



University  
of Glasgow

College of Medical, Veterinary and Life Sciences  
Nursing and Health Care School

# **Nurses' Perceptions of Patient Safety Culture in Oman**

Fatma Al Dhabbari  
MSc, PgD. BSc (Hons), R.G.N

Thesis submitted in fulfilment of the requirements for  
the degree of Doctor of Philosophy

March 2018

March 2018  
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# Abstract

## Introduction

Healthcare provision in Oman is moving towards establishing a patient safety culture, by implementing national safety schemes and international accreditation schemes for safe practice. Nurses' understanding of how to guarantee patient safety is one key aspect that contributes to the culture of patient safety in the hospital setting. Undoubtedly, certain factors can influence nurses' perceptions and compromise patient safety, and the Manchester Patient Safety Framework identifies these.

## Aim

The aim of this study was to identify and explore nurses' perceptions of patient safety culture in Oman.

## Settings and Participants

The research participants for this study were registered nurses from different grades, working on the medical and surgical wards of a teaching hospital in Oman.

## Methods

The study employed explanatory sequential mixed methods.

- **Phase I:** Survey of 330 nurses using a web-based questionnaire. Results were analysed using SPSS and differential statistics.
- **Phase II:** Four focus-group-interviews involving 40 nurses, selected according to their grades. Results were analysed using thematic analysis.

## Results

The results from Phase I and Phase II were mapped against the Manchester Patient Safety Framework.

**Phase I:** Average positive responses indicated three areas of strength, with the highest responses being: 'supportive teamwork within units' (84%) where staff support each other, treat one another with respect, and work together as a team; 'positive feedback and communication about error' (81%) whereby staff are informed about errors that happen, given feedback about implemented changes, and discuss how to prevent errors; and 'high impact through continuous

improvement organisational learning' (79%), arising when mistakes have led to positive changes that can be evaluated according to effectiveness. The level of disagreement over these statements is very low indicating minimal significance.

**Phase II:** The findings from the four focus groups indicated that education and training and team work were the principle factors influencing nurses' perceptions regarding the patient safety culture and their role in enhancing patient safety. There was evidence of strong teamwork within the ward environment, as staff routinely supported each other. However, there was a lack of incident reporting. Moreover, when reported, the evaluation and investigation of incidents is only addressed at the management level; thus, there is scope to develop this further to include ward staff. There were cross-cutting emerged concerning the expectations of Omani and expatriate nurses; these effect the role of the nurse and generate novel complexities in terms of communication. The overall findings of the study indicate a need for further research to improve the patient safety culture inside Omani hospitals.

## Conclusion

This study confirmed some previous research, and identified some areas for development within Oman, highlighting new cross-cutting themes for further exploration such as Omani and expatriate nurses, the role of the nurse and communication. Strengths were apparent in the areas of teamwork and educational and training activities. However, weaknesses emerged regarding evaluating incidents and best practices where a non-punitive response to error should be promoted. To support learning, establishing a robust process for reporting, evaluating and feeding back information related to errors is crucial. Innovations pertinent to a multi-cultural nursing workforce, introduction of infrastructure to support nurses' roles and communication require further research and practical development.

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## Published abstracts related to this study

### Journal Publications

- Al Dhabbari, F., O'Neill, A. and McDowell, J. 2016. Hospital Survey on Patient Safety Culture in Oman-Phase I Study Result. *Nitaj Scientific Journal*, 02, pp 50 - 53.
- Al Dhabbari, F., O'Neill, A. and McDowell, J. 2015. Patient Safety Culture in Oman: Literature Review. *Nitaj Scientific Journal*, 01, pp 60 - 61.

### Competition

- Al Dhabbari, F. 2015. *Image with Impact Competition MVLS*, presentation of own research to the school of Nursing and Healthcare.

### Oral Presentations

- Al Dhabbari, F., O'Neill, A. and McDowell, J. 2017. *Conference Oral Presentation: Safety Culture in Health Care* - IARMM6thWorld Congress of Clinical Safety 2017 in Italy (Accepted)(6<sup>th</sup> - 8<sup>th</sup> September 2017).
- Al Dhabbari, F., O'Neill, A. and McDowell, J. 2016. *Conference Oral Presentation: Nurses' Perceptions of Patient Safety Culture in Oman - Global Relevance of Doctoral Research*. U21 Doctoral Student Forum. University of Birmingham (12<sup>th</sup> September 2016).
- Al Dhabbari, F., O'Neill, A. and McDowell, J. 2015. *Conference Oral Presentation: (Patient Safety and Quality) -Preliminary Phase I Data Result* - Oman (Muscat) (8<sup>th</sup> February 2016).

### Poster Presentation

- Al Dhabbari, F., O'Neill, A. and McDowell, J. 2016. *Poster Presentation: Nurses' Perceptions of Patient Safety Culture in Oman - Global Relevance of Doctoral Research-Quantitative and Qualitative Results and Findings*. U21 Doctoral Student Forum. University of Birmingham (12<sup>th</sup> - 16<sup>th</sup> September 2016).
- Al Dhabbari, F., Johnston, B. and McDowell, J. 2017. *Poster Presentation-International Forum on Quality and Safety in Healthcare for Poster Display*. Amsterdam 2018 (2<sup>nd</sup>, 3<sup>rd</sup> & 4<sup>th</sup> May 2018).



## Acknowledgements

*“Keep the faith. The vision is always for the appointed time. Be patient, prayerful and wait for the fulfilment of your visions.” ~ Lailah Gifty Akita~*

*“Focused, hard work is the real key to success. Keep your eyes on the goal, and just keep taking the next step towards completing it. If you aren't sure which way to do something, do it both ways and see which works better”. ~ John Carmack~*

Firstly, I would like to express my sincere gratitude to my Supervisors: Professor Bridget Johnston (from July 2017), Dr Joan McDowell, and Dr Anna O'Neill, for their continuous support of my PhD studies and related research, their patience and motivation, and for sharing their immense knowledge with me. Their guidance helped me immeasurably when researching and writing this thesis. I could not have imagined having a better supervisors or mentors for my PhD research.

I would also like to express my special appreciation to my beloved husband MOHAMMED, who spent sleepless nights with me, and was my great support in those moments when there was no one to answer my queries. My endless love goes to my precious daughters AISHA and MARIAM, and my little baby in my uterus; without them this journey would have been impossible.

Special thanks go to my family. Words cannot express how grateful I am to my mother and father, my sister SALMA and my brother ABDULLAH, for all of the sacrifices you have made on my behalf. Your prayers for me have sustained me always. I would also like to thank all of my friends who supported me while I was writing and incentivised me to strive to realise my goal.

Finally, I am most grateful to my boss, Ms. Shinuna Al Harthy (Um Azzan) for her encouragement and support, and to all the participants in my study, without whom, I would not have been able to produce such valuable findings. Thank you also to Professor Jeyaseelan, for his support during phase 1 of the statistical analysis and to Mr Daniel Birru my Local Supervisor and colleague for his support and guidance.

Finally, I would like to express my utmost gratitude to all my friends, family members and those people who know their importance to me, I am truly grateful.

## Author's Declaration

'I declare that, except where explicit reference is made to the contribution of others, that this thesis is the result of my own work and has not been submitted for any other degree at the University of Glasgow'.

Signature: *Fatma Al Dhabbari* (Fatma Al Dhabbari), March 2018

## Definitions/Abbreviations

### List of Abbreviations

ACPE	American College of Physician Executives
AHA	American Hospital Association
AHRQ	Agency for Healthcare Research and Quality
AMNIS	Amnis® imaging flow cytometers
BBS	Behaviour-Based Safety
BMA	British Medical Association
CRM	Crew Resource Management
HFA	Health for All
HSPSC	Hospital Survey on Patient Safety Culture
ICU	Intensive Care Unit
IOM	Institute of Occupational Medicine
JCAHO	Joint Commission on Accreditation of Healthcare Organisations
KPI	Key Performance Indicators
MaPSaF	Manchester Patient Safety Framework
MoH	Ministry of Health
NMC	Nursing and Midwifery Council
NHS	National Health Services
NPSA	National Patient Safety Agency
PACT	Patient assessment, Assertive communication, Continuum of care, and Teamwork with trust
PHC	Primary Healthcare
POPMAR	Policy, Organisation, Planning and implementation, Measuring; Auditing, and Review
PSC	Patient Safety Culture
PSCIT	Patient Safety Culture Improvement Tool
PSP	Patient Safety Practice
RCN	Royal College of Nursing
RNs	Registered Nurses
SBAR	Situation, Background, Assessment and Recommendation
SOS	Safety Organisation Scale

<b>SQU</b>	Sultan Qaboos University
<b>SQUH</b>	Sultan Qaboos University Hospital
<b>VHA</b>	Voluntary Hospitals of America
<b>WBS</b>	Web-Based-Survey
<b>WHO</b>	World Health Organisation
<b>WHPA</b>	World Health Professions Alliance

# **1. Chapter One: Introduction**

This chapter provides the background and rationale for this thesis. It highlights the role of the nurses in Oman, and the teaching hospital. It also presents the organisation and structure, explaining its division into eight chapters.

## **1.1 Background to study**

Multiple factors affect patient safety (Alkorashy, 2013), and it is becoming a major area of concern globally (WHO, 2014). This is because estimates suggest that every year ten million patients worldwide are harmed unnecessarily, suffering from disabling injuries or death as result of unsafe medical practices and care (WHO, 2014). Consequently, patient safety is perceived as a central pillar of quality healthcare, and is one of the major parameters monitored by healthcare organisations worldwide (World Health Organisation (WHO), 2014). Undoubtedly, an established patient safety culture is critical for healthcare organisations to effectively address and reduce the risks encountered by patients. The culture of patient safety is evolving, and typically encompasses the avoidance of errors by healthcare professionals. Alkorashy (2013) describes patient safety culture as comprising interactions between attitudes, values, skills, and behaviours, underlining healthcare professionals' commitment to workplace safety management. Effective quality managers in healthcare settings promote a systematic approach to preventing and reducing the potential for patients to be harmed (Al Dhabbari et al., 2015; WHO, 2014).

In Oman, improving performance in the healthcare system is high on the policy agenda, and benchmarks to measure performance are understood to be crucial (Sherwood and Zomorodi, 2014). Implementing quality measures to ensure better patient safety outcomes in Oman poses a significant challenge to healthcare professionals, because of the lack of infrastructure, frameworks and guidelines for efficient care delivery (Appendix 1). Significant challenges remain in the areas of patient safety research and considerable effort will be required to produce improvement. Notable requirements at present include the need to evaluate the

cost-benefit ratio when assessing safety improvement efforts, by establishing a targeted research programme (Sorra et al., 2014). Improvements to patient safety are commensurate with changes already being implemented to provide a higher quality of service, to meet patients' rising expectations (WHO, 2014).

One of the reasons change is desired by healthcare professionals in the healthcare sector is to satisfy people's healthcare needs and promote healthy living and safer practices within the hospital setting (Taher et al., 2014; Homauni et al., 2014). The increasingly elderly population and the prevalence of chronic diseases are the key factors triggering demands for improved performance in the healthcare sector (Sherwood and Zomorodi, 2014). To create a functional patient safety culture, and to communicate on quality measures efficiently, exchange of information between leaders and frontline staff is recognised as crucial (Sherwood and Zomorodi, 2014). Thus, it is necessary to build effective systems and to educate staff regarding the necessity for change. The lack of research in this area, particularly in Oman, forms the primary justification for conducting this PhD research.

## **1.2 Why Study Patient Safety?**

As stated above, the WHO suggested in 2014 that approximately ten million patients worldwide each year suffer from unsafe medical practices and deficiencies in care provision (WHO, 2014). Meanwhile, the protection of human life, upheld by humanist discourse prevails in all aspects of daily life. Thus, those policy makers responsible for the healthcare system are expected to take steps to preserve the safety of patients; thereby benefitting patients, stakeholders, and healthcare service providers. In relation to this, the Scottish Patient Safety Programme (SPSP) had initiated a national initiative that aims to improve the safety and reliability of healthcare and reduce avoidable harm, whenever care is delivered. Hence, areas, such as leadership, communication, safety culture and safer use of medicines are key elements of every programme that may require improvements in Oman (NPSA, 2012 and WHO, 2014).

Establishing a comprehensive quality healthcare system, is contingent on implementing proper safety measures to protect patients. Certainly, in the medical field, tolerance for error is necessarily minimal, because errors can cause death. According to a report prepared by the World Health Organisation, one out of every 300 patients worldwide experience serious consequences to their health as a result of accessing healthcare services (World Health Organisation, 2012). It has also been observed that one patient out of every ten is harmed in some way at the time of admittance to hospital (World Health Organisation, 2012). This is apparently a problem encountered most frequently by patients in developing nations.

Typically, injuries and harm are caused by healthcare professionals' errors and a range of adverse situations. The occurrence of a healthcare error can increase the duration of an individual's stay in hospital, resulting in loss of income for the patient, and potentially high litigation costs for the hospital. In this way, repeated failures in the area of patient safety can have a negative and indirect impact on economic growth within the healthcare sector. When funding is low, this can in turn reduce an institutions capacity to manage infectious diseases and other problems associated with limited healthcare services. Therefore, it is essential to minimise the occurrence of healthcare errors, which can be accomplished by enhancing all facets of patient safety. According to Kohn et al. (2000), the term patient safety can be defined as the prevention of patients' harm. In order to prevent injury and fatalities arising due to healthcare errors, the Institute of Medicine suggests actively developing a patient safety culture (Institute of Medicine, 2004). This can be done through accreditation organisations, responsible for overseeing healthcare standards (Joint Commission Resources, 2007).

Moreover, healthcare errors that occur due to the lack of attention on the part of healthcare professionals, such as nurses, may not only prove detrimental to their careers, but in some cases also endanger their personal safety (WHO, 2008; WHO, 2014). However, the IOM report 2014 have indicated the value of nurses and the environments in which they provide care, and discussed how to design nurses' work environments to enable them to provide safer patient care. Based on their review of research, they concluded that nursing actions were directly related to

better patient outcomes and that nursing vigilance defended patients against errors (IOM, 2012 the Board on Global Health and WHO, 2014). Therefore, as nurses play a crucial role in preserving and supporting the safety measures designed to protect patients this research focuses on the perceptions of nurses regarding the existing patient safety culture in Oman.

Oman has a government funded National Health Service that includes general and speciality hospitals. The main health care provider is the Ministry of Health (MoH) followed by the Ministry of Defence and the Teaching Hospital. The teaching hospital is currently the only hospital that has obtained an international accreditation of its practice (Accreditation Canada International). In addition to its being a tertiary hospital, it is the only teaching hospital in Oman that covers all specialities of care for teaching purposes with highly specialised staff. It also, holds all the policies, guidelines, and standards of care up to the maximum due to its high accreditation standards.

Professional nursing in Oman has grown rapidly since the country's 1970 modernization of its health care system. Previously, nursing education was primarily vocational training, but since 1990 nurses must earn a diploma to practice as registered nurse (RN). Hence, in Oman, nursing functions in the primary health care centres are restricted to traditional nursing tasks that are normally performed in secondary and tertiary healthcare settings. The directorate of nursing and midwifery affairs (DNMA) at the MoH in Oman stressed that currently nurses working in primary health care, particularly those in small health centres are functioning in an advanced practice role without any formal educational preparation and often in the absence of medical supervision during the evening shifts and the weekends (MoH, 2013). There is no regulatory mechanism to protect these nurses and the public when they function in this advanced role. In 2011, the World Health Organization (WHO) consultants have done a partial situational analysis in Oman of and the issue and have suggested that these nurses need to be provided with appropriate educational preparation and advanced skills in order to function in this advanced practice role (MoH, 2013). The need to develop the role of advanced nursing practitioner in Oman is top of the agenda and clarity around the role is needed. Hence it has been studied extensively worldwide (MoH, 2013).



However, within the teaching hospital, it is a requirement in the teaching hospital to have a bachelor's degree to practice as an RN, in addition to a specialised qualification in highly demanding areas such as Intensive Care Units and Emergency Medicine. In the teaching hospital uses advance nurses' practices that require nurse degree in Advanced nursing practices. Also, within the teaching hospital, nurses hold additional responsibilities to teaching, mentoring and supervising students and junior nurses as well as their professional responsibilities to patients and their families. This is done in liaison with the training directorate at the teaching hospital. Nurses with qualified specialities take the responsibility to deliver some training programmes to their colleague nurses and other medical staff as part of continuous training programs within the hospital. Nurses in the teaching hospital come from different cultural backgrounds with recruitment of 75% as expatriate nurses and 25% Omani nurses. All Omani nurses are Bachelor Degree graduates, and some are graduates from the College of Nurses of the Sultan University that was launched in year 2002. The Expatriate nurses are recruited from different countries such as the UK, India, Philippines, Malaysia, and South Africa. Also, in the past two years, some midwives are recruited from Tunisia. All expatriate nurses, are recruited with a minimum of 2 years experiences along with their RN qualifications (more details in Section 1.4.1).

One of the most recent research in the middle east is a systematic review that has shown that healthcare organisations must focus on the need of assessing safety culture as this will indicate the basic understanding of the safety-related perceptions of their staff (Elmontsri et al., 2017). More importantly is the regular monitoring of the patient safety culture that assesses any introduced initiative or programmes related to safety culture. The review also has highlighted the importance of introducing a just culture to promote the learning from errors where staff are encouraged to report errors, to learn from them, but not for punishment (Elmontsri et al., 2017). Hence, policy makers need to introduce legislation and regulations to encourage health organisations to implement patient safety reporting system that will help in identifying risks to patients and learning from them (Elmontsri et al., 2017 and WHO, 2014).

## 1.3 Key Definitions

For the purpose of this thesis the following terms are used:

**Patient Safety** refers to the prevention of errors that might endanger patients in healthcare settings. Simultaneous with the rapid improvements in the treatment of illness, disease, and injury has been an increase in the complexity of medicines and treatments, and the breadth of methods and technology with which medical staff must be familiar (WHO, 2014).

**Patient Safety Culture** refers to shared values (what is important) and beliefs (what is held to be true) that interact within a system's structures and control mechanisms that produce behavioural norms. It influences patient safety directly, by determining accepted practices, and indirectly by acting as a barrier or enabler to the adoption of behaviours known to promote patient safety. Understanding the components of and influences upon culture, and assessing the safety culture in a specific work environment, is essential when seeking to develop strategies to create a culture that is committed to providing the safest possible care for patients (AHCQ, 2012).

The **Safety Culture** of an organisation arises from individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine each person's commitment to, and the style and proficiency of, an organisation's health and safety management procedures (WHO, 2014). It is also referred to as a sub-facet of organizational culture, which is thought to affect member's attitudes and behaviours in relation to an organization's ongoing health and safety performance (Cooper, 2000).

**Adverse event** is referred to as an unintended injury or complication that results in disability at the time of discharge, death or prolonged hospital stay and that is caused by health care management rather than by the patient's underlying disease process (Baker et al., 2004).

**Safety climate** is a measurable aspect of culture of safety within an organisation, which can be recognised from the attitudes and perceptions of the workforce at a given point in time (Flin et al., 2006 and Guldenmund, 2000).

**Attitude** is referred to as the predisposition to respond in a positive or negative way to someone or something in one's environment (Schermerhorn et al., 1994).

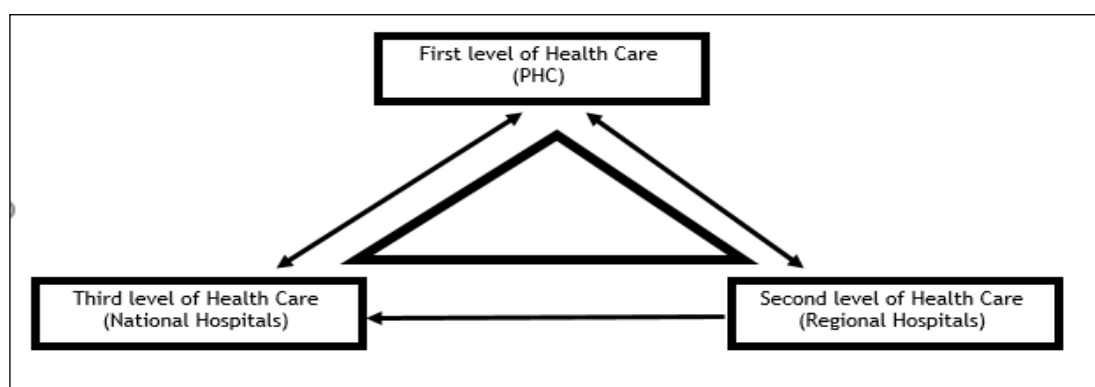
**Perceptions** is referred to as a belief of opinion, often held by many people and based on how things seem (Cambridge University Press, 2008).

## **1.4 The Healthcare System in Oman**

This section will consider the healthcare system in Oman, background to teaching hospital, patient safety initiatives in Oman and the challenges in quality and patient safety in Oman. The Sultanate of Oman is a progressive country, with a healthcare management system focused on improving health services throughout the country. The intention is to be able to deliver an excellent level of service at teaching hospitals, which are accessible to all citizens. Omani teaching hospitals and medical/nursing education institutions are coming together in pursuit of this vision, by improving the quality of their health services and enhancing measures to guarantee patient safety. The nursing institutions in Oman are all overseen by the MoH, and the ministry's training services provide the qualifications for nurses at diploma degree level only. At present (2018), Sultan Qaboos University (SQU) is the only nursing college offering the opportunity for nurses to study for a Bachelor's Degree in Nursing. In addition, there is just one tertiary teaching hospital, which has obtained accreditation by improving the quality and safety of their services based on the following standards: the International Organisation for Standardisations; Accreditation Canadian International; and the Joint Commission International. One of the other three tertiary hospitals is seeking accreditation through the British Standard Institution (BSI) and Accreditation Canadian International to endorse their safety and quality of care. Hence, with other hospitals acquiring accreditation, the quality of care around Oman will be improved.

It is widely believed in Oman that improvements in the quality of healthcare services overall will be central to enhancing the patient safety culture. Indeed, there have been a number of rapid and important improvements in healthcare in Oman since the 1970s, largely due to the country's successful completion of a new state-of-the-art healthcare infrastructure. Over the previous forty years, the Omani Renaissance has brought prosperity, and social and economic progress to Oman, with health always viewed as a primary concern (OmanInfo.com, 2012). Currently, Oman's health policy is committed explicitly to fulfilling the global strategy commitment of Health for All (HFA) (MoH, 2007); the government has thus established a broad national strategy to achieve HFA, based on Primary Healthcare (PHC) provision (Ministry of Health , 2007; OmanInfo.com, 2012).

The organisation of healthcare delivery in Oman is principally based on the PHC approach, with clearly delineated referral pathways between three levels of care. Level one care is preventative, and is provided within general practice. Level two is secondary care, and includes minor specialised treatment and care provided within a hospital setting regionally. Level three is highly specialised national care offered throughout Oman and based in hospitals (Figure 1.1). The national referral hospitals, which mostly provide tertiary medical care, are: The Royal Hospital (specialising in cardiology and oncology), Khoula Hospital (specialising in burns and orthopaedics), Al Nahdha Hospital (specialising in ophthalmology and otolaryngology), and Ibn Sina Hospital (specialising in behavioural medicine). Oman has one university teaching hospital that covers multiple specialities for teaching purposes. A referral system links the multiple levels of care through a pyramidal structure, as shown in (Figure 1.1). The Declaration of Alma-Ata in 1978 established the central role of community health services in primary healthcare by WHO Member States (WHO, 2008). Since then, there has been an increase in the utilisation of health services, and primary healthcare in particular. Globally speaking, Oman is one of the few countries to have dramatically transformed its healthcare system over such a short period of time.



**Figure 1.1** Primary Healthcare (PHC) Referral System in Oman

**Reference:** Ministry of Health (2007)

The Sultanate of Oman has entrusted the MoH, its principal healthcare provider, with the responsibility of the stewardship and coordination of the health sector. The MoH develops health policies, strategies and health programmes, and plans for the sector, while undertaking responsibility for preventive, curative, and rehabilitative care (Ministry of Health, 2007; OmanInfo.com., 2012). Services provided by the Ministry of Health are supplemented by government hospitals/clinics, including: the Armed Forces Medical Services, the Royal Oman Police Medical Services, the Petroleum Development Oman Medical Services, and the teaching hospital. While the teaching hospital serves primarily as an educational institution, providing tertiary care, further public care providers focus primarily on employees and family members. Private hospitals and clinics are licensed by the MoH, through its Directorate of Private Health Establishments, and are also supervised by respective regional directorates. Private hospitals are playing an increasingly important role in healthcare provision in Oman (Ministry of Health, 2007; OmanInfo.com., 2012).

According to the latest WHO data, published in 2015, average life expectancy in Oman has increased to 77.32 years, with male life expectancy at 75.0 years and female life expectancy at 79.2 years. This gives Oman a World Life Expectancy ranking of 48 out of 173 countries (WHO, 2015; Table 1.1).

**Table 1.1** Life Expectancy Rates in Oman

Date	Life expectancy - Women	Life expectancy - Men	Life expectancy
2015	79.42	75.33	77.32
2014	79.2	75.07	77.09
2013	78.98	74.8	76.84
2012	78.75	74.53	76.59
2011	78.51	74.25	76.33
2010	78.25	73.97	76.05

**Reference:** WHO (2015).

However, one of the main benefits to the teaching hospital is that these roles are unique to teaching hospital in Oman that enhance the care that has been delivered. The MoH is catering for over 18000 healthcare professional staff that focus mainly on primary health care. However, the teaching hospital is large and cater for approximately 5000 staff where it focuses in specialisation. In addition, the challenges for the teaching hospital is the demand from the public for specialisation even for treatments that require primary healthcare consultation. One of the challenges is the restricted opportunity for nurses from MoH to gain employment in the teaching hospital due to their nurse education and experiences. Hence, the problem recruiting because MoH employment opportunities are more local for nurses with less work load and less working hours that culturally suites more nurses with families' commitments. Hence why teaching hospital has high proportion of non-Omani nurses.

The teaching hospital is considered one of the leading hospitals in the Middle East, offering nursing and medical educations and research opportunities, alongside the provision of tertiary medical and surgical care. One of the teaching hospital benefits is that medical and nursing students are taught together as interprofessional education. Interprofessional education is a crucial aspect of preparing future health care leaders. By encouraging team-based education among students from difference disciplines (Bristowe et al., 2012). This however is not being offered within MoH. To add, medical and nursing students from MoH gain some of the clinical opportunities in the teaching hospital which give them exposure opportunities that MoH does not have. The hospital has recognised the

benefits of investing in the latest healthcare technology, to transform the vision of connected healthcare into reality.

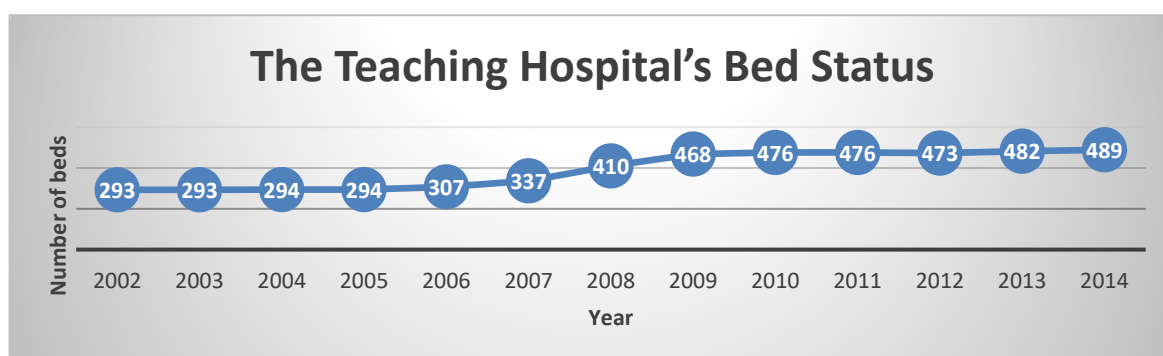
For the purpose of this research a back ground statistical analysis was conducted within the hospital in relation to error reporting and it was found that the Medical and Surgical Wards had reported the highest number of errors due to their multi-disciplinary specialities and number of beds in these areas. Therefore, by selecting Medical and Surgical wards, the highest proportion of nurses will contribute to the study (more details are in Section 1.4.1).

### **1.4.1 Background to the Teaching Hospital**

There is just one teaching hospital in Oman, located in Muscat, the capital city. With the exception of university students and other healthcare staff, who have access to special primary healthcare clinics, all patients must be referred to the teaching hospital via the national referral system. The teaching hospital officially opened in February 1990 to serve as an educational medical institution, responsible for teaching medical and nursing students, undertaking research, and providing tertiary medical care. The hospital is an integral part of the College of Medicine and Health Sciences, at the University of Sultan Qaboos, sharing members of staff, services, and teaching resources, and overseen by joint committees, including: the Hospital Board, the Medical Advisory Committee, and the Administrative Coordinating Committees. These are executive committees, in charge of developing and ensuring the implementation of various policies and procedures at the hospital. One of the benefits in the teaching hospital is that it accommodates both medical students and nursing students for teaching as well as other medical and nursing students from MoH institutes who gain experience in variety of different specialities and complex case management. The teaching hospital falls outside the authority of the MoH, as it sits within the Ministry of Higher Education, managing its own financial budget, strategic plans, staffing and recruitment. However, its collaboration with MoH hospitals is mandatory, and it is incumbent upon it to deliver safe and enhanced healthcare to patients and communities. In relation to this, one of the highest challenges with the teaching

hospital is the policy making, that has to be evidence based with regular audits, because of the accreditation. Hence, there is the need for more continuous training of the staff and regular evaluation of the practice. Hence, the impact from the teaching hospital being under Ministry of Higher Education as opposed to MoH is that more training opportunities and teaching are offered to their employees. Hence, the teaching hospital has the main medical school in the country as well as the main college of nursing.

However, although the teaching hospital is the only teaching hospital in the country, and does not fall under the control of Ministry of Health, it is representative of the other specialised hospitals in Oman, which share a similar organisational and managerial processes. Like the Royal Hospital (specialised in Cardiology and Oncology), Khoula Hospital (Burns and Orthopaedics), Al Nahdha Hospital (Ophthalmology and Otolaryngology), and Ibn Sina Hospital (Behavioural Medicine), it provides full tertiary healthcare. The hospital is located in an area covering approximately 40,000 square metres and has a total inpatient bed capacity of 528 beds; 491 of which are currently in use. There is a total of 679 inpatient (528) and ambulatory (151) beds with an occupancy of inpatient rate of 74.9% in year 2014; and Figure 1.2).



**Figure 1.2** The Teaching Hospital's Bed Status

In addition, there are High Dependency Units (HDU) located on the wards in the teaching hospital; these are considered a step down from Intensive Care Units (ICU). The increase in patient severity on medical wards is due to the presence of HDU patients and high volume of patients. It is also a consequence of the lack of isolation beds for infectious patients, which increases nursing workload, and

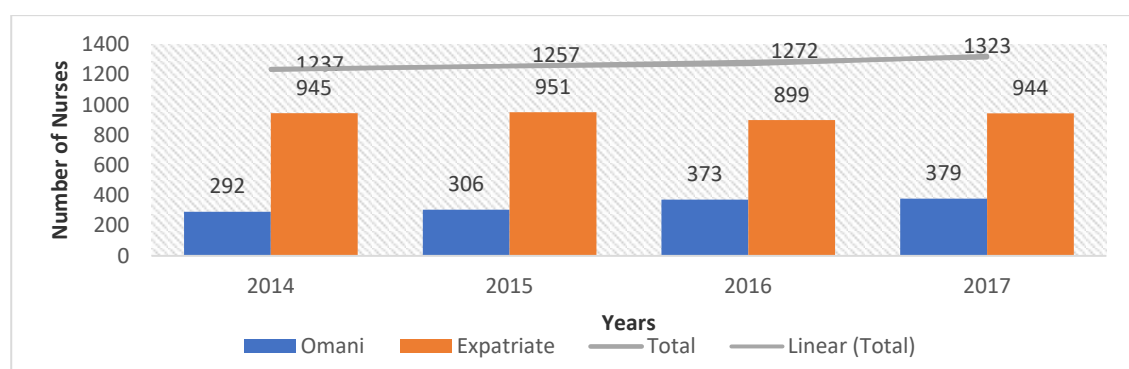


places an added burden on the nurses working on medical wards. Many of the patients admitted to medical wards require high dependency care and a significant level of nursing interventions. Typically, there is full occupancy of beds, and staffing levels are expected to reflect the acuity of patients (Table 1.2).

**Table 1.2** Staffing and Bed Status in Medical and Surgical wards

No. of beds in Medical Wards	132	All medical cases including oncology
No of Staff in Medical Wards	177	
No. of Beds in Surgical Wards	126	All general surgeries including, neuro and ortho surgeries
No. of Staff in Surgical Wards	161	

Furthermore, the majority of nurses working in the teaching hospital are expatriates. Although Omani nurses graduating from Omani Nursing Schools share a similar cultural background with one another, expatriate nurses account for the majority of hospital staff (Figure 1.3). In addition, although both Omani and expatriate nurses receive the same orientation programs, expatriates receive their cultural orientation training separately. Appraisal systems are implemented to evaluate the employee's job performance and specialisms required, and training is provided according to need. However, while Omani nurses have a work contract for life, expatriate nurses have a contract for either 2 or 4 years depending on their grades. These contracts are renewable based on their annual performance and completion of clinical practices. Working hours are 37.5 per week, full time, and there are no part time jobs available in the nursing field in Oman for cultural family reasons. Staff retention is maintained at a very high rate, and turnover does not exceed 4% annually. Administrative nursing staff are also present in the ward setting and included in the staffing numbers provided.



**Figure 1.3** Nursing Status 2014 – 2017.

In 2010 and 2012, two studies were conducted concerning patient classification, comparing workload in hours and nursing hours. The results of these studies inform the nurse: patient ratio and staffing allocations. The Nursing Directorate also consulted studies by the Royal College of Nursing Mandatory Nurse Staffing Level in the United Kingdom, and adapted some of its recommendations to suit the teaching hospital's patient population and staff availability (Royal College of Nursing, 2006 and Royal College of Nursing 2010; Table 1.3).

**Table 1.3** Overview of Nurse-Patient-Ratio

Care setting	Day shift	Evening shift	Night Shift
Intensive/critical care	1:2 + in charge	1:2 + in charge	1:2 + in charge
Neonatal intensive care	1:2 + in charge	1:2 + in charge	1:2 + in charge
Operating room	3 per theatre		
Recovery room	1:2 + in charge	1:2 + in charge	1:2 + in charge
Labour and delivery	1:2 + in charge	1:2 + in charge	1:2 + in charge
Post-partum couplets	1:4 + in charge	1:6 + in charge	1:8 + in charge
Post-partum mothers only	1:5 + in charge	1:6 + in charge	1:8 + in charge
Emergency room	1:4 + in charge	1:4 + in charge	1:4 + in charge
Emergency room with ICU patients	1:2 + in charge	1:2 + in charge	1:2 + in charge
Emergency room with trauma patients	1:1 + in charge	1:1 + in charge	1:1 + in charge
Medical	1:5 + in charge	1:6 + in charge	1:8 + in charge
Surgical	1:5 + in charge	1:6 + in charge	1:8 + in charge
Psychiatry	1:5 + in charge	1:6 + in charge	1:8 + in charge
Paediatrics	1:5 + in charge	1:6 + in charge	1:8 + in charge
High dependency	1:2	1:2	1:2

Within Omani hospitals, some patients have attenders, known as carers (usually a family member) with them when they are admitted, and they may or may not participate in the person's care. In addition, there are questionnaire surveys and complaints statistics regularly performed to learn how patients perceive their care. In addition, patient focus groups, managed by the patient services section, are conducted on a regular basis. This ensures that patients' voices are heard, and that their opinion informs the development of better quality of care.

As detailed in sections 1.2 and 1.4.1 the hospital is considered as one with the highest standard because of its accreditation related to clinical practice. Highly qualified nurses bring better patients' outcome. However, Aiken et al. (2014)

suggested that lower patient-to-nurse ratios, with higher proportion of nurses with high level of education, and better nurse work environments are associated with better patients' outcomes, better nurse work environments, good working relationships and quality improvement for patient care.

### **1.4.2 Patient Safety Initiatives in Oman**

The Omani Ministry of Health views patient safety as an essential component when delivering quality healthcare to the community. Implementation of the Patient Safety Friendly Hospital Initiative (WHO, 2007) raised community awareness of patient safety and increased the expectations of patients accessing services. A national patient safety team was established in 2007, to conduct workshops addressing patient safety issues at multiple institutions, to be organised by departments for quality assurance and patient safety (WHO, 2007). Initiatives have focused on hospital autonomy and infection control programmes, the establishment of infection control policies and procedures, and the establishment of infection control committees.

The following phases have been undertaken to implement the patient safety programme in Oman:

#### **Phase 1: 2009-2010**

- Undertaking an assessment of the existing system, delivering safe healthcare in primary, secondary and tertiary healthcare institutions, and (where appropriate) proposing corrective and preventive actions.
- An assessment of patient safety culture and awareness among healthcare professionals.

#### **Phase 2: 2010-2011**

- Development of a patient safety training schedule for key personnel; for, example, the patient safety officer as well as selected staff at the institutional level.
- Identifying and training key people nationally in patient safety, such as safety officers and risk managers.

- Raising awareness concerning the development of patient safety indicators.
- Conducting risk management and assessment.

### Phase 3: 2012-2013

- Development and launch (in 2012) of national patient safety indicators (WHO, 2012).
- Implementation of patient safety solutions between three and four solutions.
- Development of national patient safety standards.

To date, following the third phase, Omani hospitals have been striving to meet the maximum safety initiative, as measured through research and fulfilment of Key Performance Indicators (KPI), while also aligning with all international accreditation standards for safe practices.

The project team, the Patient Safety Committee, at the current researcher's own hospital in Oman has already established link nurses positioned in each ward across the hospital. The link nurses present information to their work colleagues in accordance with an educational plan, highlighting the benefits of establishing a patient safety culture. So as to enable all members of staff to become accustomed to changes in the safety culture, the development phase focused on the introduction of Six Patient Safety Goals (Figure 1.4), and in the researcher's own practice setting, a multidisciplinary committee was established, both at hospital organisational level and departmental nursing level. The establishment of the Patient Safety Committee was achieved via the hospital intranet, in conjunction with internal memoranda and various meetings.



**Figure 1.4** Six Patient Safety Goals.

**Reference:** Sultan Qaboos University Hospital, Nursing Directorate, 2009 and WHO 2014

However, there are some obstacles to patient safety that are unique to Oman, including: the cultural setting; the employment of expatriate healthcare professionals; and the utilisation, in the researcher's organisation, of staff and patients who speak and write a range of different languages. In addition, a number of priorities need to be considered, including: recruitment criteria; language requirements; and the clear identification of each organisation's requirements with the university teaching hospital's own requirements for its staff. Education assists the communication of the preferred approach to patient safety, ensuring important patient safety promotion procedures include discussions about safe care and how to record accurate and reliable healthcare statistics, neither of which are well established in the Omani system yet. One method of ensuring patient safety is the routine reporting of incidents. In the healthcare systems in both the UK and Oman, members of staff are encouraged to feel confident about reporting incidents, and so systems need to be established to effectively respond to reports and provide feedback (Aboshaiqah and Baker, 2013).

In Oman, the fall prevention measure is a KPI in risk management, as many hospital admissions are elderly people, who are considered higher risk patients. It is vital to communicate and share knowledge concerning previous incidents with other healthcare professionals, including learning from past errors. This contributes to learning from events and the development of an open and fair culture of reporting (Sorra et al., 2014), and has been encouraged in Oman through the 'lesson learned' initiative. Oman is currently collaborating with the WHO to incorporate a Multi-Professional Patient Safety Curriculum Guide into the Omani medical and healthcare system, to navigate anticipated challenges.

In Oman, nurses are included in policy-making concerning risk management, and information is transmitted across all organisational departments. However, an effective and well-planned patient safety strategy can be a positive contribution to patient care, and one that is highly relevant to the Omani healthcare system.

### **1.4.3 Challenges in Quality and Patient Safety in Oman**

Globally, attempts to improve patient safety and the quality of the medical and healthcare sector are ongoing. However Shannon (2007) states that efforts to date have been largely unsuccessful, highlighting failures in the planning and implementation of healthcare plans (Shannon, 2007). The literature has highlighted the barriers that adversely impact on care quality and guarantees of patient safety in the medical and healthcare sectors, and this is further discussed in Chapter 2.

A further critical issue faced by healthcare institutions concerned the availability of resources, which tend, to reduce the quality of care and levels of patient safety to a considerable extent. Within the teaching hospital in Oman, there is a lack of healthcare assistants, and so staffing hinders the quality of care. Moreover, a mix of skills is needed to ensure the best use of resources. Improving the availability of healthcare assistants, able to assist nurses might reduce the additional pressure on nurses. The latest evidence relating to nurse staffing, collected by Aiken et al. (2017), indicates the importance of registered nurses' skills to ensuring safe practice. Therefore, globally, staff trained to support safe clinical outcomes are essential to delivering the desired low mortality rate attributable to errors. Further studies are required in Oman regarding nurse staffing based on the latest evidence.

In response to demand, the Oman Medical Specialty Board was established in 2006 to improve the quality of medical care in Oman. Simultaneously, Oman is currently improving its manpower considerations, in order to establish an effective healthcare network, and to invest in education and training for medical and healthcare professionals. The government of Oman is also developing the quality of its infrastructure, to provide improved services and invite private sector organisations to collaborate in the development of the medical and healthcare industry.

## 1.5 Aim and Objective

The overall research aim of this study is to identify and explore nurses' perceptions of the patient safety culture in Oman. This has been expanded into the following research objectives:

1. To identify and explore nurses' perceptions of patient safety culture in Oman.
2. To explore nurses' understandings of patient safety.
3. To identify factors that influence nurses' perceptions of patient safety.
4. To identify and explore nurses' attitudes and behaviours towards patient safety.
5. To identify and explore nurses' understandings of patient safety within the hospital context and at ward level.

## 1.6 Thesis Structure

The thesis is organised into eight chapters. Table 1.4 displays the structure of the study.

**Table 1.4** Thesis Structure

Chapter One	Introduction
Chapter Two	Literature Review
Chapter Three	Literature Pertaining to Methods
Chapter Four	Methods and Theoretical Framework
Chapter Five	Phase I Results
Chapter Six	Phase II Findings
Chapter Seven	Discussion
Chapter Eight	Conclusion and Recommendations

A brief description of each chapter follows:

**Chapter One:** The first chapter is the introduction, and provides a topic specific background to the study, outlining the aim and objectives, the Omani healthcare context and its background, and an overall structure of the entire thesis.

**Chapter Two:** This chapter critically reviews the literature related to the concept of a safety culture and patient safety within both the hospital and community settings. It offers a critical analysis of the perceptions of nurses on patient safety culture from the perspectives of different researchers. It reviews previous patient safety studies and the impact of various factors on patient safety. It also elaborates on the rationale of conducting the current study in Oman. Additionally, this chapter shows how this research relates to existing theory and research by utilising the Manchester Patient Safety Framework (MaPSaF) as a theoretical framework. It guides the researcher to organise and connect results and findings in the discussion chapter.

**Chapter Three:** This chapter explores the literature surrounding the specific research methods employed within the thesis.

**Chapter Four:** This chapter discusses the research design and the methods employed to carry out the research. A description of the dominant research approach is provided, for example, mixed methods, using both quantitative (Phase I) and qualitative (Phase II) approaches. It describes the main methods of data collection used; questionnaire and focus group interviews. It represents the methodologies and data analysis techniques adopted by the researcher. It informs the research question and methodology, as well as demonstrating how this research contributes to the topic of patient safety culture.

**Chapter Five:** Presents the results of Phase I, commenting on the quantitative aspect, which involved a web-based survey (WBS) of nurses working on medical and surgical wards in one hospital in Oman. The findings are presented using statistical analysis.



**Chapter Six:** Presents the findings of Phase II, the qualitative element of the study. The findings were obtained from four focus group interviews. The participants were nurses working on medical and surgical wards, and might not necessarily have participated in Phase I of the study.

**Chapter Seven:** This chapter presents the discussion of the main results and findings of the study, and considers these with reference to the published literature relating to patient safety culture.

**Chapter Eight:** The conclusions that can be drawn from the study are addressed in this chapter, and what is known about the topic, and what this thesis contributes are also considered. Based on the research conclusions, recommendations are provided in conjunction with suggestions for future research.

## **1.7 Conclusion**

This chapter has introduced the thesis, its aim and objectives, described the study context, the Oman healthcare system, and the structure of the research. The next chapter provides a literature review related to the concept of safety culture and patient safety, to provide a more comprehensive picture of the context of research into patient safety practice. It reviews previous patient safety studies and evaluates the effects of various factors on patient safety.

## **2. Chapter Two: Literature Review**

### **2.1 Literature Review Approach**

This chapter constitutes an in-depth review of the literature relevant to the present study. Its purpose was to uncover pertinent knowledge relating to nurses' perceptions of patient safety culture in acute hospital settings. It highlighted gaps in the literature, and guided the direction of this study. This chapter begins by detailing how the relevant literature was identified, including the search terms utilised, the databases reviewed, and the inclusion and exclusion criteria applied to identify the most relevant studies. The findings from the literature review are then presented.

A narrative, or traditional, literature review was conducted for this study, which involves summarising and analysing the body of literature on a particular subject; for example, patient safety culture in this instance. This type of literature review is useful for providing a background and an overview of a subject, and for illuminating areas for further research. The type of literature review method employed can be helpful when focusing on a topic, and for refining a research question (Aphramor, 2010). The review undertaken for this study was conducted systematically, so as to collate all of the empirical evidence matching the pre-specified eligibility criteria, in order to answer a specific research question. It employed explicit, systematic methods that were selected with a view to minimising bias, thereby providing reliable findings from which conclusions could be drawn, and decisions made (Liberati et al., 2009; Collins, and Fause, 2004; Figure 2.1). The review included three types of literature based on the type of research methods used: primary, secondary, and tertiary.

Primary studies utilise original research data, and are published in a peer-reviewed journals. They may also include conference papers, pre-prints, or preliminary reports, and are referred to as empirical research (Fink, 2010). Secondary literature comprises interpretations and evaluations of articles that are derived from, or refer to, primary sources of literature. Examples of secondary literature include review articles, systematic reviews, meta-analysis, practice guidelines, referential works, and monographs on a specific subject (Fink, 2010).

A tertiary literature review was also conducted for this study, distilling collected primary and secondary data sources, such as textbooks, encyclopaedia articles, guidebooks, and handbooks. The main aim of tertiary literature is to provide an overview of key research findings, and an introduction to the principles and practices within the discipline (Fink, 2010).

### **2.1.1 Search strategy**

The following primary databases were searched: CINAHL, Medline, the Cochrane Library, EMBASE, Web of Knowledge, PubMed, and Scopus, since these databases have a high impact on evidence-based practice. They were also applicable to the current literature review, and included literature relevant to the purpose of this thesis, such as that regarding medicine, nurses, physicians, and allied healthcare professionals (Appendix 2). In addition, a search was conducted of relevant books, government websites, and professional association policy documents, including from the WHO, the Royal College of Nursing (RCN), and the Agency for Healthcare Research and Quality (AHRQ). These were included because they are highly relevant to this thesis, and their advanced updates in terms of audits, tools, policies, and guidelines are important for nurses, healthcare professionals, and healthcare organisations.

The aim of the literature search was to evaluate the extent of current evidence concerning nurses' perceptions of patient safety culture in Oman (Table 2.1). The literature review was limited to the most recent papers produced from 2010 onwards, in conjunction with frequently-cited influential papers, and those in English. The literature search was repeated at regular intervals throughout the research period, between 2014 and 2017, to capture any developments and new findings published in this area.

**Table 2.1** Search Strategy Table.

Searched items	Search string used (Boolean)	Database	Limitations / Filters	Articles for review
patient safety; patient safety area; nurses' perceptions of safety; patient safety in Oman; patient safety management; patient safety and reporting system; hospital survey on patient safety culture.	"AND"  and  "OR"	CINAHL	Nil	21
		Medline		5
		EMBASE (Ovid)		7
		Scopus		7
		Web of Knowledge		10
		Web of Science		10
		Others		10

### 2.1.2 Study Selection

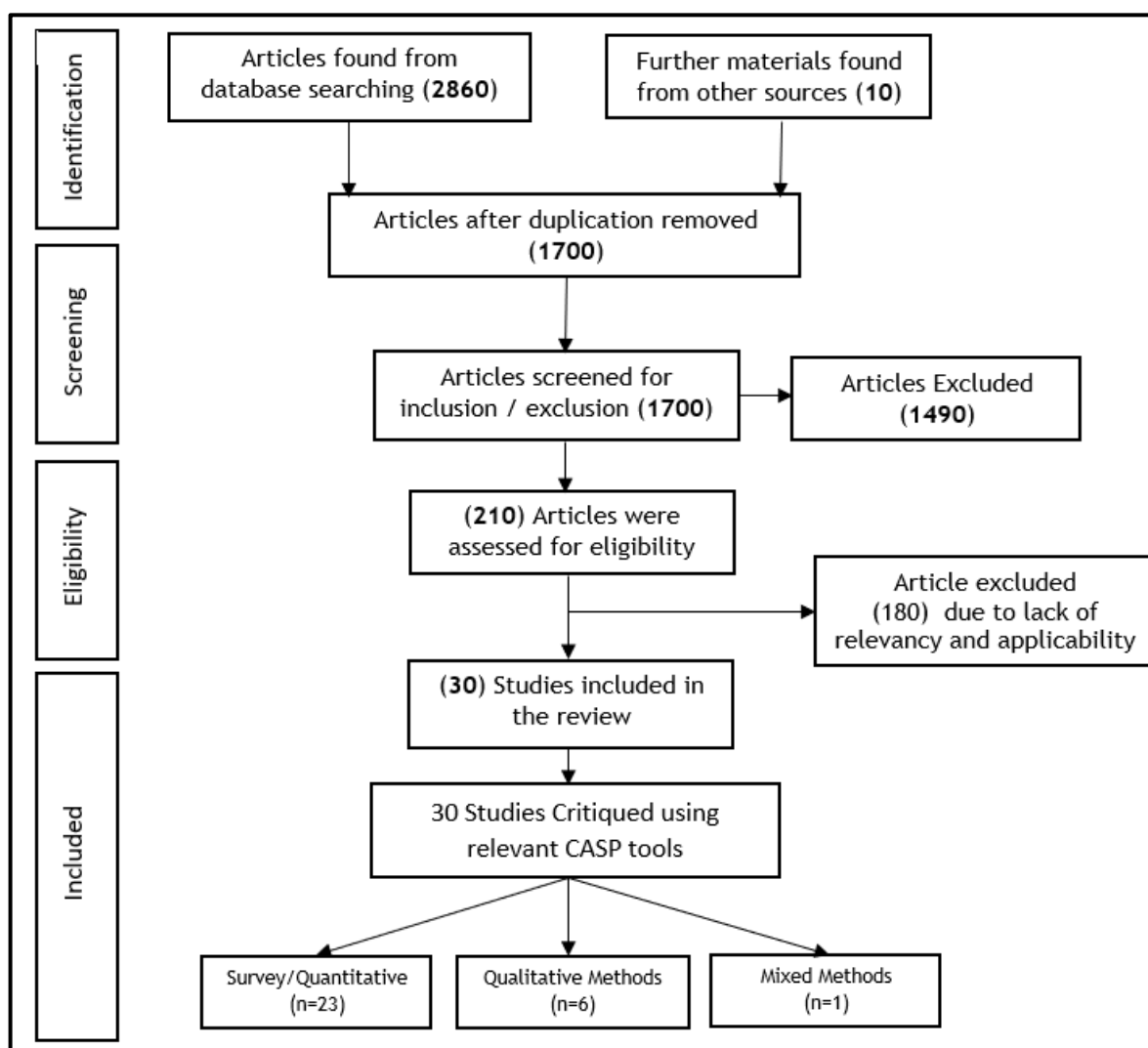
The references for the retrieved articles were reviewed to locate additional sources (Alberto and Troutman, 2012; Table 2.2).

**Table 2.2** Inclusion and Exclusion Criteria.

Inclusion	<ul style="list-style-type: none"> <li>• Empirical research; research books, Randomised Control Trials (RCTs), policies and guidelines;</li> <li>• Systematic reviews;</li> <li>• Participants who were nurses;</li> <li>• A focus on nurses' perceptions of patient safety culture;</li> <li>• Studies relevant to patient safety culture that are transferable to different healthcare settings.</li> </ul>	Rationale: Relevance and transferability to different settings for evidence-based practices and policy development.
	<ul style="list-style-type: none"> <li>• Seminal/classic papers.</li> </ul>	Due to their relevance in establishing the history of the topic under study.
Exclusion	<ul style="list-style-type: none"> <li>• Commentaries;</li> <li>• Does not include safety culture, or not relevant to safety culture.</li> </ul>	

### 2.1.3 Search results

The below Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) flow diagram summarises the key stages of the identification and selection process (Liberati et al., 2009; Figure 2.1).



**Figure 2.1** Selection of the Study Literature

### 2.1.4 Data Extraction and Results

Once the articles for scrutiny had been selected, they were evaluated to ensure that the data collection methods had been rigorous, and to assess the degree to which they were relevant. In total, 2,860 articles were retrieved, and 1,700 duplicate articles were removed. Thereafter, 210 articles were reviewed to

determine their eligibility, applying the inclusion and exclusion criteria (Table 2.2). This resulted 30 papers, 23 of which were quantitative research articles, six qualitative research articles, one mixed methods research articles (Figure 2.1; Tables 2.2 and 2.3 for studies' summaries).

Using the inclusion/exclusion criteria (Table 2.2), 30 articles were included for review, using the Critical Appraisal Skills Programme (CASP) tools (CASP, 2018).

The different CASP tools were used to review the studies for their quality and rigour. These tools were used as they are universally employed by other researchers (CASP, 2017), easy to use and there are many tools available for different types of studies. Other critical appraisal tools considered were those of the Scottish Intercollegiate Guidelines Network (Sign, 2018), the Grading of Recommendations, Assessment, Development and Evaluation tools (Grade Working Group, 2018). However, these tools do not critique in-depth as CASP tools are.

Furthermore, Table 2.3 summarises the main studies that have been scored using the relevant CASP tools for their studies (CASP, 2013). These studies are the main studies that have contributed to nurses' perceptions of patient safety culture. Also, the studies included are transferable to other settings and some are conducted in Middle Eastern countries that may have the same setting as Oman and the teaching hospital.

**Table 2.3** Summary of the Main Studies Included

No	Author(s) and year (country)	Aim/Purpose	Design and methods	Sample and setting	Summary of key findings	CASP score
1.	Abbas et al., 2008 (Egypt).	To assess the perceptions of front-line healthcare professionals towards safety climate, and management and clinical staff's commitment to patient safety.	Safety climate survey.	Convenience sample of 400 front-line clinical staff members working in general medical and surgical wards, intensive care units (ICUs), and paramedical departments at Alexandria Main University Hospital.	The majority of the participants conveyed negative perceptions towards patient safety. The physicians' perceptions about patient safety were high compared with those of nurses and paramedical personnel. The respondents perceived a significantly stronger commitment to patient safety from their managers and surrounding safety climate than from the clinical personnel.	7
2.	Aboshaiqah and Baker, 2013 (Saudi Arabia).	To identify factors that nurses perceive as contributing to the culture of patient safety in a hospital in Saudi Arabia.	Cross-sectional survey.	A total of 498 registered nurses employed in a hospital.	The majority of the nurses perceived a positive patient safety culture. There were significant differences in the nurses' perceptions of patient safety culture based on gender, age, years of experience, Arabic versus non-Arabic speaking, and length of shift.	7
3.	Abdou and Saber, 2011 (Egypt).	To assess patient safety culture among nurses at Student University Hospital in Egypt.	A descriptive correlational research design.	The study was conducted in 12 inpatient units at the Student University Hospital. The subjects consisted of a convenience sample of 165 nurses from those meeting the inclusion criteria, who were available during the data collection period, and working at the hospital.	The findings concluded that providing insight into nurses' safety attitudes can be used as a baseline for raising safety awareness throughout the organisation, and for identifying the areas that require improvement.	6

No	Author(s) and year (country)	Aim/Purpose	Design and methods	Sample and setting	Summary of key findings	CASP score
4.	Abualrub and Abu Alhijaa, 2014 (Jordan).	To examine the impact of patient safety educational interventions among senior nurses on their perceptions of safety culture, and to assess the rate of reported adverse events, pressure ulcers, and patients' falls.	Quasi-experimental, without control group.	In total, 57 nurses in a pre- and post-educational programme concerning patient safety in a hospital.	There were significant improvements to the senior nurses' positive scores of two composites, 'Frequency of event reporting', and 'Non-punitive response to errors,' and a significant decline in the rate of adverse events.	6
5.	Al-Kandari and Thomas, 2009 (Kuwait).	To identify the perceived adverse patient outcomes as related to nurses' workload. It also assessed nurses' perception of variables contributing to the workload and adverse patient outcomes.	A cross-sectional survey.	In total, 780 nurses working in the medical and surgical wards of five general governmental hospitals in Kuwait.	The three-major perceived adverse outcomes reported by the nurses while on duty during their last shift were: complaints from patients and families (2%), patients received a late dose or missed a dose of medication (1.8%), and occurrences of pressure ulcers (1.5%). In addition, the reported adverse outcomes over the past week were: complaints from patients and families (5%), patients received a late dose or missed a dose of medication (5.3%), and discovery of a urinary tract infection (3.7%), increases in nurse-patient load, bed occupancy rate, unstable patient condition, extraordinary life support efforts, and non-nursing tasks. All correlated positively with the perceived adverse patient outcomes.	7



No	Author(s) and year (country)	Aim/Purpose	Design and methods	Sample and setting	Summary of key findings	CASP score
6.	Alkorashy et al., 2013 (Saudi Arabia).	A qualitative exploration of the factors shaping patient safety management in a Middle Eastern hospital, from a nursing perspective.	Qualitative data analysis with a focus group, and a semi structured interview.	In total, 23 nurses in a hospital affiliated to the Ministry of Health.	The main results were that nurses' perceptions of the factors shaping patient safety management were: nursing leadership, patient expectations of safety, nurses' working hours, nurses' workload, a culture of blame, and a safety culture.	6
7.	Ali and Mohammed, 2006 (Iran).	To explore the relationships between managers' leadership styles, and employees' job satisfaction in Isfahan University Hospitals.	Descriptive and cross-sectional study.	Distribution of two questionnaires among the 814 employees, including first line, middle, and senior managers of these hospitals through a stratified random sampling.	The dominant leadership style of the managers was participative. The employees demonstrated less satisfaction with salaries, benefits, working conditions, promotion, and communication as satisfier factors, and more satisfaction with factors such as the nature of the job, co-workers, and supervision type factors. There was significant correlation ( $p < 0.001$ ) between the use of leadership behaviours and employees and job satisfaction.	5
8.	Allen et al., 2010 (Australia).	Reported on a case study examining the safety culture in one maternity service in Australia, and considered the benefits of using surveys and interviews to understand safety culture as an approach to identifying possible strategies to improve patient safety in this setting.	A descriptive case study using three approaches.	The study occurred in one maternity service in two public hospitals. Both hospitals were undergoing an organisational restructuring, which was part of a major health reform agenda.	The safety culture was identified as warranting improvement across all six safety culture domains. There was reduced infrastructure and capacity to support the incident management activities required to improve safety, which was influenced by instability resulting from the organisational restructuring. There was a perceived lack of leadership at all levels in terms of driving safety and quality, and improving the safety culture was neither a key priority, nor was it valued by the organisation.	7

No	Author(s) and year (country)	Aim/Purpose	Design and methods	Sample and setting	Summary of key findings	CASP score
9.	Aljadhey et al., 2013 (Saudi Arabia).	Explored the perspectives of healthcare practitioners on current issues concerning medication safety in hospitals and community settings in Saudi Arabia, in order to identify the challenges of improving it and to explore the future of medication safety practice.	Discussion sessions.	A total of 65 physicians, pharmacists, academics, and nurses attended a one-day meeting in March 2010, designed especially for the purpose of this study. The participants were divided into nine round-table discussion sessions. Three major themes were explored in these sessions, including: major factors contributing to medication safety problems, challenges to improving medication safety practice, and participants' suggestions for improving medication safety. The round-table discussion sessions were videotaped and transcribed verbatim, and analysed by two independent researchers.	The round-table discussions revealed that the major factors contributing to medication safety problems included unrestricted public access to medications from various hospitals and community pharmacies, communication gaps between healthcare institutions, limited use of important technologies such as computerised provider order entry, and the lack of medication safety programmes in hospitals. The challenges to current medication safety practice identified by the participants included underreporting of medication errors and adverse drug reactions, multilingualism and differing backgrounds of healthcare professionals, lack of communication between healthcare professionals and patients, and high workloads.	7

No	Author(s) and year (country)	Aim/Purpose	Design and methods	Sample and setting	Summary of key findings	CASP score
10.	Al-Mandhari et al., 2014 (Oman).	To illustrate the patient safety culture in Oman, as gleaned via 12 indices of patient safety culture derived from the Hospital Survey on Patient Safety Culture (HSoPSC), and to compare the average positive response rates in patient safety culture between Oman and the USA, Taiwan, and Lebanon.	Cross-sectional survey.	In total, 398 nurses from five secondary and tertiary care hospitals in the northern region of Oman.	The overall average positive response rate for the 12 patient safety culture dimensions of the HSoPSC survey in Oman was 58%. The indices from HSoPSC that were endorsed the highest included "organisational learning and continuous improvement", while conversely, "non-punitive response to errors" was ranked the lowest. There were no significant differences in average positive response rates between Oman and the United States of America (USA) (58% versus 61%; $p=0.666$ ), Taiwan (58% versus 64%; $p=0.386$ ), and Lebanon (58% versus 61%; $p=0.666$ ).	6
11.	Ammouri et al., 2015 (Oman).	To investigate nurses' perceptions about patient safety culture, and to identify the factors that need to be emphasised, in order to develop and maintain the culture of safety among nurses in Oman.	Descriptive cross-sectional survey.	In total, 414 registered nurses working in four major governmental hospitals in Oman.	The nurses who perceived more supervisor or manager expectations, feedback and communications about errors, teamwork across hospital units, and hospital handovers and transitions had more overall perception of patient safety. The nurses who perceived more teamwork within units, and more feedback and communications about errors had a greater frequency of events reported. Furthermore, the nurses who had more years of experience, and were working in teaching hospitals, had more perception of patient safety culture.	5

No	Author(s) and year (country)	Aim/Purpose	Design and methods	Sample and setting	Summary of key findings	CASP score
12.	Bahrami et al., 2014 (Iran).	To measure patient safety culture in two teaching hospitals in Iran.	Cross-sectional survey.	In total, 340 randomly-selected nurses from different units in two teaching hospitals.	The findings indicated that the hospitals' safety culture scores were of low and average rates. Therefore, these hospitals should make improvements to patient safety culture by implementing actions that support all dimensions of a positive safety culture.	7
13.	Blegen et al., 2010 (USA).	To improve unit-based safety culture through the implementation of a multidisciplinary (pharmacy, nursing, medicine) teamwork and communication intervention.	Cross-sectional survey.	Surveys were returned from 454 healthcare staff before their training, and 368 staff one year later. The AHRQ HSoPSC was used to determine the impact of the training with a before-after design.	Five of 11 safety culture subscales showed significant improvement. The nurses perceived a stronger safety culture than the physicians or pharmacists.	8
14.	Blignaut et al., 2014 (South Africa).	To investigate professional nurses' perceptions of patient safety, and quality of care in South Africa, and the relationship between these perceptions and professional nurses' qualifications.	Cross-sectional survey.	In total, 1,117 professional nurses from medical and surgical units of 55 private, and seven public hospitals.	Significant problems with regard to nurse-perceived patient safety and quality of care were identified, while adverse incidents in patients and professional nurses were underreported. The qualifications had no correlation with the perceptions of patient safety and quality of care, although the perceptions may serve as a valid indicator of patient outcomes.	8

No	Author(s) and year (country)	Aim/Purpose	Design and methods	Sample and setting	Summary of key findings	CASP score
15.	Braaf et al., 2013 (Australia).	To gain an understanding of service providers' perceptions of organisational communication, and to identify areas for improvement across the perioperative pathway.	Prospective cross-sectional survey design.	A whole population sampling method of all service providers from across the perioperative pathway, including surgeons, nurses, anaesthetists, theatre technicians, patient service assistants, and receptionists. The sample were surveyed using the International Communication Association survey. The responses were analysed using descriptive statistics, univariate analysis of variance, and independent sample t-tests.	In total, 281 service providers from the perioperative pathway of three Australian public hospitals completed the survey. The respondents were dissatisfied with communication from top management, and the service providers employed in the operating room, or post anaesthetic care unit, perceived the communication of information to be inadequate. Furthermore, analysis by the service providers' occupation revealed that the nurses were less satisfied with the channels of information than the surgeons, and the anaesthetists were less satisfied with the timeliness of information than the nurses.	6

No	Author(s) and year (country)	Aim/Purpose	Design and methods	Sample and setting	Summary of key findings	CASP score
16.	Elmontsri et al., 2017 (United Kingdom (UK)).	To explore the status of patient safety culture in Arab countries, based on the findings of the HSoPSC.	Systematic review.	Performed electronic searches of the MEDLINE, EMBASE, CINAHL, ProQuest and PsychINFO, Google Scholar, and PubMed databases, with manual searches of bibliographies of including articles and key journals. Included studies that were conducted in Arab countries that were focused on patient safety culture. Two reviewers independently verified that the studies met the inclusion criteria, and critically assessed the quality of the studies.	In total, 18 studies met the inclusion criteria. The review identified that non-punitive response to error was seen as a serious issue that required improvement. Healthcare professionals in Arab countries tend to believe that a 'culture of blame' exists that prevents them from reporting incidents. An overall similarity was found between the reported composite score for the dimension of teamwork within the units in all of the reviewed studies. Teamwork within the units was found to be better than teamwork across the hospital units. All of the reviewed studies reported that organisational learning, and continuous improvement, was satisfactory, as the average score for this dimension for all of the studies was 73.2%. Moreover, the review found that communication openness appeared to be an issue of concern for healthcare professionals in Arab countries.	7

No	Author(s) and year (country)	Aim/Purpose	Design and methods	Sample and setting	Summary of key findings	CASP score
17.	El-Jardali et al., 2010 (Lebanon).	To conduct a baseline assessment of patient safety culture in Lebanese hospitals.	Cross-sectional survey.	A total of 6,807 hospital employees participated in the study, including hospital-employed physicians, nurses, clinical and non-clinical staff, and others from the medical and surgical units of 68 Lebanese hospitals.	The dimensions with the highest positive ratings were: teamwork within units, hospital management support for patient safety, and organisational learning and continuous improvement, while those with lowest ratings included staffing and non-punitive response to error. Approximately 60% of the respondents reported not completing any event reports in the past 12 months, and over 70% gave their hospitals an 'excellent/very good' patient safety grade. Bivariate and multivariate analysis revealed significant differences across hospitals of different sizes and accreditation status.	9
18.	El-Jardali et al., 2011 (Lebanon).	To explore the association between patient safety culture predictors and outcomes, taking into consideration respondent and hospital characteristics. In addition, to examine the correlation between patient safety culture composites.	A cross-sectional survey, using an Arabic version.	In total, 68 hospitals, and 6,807 respondents, participated in the study. The study adopted a cross-sectional research design, and utilised an Arabic-translated version of the HSoPSC to measure 12 patient safety composites. Two of the composites, in addition to a patient safety grade, and the number of events reported, represented the four outcome variables. Bivariate and mixed model regression analyses were employed to examine the association between the patient safety culture predictors and outcomes.	Significant correlations were observed among all of the patient safety culture composites, but with differences in the strength of the correlation. Generalised Estimating Equations for the patient safety composite scores, and respondent and hospital characteristics against the patient safety grade, and the number of events reported revealed significant correlations. Significant correlations were also observed by linear mixed models of the same variables against the frequency of events reported, and the overall perception of safety.	6

No	Author(s) and year (country)	Aim/Purpose	Design and methods	Sample and setting	Summary of key findings	CASP score
19.	El-Jardali et al., 2014 (Saudi Arabia).	To explore the association between patient safety culture predictors and outcomes, considering respondent characteristics and facility size.	Cross-sectional study adopting a customised version of the HSoPSC.	In total, 3,000 staff matching the sampling criteria, including physicians, nurses, clinical and non-clinical staff, pharmacy and laboratory staff, dietary and radiology staff, supervisors, and hospital managers.	There was a response rate of 85.7%. The areas of strength were organisational learning, continuous improvement, and teamwork within units, whereas areas requiring improvement were hospital non-punitive response to error, staffing, and communication openness. The comparative analysis noted several areas requiring improvement when the results on the survey composites were compared with the results from Lebanon, and the USA. Regression analysis showed associations between a higher patient safety aggregate score and greater age (46 years and above), longer work experience, possession of a Baccalaureate degree, and being a physician, or other health professional.	8
20.	Ginsburg et al., 2009 (Canada).	To examine the psychometric and unit of analysis/strength of culture issues in patient safety culture (PSC) measurement.	Two cross-sectional surveys of healthcare staff.	In total, 10 Canadian healthcare organisations, totalling 11,586 respondents. A cross-validation study of a measure of PSC, using survey data gathered using the Modified Stanford PSC survey (MSI-2005, and MSI-2006), and a within-group agreement analysis of MSI-2006 data. Extraction methods: Exploratory factor analyses (EFA) of the MSI-05 survey data, and confirmatory factor analysis (CFA) of the MSI-06 survey data. Rwg coefficients of homogeneity were calculated for 37 units, and six organisations in the MSI-06 data set, in order to examine within-group agreement.	The CFA did not yield acceptable levels of fit. The EFA and reliability analysis of MSI-06 data suggested two reliable dimensions of PSC: Organisational leadership for safety ( $\alpha=0.88$ ), and Unit leadership for safety ( $\alpha=0.81$ ). Within-group agreement analysis showed stronger within-unit agreement than within-organisation agreement on the assessed PSC dimensions.	9



No	Author(s) and year (country)	Aim/Purpose	Design and methods	Sample and setting	Summary of key findings	CASP score
21.	Ginsburg et al., 2010 (Canada).	To examine the relationship between organisational leadership for patient safety, and five types of learning from patient safety events (PSEs).	A nonexperimental design using cross-sectional surveys.	In total, 49 general acute care hospitals in Ontario, Canada. A nonexperimental design using cross-sectional surveys of hospital patient safety officers (PSOs), and patient care managers (PCMs). The PSOs provided data on organisational-level learning from (a) minor events, (b) moderate events, (c) major near misses, (d) major event analysis, and (e) major event dissemination/communication. The PCMs provided data on formal and informal organisational leadership in terms of patient safety.	The formal organisational leadership for patient safety was found to be an important predictor of learning from minor, moderate, and major near-miss events, and major event dissemination. This relationship was significantly stronger for small hospitals (<100 beds).	5
22.	Homauni et al., 2014 (Iran).	To evaluate the effect of establishing patient safety friendly initiative on improving patient safety culture.	Quasi-experimental-interventional, descriptive, and correlational study.	In total, 117 Nurses in two medical and surgical hospitals.	An average score of patient safety culture was obtained. The strongest areas of safety culture were teamwork within hospital units, and organisational continuous learning, while the weakest areas were areas of reply to employees, and frequency of incident reporting.	7

No	Author(s) and year (country)	Aim/Purpose	Design and methods	Sample and setting	Summary of key findings	CASP score
23.	Kirwan et al. 2013 (Ireland).	To explore the relationship between the ward environment in which nurses' practice, and specific patient safety outcomes, using ward-level variables, as well as nurse-level variables.	Cross-sectional quantitative study.	A cross-sectional quantitative study was conducted within a European FP7 project titled, 'Nurse Forecasting: Human Resources Planning in Nursing (RN4CAST)', in 108 general medical and surgical wards in 30 hospitals throughout Ireland. All of the nurses involved in direct patient care in these wards were invited to participate. The data from 1,397 of these nurses was used in the analysis.	The study results supported other research findings, indicating that a positive practice environment enhanced patient safety outcomes. Specifically, at ward level, factors such as the ward practice environment, and the proportion of nurses with degrees, were found to significantly impact on safety outcomes. The models developed for this study predicted 76% and 51% of the between-ward variance of these outcomes. The results can be utilised to enhance patient safety within hospitals by demonstrating the ward-level factors that enable nurses to conduct this aspect of their role effectively.	8
24.	Nagpal et al., 2013 (UK).	To improve postoperative handover through the implementation of a new handover protocol, which involved a handover proforma, and standardisation of the handover process.	Intervention study	A prospective pre-post intervention study demonstrated the improvement in postoperative handover through standardisation. There was a significant reduction in information omissions and task errors, and improvement in communication and teamwork with the new handover protocol.	The introduction of the new handover protocol affected a significant reduction in overall information omissions from nine to three ( $P < .001$ ) omissions per handover, and of task errors from 2.8 to .8 ( $P < .001$ ). Teamwork and nurse satisfaction scores improved significantly, from a median of three to four ( $P < .001$ ), and a median of four to five ( $P < .001$ ). The duration of handover decreased from a median of eight to seven minutes ( $P < .376$ ).	8

No	Author(s) and year (country)	Aim/Purpose	Design and methods	Sample and setting	Summary of key findings	CASP score
25.	Kirk et al., 2007 (UK).	To develop and test a framework for making the concept of safety culture meaningful and accessible to managers and frontline staff, and facilitating discussion of ways to improve team/organisational safety culture.	Phase One was a comprehensive review of the literature with a postal survey of experts helping to identify the key dimensions of safety culture in primary care. Semi-structured interviews were conducted with 30 clinicians and managers in order to explore the application of these dimensions to an established theory of organisational maturity. In Phase Two, the face validity and utility of the framework was assessed in 33 interviews, and 14 focus groups.	Eight primary care trusts, and a sample of their associated general practices, in northwest England.	Nine dimensions were identified through which safety culture was expressed in the primary care organisations. Organisational descriptions were developed, in terms of how these dimensions might be characterised, at five levels of organisational maturity. The resulting framework conceptualised patient safety culture as multidimensional and dynamic, and appeared to possess a high level of face validity and utility within primary care. It aided clinicians' and managers' understanding of the concept of safety culture, and promoted discussion within teams concerning their safety culture maturity.	7

No	Author(s) and year (country)	Aim/Purpose	Design and methods	Sample and setting	Summary of key findings	CASP score
26.	Najjar et al. 2013 (Palestine).	To investigate the psychometric properties of the HSoPSC, and its appropriateness for Arab hospitals.	Survey (Arabic version).	The seven-step guidelines of the AHRO was employed to translate and validate the HSoPSC. A panel of experts evaluated the face and content validity indexing of the Arabic version. Data was collected from 13 Palestinian hospitals, including 2,022 healthcare professionals who had direct or indirect interaction with patients, hospital supervisors, and managers and administrators. Descriptive statistics and psychometric evaluation, using a split-half validation technique, were then employed to test and strengthen the validity and reliability of the instrument.	With respect to the face and content validity, the Content Validity Index (CVI) analysis showed excellent results for the Arab context (CVI = 0.96). In terms of construct validity, the 12 original dimensions could not be applied to the Palestinian data. Furthermore, three of the 12 original dimensions were not reliable ( $\alpha < 0.6$ ). The split-half technique resulted in an optimal 11-factor model.	8

No	Author(s) and year (country)	Aim/Purpose	Design and methods	Sample and setting	Summary of key findings	CASP score
27.	Siemsen et al., 2012 (Scandinavia).	To explore healthcare professionals' attitudes and experiences with critical episodes in patient handover, in order to elucidate factors that impact on handover from ambulance to hospital, and within and between hospitals. The secondary aim was to identify possible solutions to optimise handovers, defined as "situations where the professional responsibility for some or all aspects of a patient's diagnosis, treatment or care is transferred to another person on a temporary or permanent basis".	Semi-structured, single-person interviews.	In total, 47 semi-structured, single-person interviews were conducted in a large university hospital, in the Capital Region in Denmark, in 2008 and 2009, in order to obtain a comprehensive picture of the clinicians' perceptions of self-experienced critical episodes in handovers. The different types of handover process that occurred within several specialties were included. A total of 23 nurses, three nurse assistants, 13 physicians, five paramedics, two orderlies, and one radiographer from different departments and units were interviewed.	A total of 8 central factors were found to have an impact on patient safety in handover situations: communication, information, organisation, infrastructure, professionalism, responsibility, team awareness, and culture.	7

No	Author(s) and year (country)	Aim/Purpose	Design and methods	Sample and setting	Summary of key findings	CASP score
28.	Singer et al., 2009 (USA).	To explore how aspects of general organisational culture relate to hospital patient safety climate.	Survey.	In a stratified sample of 92 US hospitals, 100% of senior managers and physicians were sampled, and 10% of the other hospital workers. The Patient Safety Climate in Healthcare Organisations, and the Zammuto and Krakower organisational culture surveys measured the safety climate and group, entrepreneurial, hierarchical, and production orientation of hospitals' culture, respectively. The safety climate surveys were administered to 18,361 personnel, and the organisational culture surveys to a random subsample of 5,894, between March 2004 and May 2005. Secondary data was obtained from the 2004 American Hospital Association Annual Hospital Survey, and Dun and Bradstreet (2004). Hierarchical linear regressions assessed the relationships between the organisational culture and safety climate measures.	Aspects of general organisational culture were strongly related to the safety climate. A higher level of group culture correlated with a higher level of safety climate, but more hierarchical culture was associated with a lower safety climate. Aspects of organisational culture accounted for a more than threefold improvement in measures of model fit, compared with models with controls alone. A combination of culture types, emphasising group culture, appeared to be optimal for the safety climate.	6

No	Author(s) and year (country)	Aim/Purpose	Design and methods	Sample and setting	Summary of key findings	CASP score
29.	Sorra et al., 2010 (USA).	To examine the relationships between the HSoPSC, and rates of in-hospital complications and adverse events, as measured by the AHRQ Patient Safety Indicators (PSIs).	Exploratory study	Multiple regressions were performed in order to examine the relationships between 15 patient safety culture variables, and a composite measure of adverse clinical events, based on eight risk-adjusted PSIs from 179 hospitals, controlling for hospital bed size and ownership. All of the patient safety culture data was collected in 2005 and 2006, with the exception of one hospital that was collected in late 2004, and all PSI data was collected in 2005.	Nearly all of the relationships tested were in the expected direction (negative), and seven (47%) of the 15 relationships were statistically significant. All of the significant relationships were of moderate size, with standardised regression coefficients ranging from -0.15 to -0.41, indicating that the hospitals with more positive patient safety culture scores possessed lower rates of in-hospital complications, or adverse events, as measured by the PSIs.	9
30.	Turkmen et al., 2013 (Turkey).	To identify nurses' perceptions of, and factors promoting, patient safety in hospitals in Turkey.	Descriptive and cross-sectional study.	In total, 750 nurses in three public, two private, and one university hospital located in Istanbul, Turkey.	The type of hospital and the amount of education nurses obtained concerning patient safety and quality improvement were found to be positively associated with patient safety culture. Conversely, the type of work unit negatively affected the workers' behaviours, and adverse event reporting, in terms of patient safety culture.	5

All of the studies were read, analysed, and organised according to distinct patterns and themes comprising similar ideas, producing a thematic analysis. Themes however, were developed using Braun and Clarke (2006) and Ward et al. (2013) who identified six phases that comprise thematic analysis as highlighted in section 3.11.2 as a method of coding of qualitative data (Appendix 3). To confirm the themes, the studies were read and re-read in an immersive method. These themes start with familiarising self with the data through active repeated reading. This was followed by generating initial codes to identify the feature of literature that are highly relevant to this study research question. Searching for themes in a broader way start with the initiated list of codes. Within this step, sorting the different codes into potential themes, and collating all the relevant coded data extracts within the identified themes. A further step is taken to reviewing and refining those themes using concept mapping as in Appendix 3. In addition, defining and naming themes takes place with all the identified subthemes. Finally writing report with all the relevant literature under those named themes (Braun and Clarke, 2006) and Ward et al., 2013). Hence, through this in-depth reading, and analysis of concepts, five themes emerged as relevant to discussions concerning safety culture. These are: safety culture, concept of patient safety culture, establishing a safety culture, factors affecting patient safety culture, and assessment of patient safety culture (Table 2.4 and Appendix 3). While the literature was broadly categorised according to each of these themes (Table 2.4), each of the articles also addressed other aspects, although to a lesser degree. Hence, there is some cross-referencing within the literature with reference to aspects that make a valuable contribution to the present discussion. Appendix 3 presents a conceptual map demonstrating the decision-making processes involved in the development of the themes. These themes were categorised to answer the research questions, and to classify the literature and to generate new insights into the topic (Table 2.4). The structure of this literature review chapter is designed based around these themes.



**Table 2.4** Table of Themes.

Main themes	Authors
Safety culture	Abbas et al. (2008)
	Kennedy (2006)
	Ocasio (2005)
	Panesar et al. (2013)
	WHO (2007), WHO (2008), WHO (2014)
	Wilson et al. (2012)
Concept of patient safety culture	Ali and Mohammad (2006)
	Berger et al. (2017)
	Cooper (2000)
	Currie et al. (2011)
	El-Jardali et al. (2011)
	Hofstede (1990)
	Lee (1998)
	The Health Foundation (2011)
	Thomas et al. (1990)
Establishing a safety culture	Arnetz et al. (2011)
	El-Jardali et al. (2011)
	Sorra et al. (2014)
	Singer et al. (2009)
	Taylor et al. (2011)
	Vincent (2010)
	Vona and DeMarco (2007)
Factors affecting patient safety culture	Al-Ahmadi (2009)
	Al-Kandari and Thomas (2009)
	Alkorashy (2013)
	Armstrong and Laschinger (2006)
	Braaf et al. (2013)
	British Medical Association (2004)
	El Salam et al. (2008)
	Ginsburg et al. (2010)
	Ginsburg et al. (2009)
	Hughes et al. (2009)
	Nagpal et al. (2013)
Assessment of patient safety culture	Al-Ahmadi (2010)
	Agency of Healthcare Research and Quality (2012)
	Ginsburg et al. (2009)
	Kirk et al. (2007)
	Najjar et al. (2013)
	Sexton et al. (2006)
	Singla et al. (2006)
	Sorra et al. (2010)
	Sorra and Dyer (2010)

### **2.1.5 Methodological Quality Approach**

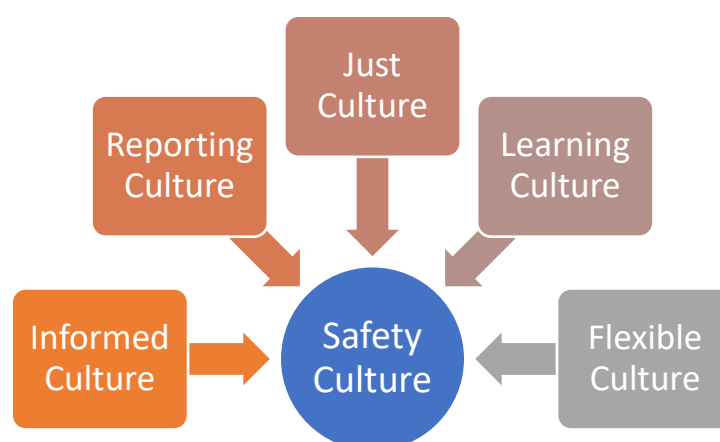
The Critical Appraisal Skills Programme Checklist (CASP) tool. The relevant CASP tool is used according to the research design. Different CASP tools were used: randomised control trials, systematic reviews, case control, etc were used to critique the research papers, which included systematic reviews, cohort studies, case control studies, mixed methods, and quantitative and qualitative studies (CASP, 2013). The different CASP tools were used to systematically appraise the research evidence, by identifying its strengths and its weaknesses to determine if the study is robust, ethical and rigorous. Hence, the Critical Appraisal Skills Programme (CASP) tools were developed to teach people how to critically appraise different types of evidence in order to judge its trustworthiness, value and relevance in clinical practice. Assessing the quality of a study by critiquing involves evaluating whether its methods are robust enough to affect future decisions regarding practice (Steen and Roberts, 2011). These papers were assessed for their evidence, and their relevance to healthcare settings, utilising the CASP tool in reference to healthcare practice, policy development, and the enhancement of safe practices.

Each included paper was critically appraised using the CASP criteria scores to determine whether its contribution to the existing evidence might usefully inform nursing practice and future research as necessary (Table 2.3). The CASP criteria were scored, as introduced by the researcher, as follows: a score of 1 referred to a 'yes', meaning the criterion was fully addressed. A score of 0 referred to a 'no', meaning the criterion was not addressed, and the same was applied to the criterion 'cannot tell', meaning that it was inadequately addressed. A total score between 6 and 10 was considered 'high', and a score of 5 was considered 'moderate', while 'low' quality papers were those scored below 5 (CASP, 2017; Tables 2.2 and 2.3).

## **2.2 Introduction to Safety Culture**

The importance of patient safety has been demonstrated by the widespread adoption of specific strategies, both globally and within Oman, to increase the

safety and quality of healthcare, while reducing the impact of unsafe events. Safety culture in health care systems is widely recognised as a strategy that should be adopted to improve the safety of care and to prevent the recurrence of adverse events (Pronovost and Sexton, 2005). It has been identified as the main determinant of a health care organisation's ability to prevent and mitigate errors (Institute of Medicine, 2001). The IOM has emphasised the need for health care organisations to develop a safety culture such that an organisation's care processes and workforce are focused on improving the reliability and safety of care for patients (Kohn et al., 2000). Safety culture development requires an understanding of safety culture characteristics. In describing how to develop such a culture, Reason (1997) identified five essential characteristics (Figure 2.2). Reason (1997) considered that an organisation with a positive safety culture will have an informed workforce with an effective safety information system which collates and analyses data about incidents and near misses. It will have a culture of reporting in which people who are in direct contact with hazards are willing to report their own errors and near misses; and this depends on how errors and near misses are handled. Organisations need a just culture where people are encouraged to report errors and near misses and are rewarded for doing so, rather than receiving blame and punishment. A culture of learning is another characteristic of safety culture, where people have the ability to draw the right decisions from the organisation's safety information system and thereby improve safety. Organisations must also have a flexible culture that enables them to respond appropriately to a fast-changing environment.



**Figure 2.2** Safety Culture Characteristics

**Reference:** Reason (1997)

The current study provides an important contribution to what is otherwise an underdeveloped area of research, proposing relevant questions to guide future research. The primary significance of this study lies in the lack of existing studies exploring nurses' perceptions of patient safety culture in hospitals in Oman.

For decades, human errors in complex systems have been a topic of debate, due to their consequences (Elmontsri et al., 2017 and Khater et al., 2015), and patient safety has increasingly come to the fore in debates over healthcare (WHO, 2008). In healthcare sectors, errors can prove deadly, and this has triggered a debate concerning the issues effecting patient safety (Elmontsri et al., 2017 and Khater et al., 2015). As mentioned at the start of this thesis, it is estimated that, every year, ten million patients worldwide are harmed unnecessarily, and suffer from disabling injuries, or death, due to unsafe medical practices and care (WHO, 2014). The WHO (2014) commented that globally, the chance of being harmed in an air traffic accident is approximately one in a million, while the possibility of a patient being harmed while under the care of a health provider is one in 300.

The term 'safety culture' first emerged in 1987 in a report by the International Nuclear Safety Advisory Group. Cullen (1990) later employed the term to describe corporate atmospheres, or cultures, in which safety is understood to exist. A safety culture is broadly described by various researchers as a set of shared values, beliefs, norms, and attitudes that interact with an organisation's structure and control systems to produce behavioural norms (Perrow, 2004; Reason, 2002; Zhang et al., 2002). Furthermore, it represents the shared roles and social and technical practices that minimise the exposure of employees to dangerous conditions (Uttal, 1983; Turner et al., 1989).

In Europe, it is estimated that approximately one in every ten patients admitted to hospital suffers some form of avoidable harm (WHO, 2007). A study conducted by Panesar et al. (2013) reported that a large number of surgical patient safety incidents were reported to the National Reporting and Learning System (NRLS) in England and Wales. In addition, 48,095 out of 163,595 (30.1%) admissions, result in trauma- and orthopaedics-related incidents, and iatrogenic harm, with 0.15% of these resulting in death. Research has established that a large number of

accidents result from deficiencies in organisations' safety culture (Ocasio, 2005). Kennedy (2006) identified a poor level of safety culture as a causal factor in healthcare errors. This issue was raised in relation to a scandal in a hospital in Bristol, UK, concerning paediatric heart surgery during the 1990s. That study reported that 29 children had died as a result of incorrect heart surgeries, and a total of 53 babies had died as a result of poor medical practice. An inquiry found that staff shortages, a lack of leadership, a lax approach to safety, confidentiality about doctors' performance and a lack of monitoring by management (Smith, 2010) were all casual factors in these deaths.

A retrospective study in the field of patient safety conducted by Wilson et al. (2012) reviewed the medical records of 15,548 hospital admissions in eight countries from the Eastern Mediterranean and African Regions, including Yemen, Egypt, Sudan, Jordan, Kenya, South Africa, Tunisia, and Morocco. A random sample of patients' admission records was taken from a convenience sample of 26 hospitals. The study revealed one or more adverse events occurred in 8.2% of these records, with a range of 2.5% and 18.4% per country (Wilson et al., 2012). Inadequate training, lack of clinical skills and supervision of clinical staff, or the failure to follow policies or protocols may have contributed to most of these events (Ker, 2011). Although convenience sampling at hospitals might limit the reliability of the results, the adverse event rates identified should stimulate the urgent institution of appropriate remedial action, and also serve to trigger further research. Additional studies (WHO, 2014) have reported that 83% of adverse events were preventable, while approximately 30% led to the death of the patient; although this was questioned by the WHO. Approximately 34% of these adverse events occurred as a result of treatment errors, and the majority of such incidents were believed to have resulted from a failure on the part of clinical staff to follow appropriate protocols or policies, or from a lack of adequate supervision and training. A study conducted by Abbas et al. (2008) explored the perceptions of Egyptian healthcare professionals at a hospital in Alexandria and revealed the majority of participants possessed negative attitudes towards patient safety. Such attitudes in a country with similar healthcare practices to Oman should constitute a warning to Middle Eastern health authorities of a need for the Arab healthcare system to develop a positive culture in relation to patient safety.

Although two studies were undertaken in Oman using the HSoPSC as a cross-sectional study, they did not include teaching hospital staff (Ammouri et al., 2015 and Al-Mandhari et al., 2014). Al-Mandhari et al. (2014) studied five different secondary and tertiary northern regions in Oman, with participants (n=398) from among different professional designations of the staff. Both these studies employed descriptive statistics to calculate the average positive response rate for the 12 dimensions involved. The average positive response rate for Al-Mandhari et al.' (2014) study was 58%. While Ammouri et al. (2015) study employed the HSoPSC tool with a cross-sectional design among nurses (n=414) in four major government hospitals over a period of 9 months, with an average response rate of 68.8%. A third study in Oman, which formed part of a PhD thesis, was presented at a conference in Dubai in the United Arab Emirates. It employed the HSoPSC among different healthcare disciplines in 22 primary health centres, with a response rate of 91% (n=181) (AL Lawati et al., 2017).

A study by Ali and Mohammad (2006) suggested that perceptions of management's commitment and willingness to lead in the area of safety are important determinants in the commitment of employees. The most common component of safety culture represented in the studies and articles reviewed was management commitment at all levels, as mentioned in 12 out of 16 articles (Ali and Mohammad, 2006). In addition, communication and training was included in seven out of 16 articles (Ali and Mohammad, 2006). Further components that were frequently cited across the studies were job satisfaction; support of co-workers, such as team work; organisational learning reporting systems; reward systems; and worker involvement (Ali and Mohammad, 2006).

Patient safety culture is a complex phenomenon, as it is a facet of organisational culture, encompassing attitudes, beliefs, perceptions, and values concerning safety (Cooper, 2000). In the context of the history of patient safety, a culture of safety is an essential component for ensuring the high reliability of any organisation, and is a critical mechanism for the delivery of safe and high-quality care. Identifying and reporting patient safety issues requires a strong commitment from both the leadership and the staff of an organisation (Flin et al., 2006).

Safety culture is a multidimensional concept, constituted of a number of different dimensions, including safety leadership, whereby leaders establish values, develop procedures, and enforce accountability for the safety programme; teamwork; and adverse event reporting (Khater et al., 2015, Wong et al., 2013 and Wong and Laschinger, 2013). Researchers and organisations primarily adopt a model of safety culture that features a number of dimensions. Various researchers have explained the concept by introducing the dimensions of safety culture, or the use and development of safety culture questionnaires. However, disagreement concerning the terminology and definition of safety culture extends into the identification of the dimensions involved in creating a positive safety culture (Khater et al., 2015 and Wong and Laschinger, 2013). The majority of these dimensions were identified from the literature review, and the subsequent factor analysis of quantitative safety culture questionnaires, thus becoming a means of conceptualising safety culture. The 30 studies evaluated for the purpose of this review cited different themes, primarily employing quantitative studies, and using cross-sectional surveys. These presented combinations of the following dimensions: leadership commitment to safety, open communication founded on trust, organisational learning, a non-punitive approach to event reporting and analysis, teamwork, and a shared belief in the importance of safety.

## **2.3 The concept of patient safety culture in healthcare**

The concept of safety has been studied over the last three decades within different industries and health organisations through the use of different study designs; many of these have been quantitative, using cross-sectional survey designs. The concept of safety culture appeared following a number of disasters. For example, the nuclear accidents at Chernobyl (1986) and Three Mile Island (1979), the Piper Alpha oil platform disaster in the North Sea (1988), the fire at Kings Cross tube station (1987), and the train crash at Clapham Junction (1988) (Reason, 2002; Fleming and Lardner, 1999; Perrow, 2004; International Atomic Energy Agency, 1991). These accidents and errors were interpreted as evidence of a poor safety culture resulting from a breakdown in safety systems (Zhang et al., 2002 and Jha et al., 2008). There has been increasing recognition of the

importance of safety culture in high-risk industries, which has engendered a focus on the need for improvements as an overriding priority, following a number of high profile accidents and disasters, such as the aforementioned (Lee, 1998 and Jha et al., 2008). Accident investigations from a number of different industries have resulted in the identification of violations and errors in operating procedures contributing to accidents, which are viewed as evidence of poor safety cultures (Jha et al., 2008).

Furthermore, Cooper (2000) stated that safety is a sub-component of corporate culture, as it is a feature of organisational and individual performance. It is important to define both organisational and individual performance to further understanding of the concept of safety culture. Organisational culture encompasses values and behaviours that contribute to the unique social and psychological environment of an organisation (Nielsen, 2014). While individual performance includes values, attitudes, perceptions, competencies, and patterns of behaviour that determine an individual's commitment to, and the style and proficiency of, an organisation's health and safety management is vital for the safety culture within an organisation (Reason, 2004; Nielsen, 2014 and Khater et al., 2015). Hofstede (1990) viewed culture as the collective programming of the mind, distinguishing members of one group from another, while Thomas et al. (1990) stated that understanding the prevailing culture is essential for changing the behaviour of individuals in any organisation.

## **2.4 Establishing a patient safety culture**

In recent years, management literature appears to have focussed extensively on motivational techniques, such as feedback and reward systems. This is due to the understanding that motivation potentially facilitates development. Moreover, the creation of a culture of safety is affected by the utilisation of motivational strategies in various environments, including business and commerce, culture, education, and healthcare (Van Bogaert et al., 2014). Hannagan (2008) noted that leadership, motivation, and change are inevitably entwined, and that therefore this complex triangle must be fully understood in order to ensure effective leadership, and to achieve improvement. In nursing, these notions appear to be



even more relevant than in other settings, as individuals bring different needs and goals to their workplace, in which the diversity within the profession brings its own uniqueness. Nurses are able to use their creativity and innovation to improve their decision-making practices, and therefore directly influence the care and personal safety of patients (Vona and DeMarco, 2007).

However, there are a number of barriers to the introduction of a patient safety culture, including the impact of a blame culture on incident reporting (Curtis and White, 2002). Potential strategies to address this issue include the promotion of problem reporting through practical measures, including de-identification and protective reporters, ensuring protection from unnecessary retaliation, and the provision of feedback for error management (Reason, 2004). De-identification has been utilised in the UK (e.g. the UK National Confidential Inquiry into Maternal Deaths (2012) has been implemented in Omani culture to confront this barrier, as a result of the importance of accurate and reliable statistics on epidemiological data on the population in Oman. Therefore, in-depth investigations undertaken by analysts on adverse events taking place in the medical field have led to an approach that is system-based, rather than individual-based (Milligan, 2007). Furthermore, various studies have identified patient safety to be impacted by a lack of available data in organisations, including the recording of medical errors (Reiling, 2005). Considine and Botti (2004) argued that common medical errors take place in areas containing important legal consequences, including: (1) adverse drug events; (2) incorrect surgery sites; (3) restraint injuries; (4) falls; and (5) pressure ulcers. They suggested that errors tend to be caused by working conditions, rather than personal failings or carelessness. This can also be observed in Omani culture, leading to a need to overcome this issue by transforming the culture through the reporting of adverse events. Moreover, Vincent (2010) argued that the estimated cost for adverse events in the NHS is at least one billion pounds, due to increases in length of hospital stay, and statistical data (if available) could confirm that the cost is even higher in Oman. However, identifying cultural barriers can lead to the establishment of a 'no blame' approach to incident reporting, thus reducing medical errors and learning from errors, so fostering a patient safety culture.

Improvements in patient safety promote a quality of service that meets patients' expectations, with the desire for change in healthcare sectors aimed at improving and satisfying healthcare needs, as well as promoting healthy living, and safer practice (Lynch and Cole, 2006). When members of staff are alerted to the need to maximise patient safety, they are also able to minimise the risk of harm, and may additionally be able to identify potential problems, and intervene early to avoid negative outcomes, such as medical emergencies, pressure ulcers, falls, and errors with ventilator care.

Reason (2004) identified the Three Bucket Model of error prevention, 'error wisdom', as a strategic tool for promoting awareness among staff of the importance of identifying any patients at risk of harm, prompting frontline staff to take immediate action. Within the Three Bucket Model, clinical risk is affected first by the **Self**, which includes factors relating to skills, capacity, and the emotions of individual team members; second by **Context**, including the availability of serviceable equipment, the working environment, the level of team support, and management issues such as culture, targets, and workload. Finally, **Task**, which includes issues regarding the complexity of a task, and whether the individual is familiar with the task, and whether one task is completed prior to another being started. The contents of the buckets assess whether the situation is safe or unsafe (Reason, 2004 & National Patient Safety Agency, 2008; Figure 2.3).



**Figure 2.3** The Three Bucket Model of Error Prevention

**Reference:** Reason (2004) and NPSA (2008).

However, gaps remain in patient safety policy and practice in Omani hospitals, with a minimum amount of specific audit data collected in relation to patient

safety. An audit system has currently been put in place to assess compliance to the six Patient Safety Goals policy, which was initially met with resistance, but (as a result of the high rate of incidents) has been subsequently accepted. In the hospital setting, audit results demonstrated the main problems to result from clinicians' lack of knowledge and awareness concerning the principles of patient safety and the six Patient Safety Goals. This is, however, initiated in the Omani health system, but with only Six Safety Goals.

Studies focussing on social attitudes, behaviour, and health promotion in Middle-Eastern countries have identified a lack of public awareness, and a limited knowledge of the various factors contributing to safety culture (Gunay et al., 2006; Angeles-Llerenas et al., 2005; Murugesan et al., 2007). Therefore, a change is required to foster a new culture of safer practice, commencing with health education in the workplace, and promoting a safer environment (Al-Adawi, 2006). In order to address this issue, and to stimulate a safety culture among staff, healthcare professionals must implement training courses and seminars for all staff, while also re-enforcing any relevant policies. This has been implemented as a first step in Oman, i.e. public awareness has been raised through the use of media, leaflets, and conferences (e.g. educational leaflets and seminars). Leaders can act as agents of change, motivating others through the promotion of a safety culture within hospitals (Vona and DeMarco, 2007). Innovations within organisations are delivered by means of communication and information technology (Greenhalgh et al., 2004). The establishment of innovation includes two main stages, firstly founding a framework to eliminate barriers to innovation, and secondly creating a more innovative local environment. Vona and DeMarco (2007) stated that leaders must be prepared to communicate their personal commitment to innovation when implementing change and promoting a safety culture, and must emphasise that it is rational, and tangible to achieve the required target. For example, leaders should lead by communicating their enthusiasm. This can engender the creation of a compelling vision in which cross-functional collaboration is initiated, and can also engender the empowerment of staff within an environment that both values and rewards their contribution.

The many factors inhibiting the introduction of a patient safety culture are categorised under the framework 'human factors' (Callahan and Ruchlin, 2003),

such as those important to delivering an improved and safer care practice (Currie et al., 2011). A further aspect comprises information technology, which provides opportunities for systematic data collection, and could potentially enhance a safety culture by establishing accurate and reliable evidence (currently lacking in Oman) to encourage regular assessment of patient safety culture. Implementing risk management strategies within an organisation promotes the development of protocols to ensure a more responsive system (Sorra and Dyer, 2010), including establishing national targets and quality indicators to achieve quality assurance (Department of Health, 2008). In addition, change is implemented through the initialisation of safety indicators, forming an innovative approach to assessing and monitoring risks (Lynch, 2011). Furthermore, Baulcomb (2003) suggested the need for an evaluation strategy to improve project adherence, including auditing and feedback.

Creating and sustaining a culture of safety in any organisation is an ongoing challenge. In any healthcare context, the priority of the leadership is to be accountable for effective care, while protecting the safety of the patients, employees, and visitors. However, many factors contribute to improvements in safety and organisational culture. An organisation committed to prioritising and affecting visible patient safety through everyday actions is critical aspect to the creation of a true culture of safety. Moreover, individuals must commit to creating and maintaining a culture of safety through prevention strategies, and safety assessment.

## **2.5 Factors involved in patient safety culture**

To understand the actions required for the improvement of patient safety culture, it is first essential to establish the main factors in nurses' perception of patient safety culture within healthcare organisations. The literature identifies a number of factors determining nurses' perceptions of patient safety culture at the organisational, leadership, and personal levels. One such initiative consists of effective leadership, which is required at all levels within an organisation, in order to achieve success in establishing the safer practice currently lacking in Omani

healthcare culture. Nicklin and McVeety (2002) conducted a national survey of 22 organisations, focussing on nurses' perceptions of the main factors of patient safety, employing 33 focus groups composed of 503 nurses, from Academic Health Science Centres in Canada. The study established that the major aspects of patient safety consisted of factors within the healthcare environment, including: nursing workload; human resources, such as support and healthcare assistants; nursing shortages; complexity of patient care; the physical environment; and technology. The study emphasised the role of healthcare leaders in developing strategies to address these issues.

Similarly, Ginsburg et al. (2009) studied the impact of training interventions on nursing leaders' perceptions of patient safety culture. The researchers employed a quasi-experimental untreated control group design in order to administer a training intervention focussing on patient safety for 356 nurses in clinical leadership positions, from two teaching hospital in Canada. The duration of the safety intervention was a period of six months. The study found the intervention group demonstrated a statistically important increase in the 'valuing of safety' between the questionnaires distributed before and after the intervention ( $p < .001$ ), while concurrently, no important change was observed in 'fear of repercussion' or the 'perceived state of safety'. The control group demonstrated an important decrease in the 'perceived state of safety' ( $p < 0.05$ ). However, no important change was identified in 'valuing safety' or 'fear of repercussion'. It was clear that support for improvement in the context of organisational leadership was critical for fostering a culture of safety, and that training interventions and leadership support combined have the most significant impact on patient safety culture. The study concluded that the implementation of safety training in relation to nursing could improve nurses' perceptions of a patient safety culture (Ginsburg et al., 2009). This was based on a research sample from two hospitals, and may require further exploration to enable the generalisation of the value of safety to different settings.

Meanwhile, Armstrong and Laschinger (2006) conducted a pilot study to test a theoretical model that related the working environment of nurses to their perceptions of a patient safety culture. The researchers administered questionnaires to 79 nurses, of which 40 were returned, with a response rate of

51%. The study found that nursing empowerment, such as access to information, support, and resources, constituted an important aspect of the characteristics of magnet hospitals ( $r = 0.316$  to  $0.612$ ). Within the study, nursing empowerment was defined as a positive concept of a power or authority, one provided in order to affect better care, or care improvement. It was found that nursing empowerment was related positively to nurses' perceptions of patient safety culture ( $r = .50$ ). Thus, nursing empowerment, in conjunction with the characteristics of magnet hospitals, predicted the nurses' perceptions of patient safety culture. In this paper, magnet status was an award given to hospitals satisfying a set of criteria designed to measure the strength and quality of their nursing by the American Nurses' Credentialing Center (ANCC), an affiliate of the American Nurses Association. This finding was later supported by the studies conducted by Wong and Laschinger (2013), and Wong et al. (2013).

An exploratory study of 886 nurses from eight teaching hospitals in Korea was undertaken by Kim et al. (2007), in order to investigate the relationship between the characteristics of nurses, and their perceptions of patient safety culture. It identified the fact that the majority of nurses were uncomfortable reporting, or communicating, healthcare errors. The study also found that the nurses in managerial positions perceived patient safety culture in a more positive manner than the nurses who worked on the frontline. The nurses aged 40 years and above perceived patient safety culture in a more positive manner than the younger nurses, aged between 20 and 39 years. Moreover, nurses with more experience on wards had a more positive perception of safety culture than the nurses with experience in wards of between one and five years. However, the study was determined by cultural setting and age, and other characteristics were not considered, which limited the study to those hospital settings.

Similarly, Hughes et al. (2009) conducted a study to assess patient safety culture, and to determine the characteristics of hospitals and wards that are associated with patient safety culture. The sample comprised 3,689 nurses working in 286 medical-surgical wards in 146 USA hospitals. The study found the most important factors involved in patient safety culture were the nursing workgroup, and managerial commitment to safety. The nurses in magnet hospitals, who satisfied a set of criteria designed to measure the strength and quality of their nursing,

reported the existence of more communication concerning errors, and more participation in error-related problem solving. Meanwhile, the nurses in smaller wards, with a lower complexity of work, reported additional compliance with safety, and were more likely to report errors (Grant et al., 2006). In addition, the nurses working in smaller wards reported greater participation in error-related problem solving, and more commitment to patient safety.

In addition, Taylor et al. (2011) investigated the main factors concerning the implementation of patient safety practices (PSP), in which PSP were seen as an engagement that can be considered an 'umbrella' term, incorporating various approaches, rather than a specific process, team, or technology (Berger et al., 2017 and Hudson, 2001). Taylor et al. (2011) convened a panel of technical experts, composed of 22 experts and leaders in patient safety, administering two web surveys designed to prioritise key factors. The analysis of the experts' discussion revealed four major factors of PSP implementation, including safety culture, teamwork, and the involvement of leadership (Taylor et al., 2011 and Gözlü and Kaya, 2016). In addition to these were the characteristics of organisational structure, including size and organisational complexity, and external factors, such as financial or PSP regulations, and finally, the availability of management tools, including the organisation's training incentives. Consequently, to affect evidence-based interventions in practice, the aforementioned factors constituted important aspects of effective safe practice that effect nurses' perceptions of safety culture.

Another study that sought to identify the critical organisational factors of a positive safety culture was conducted by Arnetz et al. (2011), who employed self-administered questionnaires to measure organisational climate and patient safety culture. The sample comprised 312 nurses from four nursing homes in Michigan, USA. The results demonstrated that the factors involved in the creation of a non-punitive response to error, and compliance with procedures, were a positive work climate, and organisational efficiency. The clarity of an organisation's goals proved to be a determiner of communication in relation to error, while stress at work was a factor in non-compliance with procedure. The study recommended improving organisational factors as a means to increase patient safety.

Meanwhile, El-Jardali et al. (2011), employed a cross-sectional study of 6,807 healthcare professionals in 68 Lebanese hospitals to measure the association between the predictors and outcomes of safety culture, establishing that the main factors of patient safety culture consisted of event reporting, communication, patient safety, leadership and management, staffing, and accreditation (El-Jardali et al., 2011).

A considerable volume of literature has encouraged the establishment of patient safety through learning and facilitation, with the aim of meeting organisational goals while implementing safer practice. However, other studies have indicated the limitations caused by the failure of certain quality initiatives, when seeking to establish patient safety. One such initiative concentrated on effective leadership, which was required at all levels within an organisation, in order to achieve success when establishing the safety practices currently lacking in particular healthcare cultures (Khater et al., 2015). Healthcare organisations strive to achieve optimal quality care, but complexities arise when combining processes, stresses, organisational culture, and technology within their systems, as these can fail to provide optimal care to deliver patient safety (AMNIS, 2011). However, the gap in the extant knowledge results in organisational behaviour able to influence the ways in which changes are implemented and communicated across an organisation (Sorra et al., 2014). Therefore, changes in practice, such as the establishment of a patient safety culture, and the introduction of patient safety committees, must be accompanied by changes in the behaviour of individuals, and hospital management, as required in Oman.

Moreover, the presence of a diverse array of individuals, with different backgrounds and cultural values, can influence organisational values, as can be perceived in regard to team-working that seeks to achieve the vision of an organisation. Omani hospitals employ staff from diverse cultural backgrounds, as confirmed by the research on team-work undertaken by Drucker and Senge (2001), and Senge (2009). This can engender difficulties when implementing change within a specific organisation, but with the aid of advanced media, such as the internet, television, and radio, this may be realised over time, and so clarify such concepts for the general population. Milligan (2007) reviewed the literature focussing on the role of education in establishing a safe patient culture,



commenting that it is challenging to establish a safety culture, but that the National Patient Safety Agency (NPSA) (2004/2005) guide, 'Seven Steps to Patient Safety', represents a valuable step forward for healthcare staff, organisations, and patients (National Patient Safety Agency, 2004; National Patient Safety Agency, 2005). This guide has been adopted in Oman healthcare system as a component of a new patient safety culture initiative.

In another study, conducted by El Salam et al. (2008), it was indicated that the requirement to attend to patients quickly can increase health and safety risks. Therefore, the ability to exercise clinical judgement is crucial, particularly when predicting potential issues in cases presenting in a learning environment (Ker, 2011 and Stirling et al., 2012). Managing risk at work is a collective responsibility (Currie et al., 2011 and Currie and Lockett, 2011), as staff work on the frontline, and are viewed as the 'last defence' against any failure of patient safety (Currie et al., 2011). One aspect of the national patient safety initiatives in the UK focusses on providing nurses with tools to improve outcome measures, thus promoting patient safety, and assisting in delivering safe and effective care (Currie and Lockett, 2011). This would be an effective initiative to apply within the Omani healthcare system. Nursing outcome measures employed included the following (Currie et al., 2011 and Currie and Lockett, 2011):

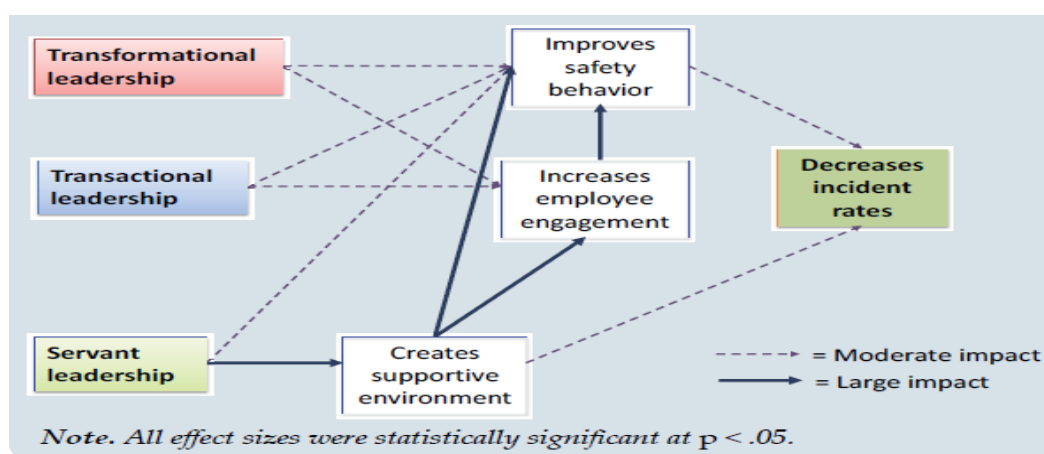
- The percentage of patients with appropriate observations documented after a fall;
- The number of staff undertaking training in nutrition and hydration care within the previous 12 months;
- The number of staff undertaking staff training in pressure ulcer prevention within the previous 12 months;
- The number of staff with access to hand decontaminants at the point of care.

Furthermore, the UK has awarded high priority to health and safety legislation, engendering the recruitment and training of safe, competent, and conscientious staff. This legislation encourages professionals to anticipate potential hazards, and to implement procedures designed to avoid risk (Lynch and Cole, 2006). An important point to emerge from the related literature was that all elements of

the process must be clear and understandable, to involve the necessary personnel in the establishment of a patient safety process. Therefore, patient safety goals must be defined, and limited to addressing either a single problem, or a small number of problems (Kitson, 1999). Data collection is therefore essential to ensure that a safety culture is built into everyday practice, and to provide practitioners with evidence concerning the impact of any changes (Department of Health, 2008 and Williams and Irvine, 2009). This approach is advocated by the NPSA in the UK, and could make a positive impression if applied within the Omani healthcare system.

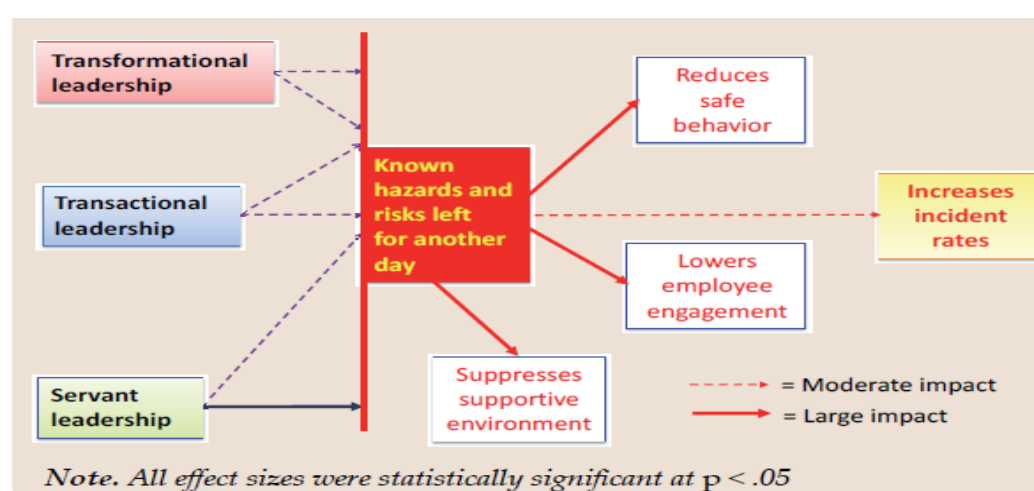
### **2.5.1 Leadership and management support for safety issues**

Patient safety is a process by which an organisation improves patient care (Bird and Dennis, 2005). The NPSA (2004) advised that this process should include: risk assessment; identification and management of patient-related risks; the reporting and analysis of incidents; and the ability to learn from, and follow up incidents, so as to prevent risks recurring. A robust risk management strategy enables an organisation to gain an overview of high-risk activities, and areas of weakness requiring active intervention (Cooper, 2015; Figure 2.4 and Figure 2.5). The concept of patient safety is broad, and has been discussed and explored in depth in the academic literature. For example, programmes include the Safer Patient Initiatives by the Health Foundation 2010, and Leading Improvement in Patients' Safety Programme by the NHS Institute for Innovation and Improvement 2010 (Department of Health, 2013). In addition, Cooper (2015) identified strengths in servant leadership style over other styles, while McFadden et al. (2009) indicated that leadership style is linked with patient outcomes when implementing safety practices within the clinical area. However, no studies currently exist in this area in the context of Middle-Eastern countries, despite the fact that the role of nursing leaders in establishing a safety culture is vital to fostering, directing, instilling, and implementing safety conscious practices within these countries.



**Figure 2.4** Positive Impact of Safety Leadership Styles

Reference: Cooper (2015).



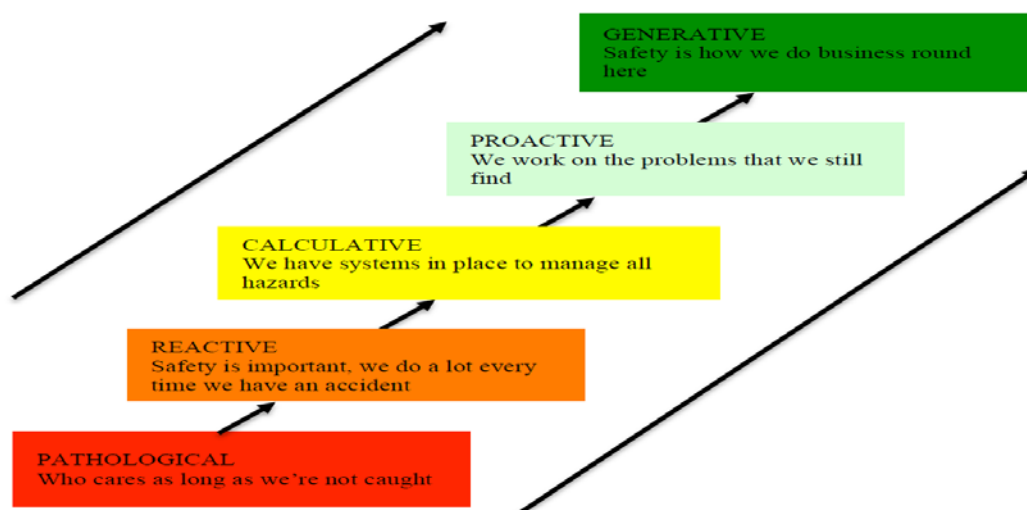
**Figure 2.5** Negative Impacts of Hazards and Risks

Reference: Cooper (2015).

## 2.5.2 Error reporting systems

Further dimensions that are beneficial for measuring patient safety culture in hospitals include the reporting of, and non-punitive responses to, the occurrence of errors. In the USA, the Institute of Medicine (IOM) stated that hospitals are able to increase their accountability, and thereby reduce malpractice by adopting a mandatory policy for error reporting (Kohn et al., 2000 and Williams and Irvine, 2009). Leape (2002) believed that reporting errors and disseminating their causes improved safety practice in healthcare organisations, through a 'Just Culture' (Figure 2.6). A system therefore needs to be implemented to report errors, and

such reports must be carefully audited to ensure they are not repeated (Carroll and Edmondson, 2004 and Hudson, 2001). In the health care system, safety culture tends to be reactive. Hudson (2001) has classified safety culture into five types: pathological, reactive, bureaucratic, proactive, and generative (Figure 2.6).



**Figure 2.6** 'Just Culture' Evolution in Safety (a typology of safety culture)

**Reference:** Institute for Health Improvement (IHI) (2013).

The WHO (2014) stated that effective reporting within a hospital or healthcare organisation resolves a large number of problems. Additionally, if incidents are reported system-wide, and to a broad audience, either regionally or nationally, lessons can be learned. An effective reporting system is seen as central to safe practice, and as a measure of progress towards the achievement of a safety culture within a hospital, or any other type of healthcare organisation. As a minimum, reporting can assist in the identification of risks and hazards, and provide information relating to areas of concern (Hudson, 2001). This can then enhance the targeting of improvements, and the transformation of systems, thereby reducing the future potential for injury to patients. This view was supported by Leape and Fromson (2006), who stated that event-reporting systems assist healthcare organisations to monitor staff performance, and so to correct any shortcomings. The national adoption of an event reporting system by the Ministry of Health (MoH) in Oman would encourage healthcare workers to report their errors. However, this would need to be applied to all levels of the National Health Service and include: (1) confidentiality; (2) appropriate data protection

policies; and (3) a focus on the analysis of incidents to improve the healthcare service, rather than apportioning blame.

A study conducted by Cooke et al. (2007) surveyed 125 different healthcare professionals at a major academic cancer centre in Canada. The study measured staff perceptions of the analysis of incidents by organisations, including personal experience of such analyses, and whether such procedures stimulated learning and development. The study concluded that medically adverse events would continue to occur if a healthcare organisation failed to learn from previous errors, and take appropriate measures.

Furthermore, a descriptive qualitative study conducted by Waters et al. (2012) with focus groups of 16 Canadian registered labour and delivery nurses explored perceptions of incident reporting practice, including facilitating and restraining factors. The nurses' perceptions appeared to be strongly influenced by cultural factors within their wards, and the complexity of their team dynamics. The reporting tools were considered of a poor standard, and the incidents tended to be perceived as resulting from a series of related incidents that were beyond the nurses' individual control. In addition, the fear of litigation played a large part in the nurses' behaviour, although incidents were also recognised as an opportunity to improve practice, due to the development of a sense of professional responsibility. However, in general the incidents were characterised as occurring due to the type of work in the unit, and were primarily attributed to fatigue and/or time pressure.

Both the aforementioned studies identified staff perceptions of the key factors as of importance when improving error-reporting practice, along with the capacity of organisations to learn from previous errors. However, a number of limitations effected both studies. Firstly, that of Cooke et al. (2007) employed only a small sample, and lacked a qualitative element to more deeply explore the complexities and sensitivities involved in the incident reporting. Secondly, the study by Waters et al. (2012) would have been improved by the use of an interpretive qualitative approach in order to gain a deeper appreciation of the issues involved.

Despite the benefits outlined by the preceding account, a number of important cultural and professional barriers have been recognised in terms of the

participation of staff in reporting incidents (Zurn et al., 2004; Waring, 2005 and Haw et al., 2014); furthermore, a number of research studies have identified important levels of under-reporting (Vincent, 2010 and Waters et al., 2012, Bodur et al., 2012). Vincent et al. (1999) explored the reason behind the low level of error reporting in obstetric wards in the UK, employing a questionnaire with 42 obstetricians and 156 midwives. The research revealed variations between staff when reporting their errors, with midwives reporting more errors than the doctors, and junior doctors being more likely to report their errors than senior doctors. Furthermore, the study identified a number of justifications for this lack of reporting, which were primarily related to a fear among the junior staff that they would be blamed, and workload being viewed as too heavy to allow time to report errors. These fears were attributed to a concern on the part of individuals that they might lose their jobs at the early career stage, or be subjected to supervision by senior staff at all times, and to the fact that they were new to the practice of adhering to policies and guidelines. Similar studies by Bodur et al. (2012), and Haw et al. (2014) revealed that the participants did not report errors, or perceive the importance of reporting errors in cases in which they had been corrected rapidly, or had resulted in no potential harm to the patient.

Similarly, research in an acute services hospital in the UK, undertaken by Waring (2004), employed an in-depth qualitative case study using semi-structured interview methods in order to explore the relationship between differences in the degree of event reporting. The study identified considerable differences between the reporting of adverse events on the part of healthcare professionals and managers working in obstetrics, and those working in general surgery departments. The findings revealed that medical doctors were more inclined to report adverse events when the reporting process constituted an aspect of medical practice, than when it was contained within an overarching managerial system intended for the improvement of quality. However, the sample for this study was limited, and did not represent other healthcare professionals. These contradictions in the findings of the two studies (Vincent et al., 1999 and Waring, 2005), might result from the fact that the sample used by Waring (2004) included doctors from different departments, and thus reflected opinions and experiences from different places, while the study sample used by Vincent et al. (1999)

included only doctors from a single department. The differences between the results of these study leads to the conclusion that the reporting of errors in hospitals depends upon the workplace environment, the type and grade of the healthcare professionals involved, and the severity of the incident.

In addition, Barach and Small (2000), and Jeffe et al. (2004) undertook a literature review of articles published between 1966 and 1999 concerning non-medical incident reporting. They also interviewed a number of different healthcare practitioners concerning error reporting. Their study identified a considerable number of factors that constitute deterrents to the reporting of errors, including the reporting database's lack of confidentiality and privacy; a lack of trust, and scepticism among staff; fear of punishment; a lack of incentive for staff to report errors; and workload and time pressures. The qualitative study included nine focus groups, four with 49 staff nurses, two with 10 nurse managers, and three with 30 physicians, from 20 academic and community hospitals in St. Louis, USA. The study identified a number of further reasons for the reduction in incidences of reporting within healthcare organisations, including time constraints and poor feedback, and a rapid response to staff (Barach and Small, 2000 and Jeffe et al., 2004).

The factors influencing the reporting of errors might also include the design of the forms used to report incidents, and can be influenced by the nature of the systems in place within an organisation for communication and feedback. Furthermore, individuals might be prejudiced by concerns over potentially unfair consequences resulting from the reporting of errors (Vincent, 2010). In the context of healthcare, fear of being held personally accountable, and/or responsible for an error, is an important inhibitory factor in terms of incident reporting within an environment with a prevailing 'culture of blame' (Department of Health, 2013). Potential reasons for a reluctance to report errors result from the fact that discrepancies in power, and the relationships between different types of health professional, have an important bearing on the willingness of staff to communicate openly about their errors.

These cultural and social barriers were also identified within the three different Arabic healthcare contexts of Lebanon, Saudi Arabia, and Jordan. Studies by Mrayyan et al. (2007a), Al-Ahmadi (2010), and El-Jardali et al. (2010) employed

both questionnaires and interviews with nurses to assess their attitudes towards patient safety culture and medication errors. The findings revealed that healthcare professionals had a negative perception of the possibility of a punitive response to errors in their hospital working environment. As a result, the staff tended not to report their errors, due to fears about losing their jobs, or being subject to disciplinary action; hence demonstrating the communication barrier that arises between healthcare professionals when they are working in a punitive culture.

### **2.5.3 Patient safety culture and reported medication errors**

The relationship between patient safety culture and adverse events as a factor in patient safety has not yet been well established in the literature. However, it is important to investigate this relationship to validate whether an assessment of patient safety culture can be a meaningful indicator for patient safety (Mardon et al., 2010 and Khater et al., 2015). The results of research undertaken by Mardon et al. (2010), and Khater et al. (2015) have contributed evidence regarding the relationships between these variables.

An earlier study by Katz-Navon et al. (2005) tested the interaction between the four components of a patient safety climate; for example, safety procedures, safety information flow, perceived managerial safety practice, and the prioritisation of safety. This might also include components' relationship with patient treatment errors, for example, medication errors, patient falls, and errors in blood transfusion. The study employed a sample of 632 participants from among all staff members at 47 medical wards from three general hospitals in Israel, statistically controlled for unit safety performance, unit workload, and differences between the hospitals. Katz-Navon et al. (2005) employed self-report questionnaires to measure the patient safety climate, and reviewed wards' annual incident reports to measure patient treatment errors. The results revealed the perceived priority of the safety relationship between the level of detail concerning safety procedures, and the number of treatment errors, also moderating the linear relationship between managerial safety practice, such as employees' perceptions



of their supervisors' safety-related activities and methods, and the number of treatment errors. The study implied the different dimensions of a safety climate have varying relationships with safety outcomes, and suggested a need to examine additional dimensions of safety culture to obtain a more comprehensive picture, along with the recommended use of a longitudinal design to infer causality.

Another study, conducted by Hofmann and Mark (2006), studied the association between nurses' perceptions of a patient safety climate and the safety outcomes from the perspective of both nurses and patients. The authors employed a number of different methods of data collection, including surveys with nurses and patients, and the use of archival records. The sample included 1,127 nurses working at 81 general medical/surgical nursing wards in 42 accredited acute care hospitals in the US. After controlling for the size of the hospital, and the complexity of the patient's condition, the study established the overall perception of the unit's safety climate was an important predictor of the existence of medication errors, urinary tract infections, back injuries to nurses, patient satisfaction, patients' perceptions of nurses' responsiveness, and the satisfaction of nurses; although the safety climate did not predict needle stick injuries. The study's strength was its use of multiple methods of data collection.

A study conducted by Vogus and Sutcliffe (2007) tested the combined effects of reporting medication errors on the patient safety culture with further contextual factors. The researchers employed a sample of 1,033 registered nurses, and 78 nurse managers, in acute-care nursing wards at 10 acute-care hospitals across the US, using a nine-item scale to measure the organisational safety culture, and two survey items to measure trust in managers, when following the unit's incident reporting system for six months after the collection of the survey data. The study found wards with higher levels of safety culture, and higher levels of trust in managers engendered fewer medication errors being reported per unit than those with a lower level of trust ( $p < .001$ ). Also, higher levels of safety culture, along with higher levels of standardised protocols, such as work pathways, caused three fewer reported medication errors per unit than those with lower levels of standardised protocol ( $p < .001$ ). The study found nurse managers' perceptions of safety culture were associated negatively when reporting medication errors, and concluded that the impact of safety culture is improved when combined with

additional components of a supportive safety system. While one limitation of this study was its use of convenience sampling, nevertheless the papers evaluated under this section have revealed that a higher level of nurse perception of patient safety culture is associated with fewer reported medication errors.

#### **2.5.4 Patient safety culture and reports of patient falls**

There is growing recognition that organisational change that seeks to improve patient safety, including fall prevention, requires a general prevailing culture of safety among an organisation's staff. However, achieving a culture of safety requires an understanding of the values, beliefs, and norms that inform what is important to an organisation, and the nature of those patient safety attitudes and behaviours that are expected and appropriate. This requires a culture that views errors as opportunities to improve the system, and not as the result of individual, or system failures.

A study by Brewer (2006) employed the trans-theoretical integration model to examine the relationship between team-based phenomena, patient safety culture, and patient outcomes in which patient falls have led to injury, patient cost per unit, and length of patient stay in hospital. The sample included 372 nurses, along with 39 other healthcare professionals from 16 medical-surgical wards. The researcher employed previously-developed questionnaires to measure the patient safety culture and work group design, while also requesting that unit managers provide data concerning patient falls leading to injury, average length of stay, and labour and supply expenses. The results of the study revealed a higher group-type hospital culture, entailing a stronger affiliation amongst all hospital staff was associated with fewer patient falls resulting in injury. Meanwhile, a higher developmental-type hospital culture with a more innovative and risk-taking culture was associated with higher patient costs per unit. An unexpected result of this was that improved team communication and coordination were associated with lengthier stays by patients. The study limitations included the use of a relatively small and non-randomly selected sample (Brewer, 2006).

Similarly, a study by Vogus and Sutcliffe (2007) developed a short format Safety Organisation Scale (SOS) to measure patient safety culture. Their research tested the psychometric properties of the scale, while examining the relationship between patient safety culture, nurses' reporting of medication errors, and nurses' reporting of patient falls. The researchers employed mailed questionnaires to collect data from 1,685 registered nurses in 13 Catholic hospitals in California, Idaho, Indiana, Iowa, Maryland, Michigan, and Ohio, in the USA, collecting reports of medication errors and patient falls at the hospitals over the subsequent six months. The study found the SOS had good psychometric properties, with Cronbach's alpha equal to 0.88, while over a six-month period, the patient safety culture was negatively associated with reported medication errors ( $p < 0.001$ ) and reported patient falls ( $p < 0.001$ ). The strong association between the SOS scores, medication errors, and patient falls supported the tool's construct validity.

A study conducted by Fleming and Wentzell (2008) collected incident reports for six consecutive months to test a relevant model. First, the organisational context, such as the external environment, hospital environment, nursing unit environment, and patient characteristics were assessed, followed by the organisational structure; for example, unit capacity, work engagement, and working conditions. Then the safety climate was evaluated, and finally, two adverse patient events; such as patient falls and medication errors. The researchers collected data from 278 medical-surgical units at 143 accredited hospitals participating in the outcome of the Research in Nursing Administration Project 2 (Fleming and Wentzell, 2008). The study revealed the organisational context had an important impact on organisational structure, which in turn had an important effect on the safety climate at the nursing unit. However, the organisational structure was seen to have a limited influence on patient safety outcomes, such as medication errors and patient falls. The study also revealed a mediating effect on the patient safety climate between organisational structure and patient safety outcomes, for example units with high capacity and low levels of patient safety reported fewer medication errors. In contrast, units with low patient capacity and more rigorous safety climates reported more patient falls. Despite the model outlining the limited variance in patient safety outcomes, the

implications might prove beneficial if designing a more flexible staffing model to benefit each nursing unit.

The studies evaluated in this section indicated that a higher level of perception of patient safety culture on the part of nurses is associated with fewer reports of patient falls. However, systems for the effective reporting of errors must be followed by an active learning process, based on the experience of errors. The following section therefore addresses the importance of organisational learning to improving patient safety.

### **2.5.5 Organisational learning and continuous improvement of patient safety**

A further dimension involved in the assessment of patient safety culture in hospitals includes organisational learning and continuous improvement. In general, organisational learning policies focus on developing the current knowledge and skills of the staff, and establishing improved methods to assist with partnership work, in order to enhance patient safety (Carroll and Edmondson, 2004). In a study concerning cannulation practice, conducted by McSherry et al. (2013); the use of practice development principles was found to facilitate a comprehensive analysis of the strengths, weaknesses, opportunities, and threats in terms of an individual involved in an error incident. The authors argued that this would provide greater focus on the precise nature of the incident, and would assist in establishing whether a member of staff possessed the necessary knowledge, skills, and competence to correctly undertake safe practice actions.

Similarly, Reason (1997) believed that the investigation of previous adverse events and near-misses provides “free lessons” (p.119), fostering the development of defences in a system to bolster it against the possibility of a more serious incident in the future. Furthermore, it was noted that successful approaches to patient safety involve the implementation of proactive systems for error management that are capable of ‘learning’ about threats to patient safety, accompanied by practices leading to an ‘understanding’ of their underlying cause. Leape (2006) argued that the lack of consistent reporting or learning systems in healthcare

organisations can engender persistent repetition of healthcare errors. The absence of effective learning or reporting systems has also been shown to prevent the collection, analysis, and distribution of information in a meaningful way capable of improving the subsequent performance of organisations (WHO, 2016).

In addition, a similar study by Gorelick et al. (2005) suggested that organisational learning relies on a system of actions, involving the implementation of processes that enable an organisation to transform information into knowledge, and consequently enhance its learning capacity. A report by the UK Department of Health (DoH) (2008) considered that the UK National Health Service (NHS) could increase patient safety by becoming a learning organisation with a memory, prepared to learn from its experiences and, in particular, its failures. This would prevent the repetition of errors in patient care that engender preventable errors. Similarly, Kennedy (2006) made a range of recommendations in his report concerning the complexities of the health management of care provided to children in the Bristol Royal Infirmary, recommending that the NHS Trust employ an organisational learning approach to improve their healthcare practices, by learning from their experience of unsafe practice. Furthermore, Carmeli and Sheaffer (2008) agreed with Kennedy concerning the adoption of an organisational learning approach, believing that improvements in organisational outcomes require a policy based on actual incidences.

A study conducted by Clark et al. (2013) examined the effect of adverse-incidence learning systems for the improvement of patient safety. The study reviewed a total of 2,506 patient safety incidence reports made over a period of five years, demonstrating that the adoption of a learning approach in health organisations had contributed to a decline in patient-related errors. However, the application of an effective organisational learning policy in hospitals is subject to the presence of an effective error reporting system, and this does not always exist, particularly in developing countries. Hudson et al. (2012) suggested that learning policies, including the exchange of information and work experience between staff, can improve patient safety in hospitals. Moreover, quantitative research conducted in 49 hospitals in Canada by Ginsburg et al. (2010) established a relationship between the support of leadership for patient safety, and the increase of organisational learning gathered from patient safety incidences within hospitals.

In contrast, cross-sectional descriptive research conducted by Chang and Mark (2010), which sampled 279 randomly selected nurses from 146 USA hospitals, established a negative relationship between the learning organisation and the medication errors made by nurses. However, such findings can be influenced by cultural and managerial constraints, leading to staff reporting simple medication errors, while avoiding reporting those that were potentially more dangerous (Mark, 2010; Bodur et al., 2012; Haw et al., 2014). An exploratory qualitative study conducted by Aljadhey et al. (2013) employed group discussions, and focused on identifying the challenges to improving medication safety practice in hospitals and community settings in Saudi Arabia. This research was concerned with an exploration of the perspectives concerning the current issues involved in medication safety among a variety of healthcare practitioners. The researchers interviewed 65 physicians, pharmacists, academics, and nurses, and their findings suggested that hospitals must establish organisational learning policies to improve their safety medication practices, by reducing error rates.

However, it is not always easy to implement policies in hospitals that seek to ensure that errors become a source of learning. Edmondson (2004), for example, believed that the establishment of an effective organisational learning policy requires the leader of a healthcare organisation to offer an open working environment, encouraging staff to share information and report errors. Meanwhile, Wagner et al. (2013) argued that improvements to safety within an organisation require an effective learning policy to be applied at all organisational levels, not simply at the level of an individual member of staff. A further important issue when considering the promotion of patient safety in hospitals is feedback concerning errors, which should be provided following error reporting, along with consideration of the lessons learned, to enable appropriate corrections to be affected, so as to reduce and/or avoid future errors in patient safety.

Studies conducted by Lundstrom et al. (2002), and Benn et al. (2009) agreed that feedback from hospital management is a crucial factor, as it reinforces a sense among staff that their reports and recommendations have been considered useful and beneficial for improving patient safety. This view was supported by a report by the WHO (2014), which asserted that it is likely to be the response system, rather than the reporting system, that has the greatest positive influence on

patient safety relative to feedback. An important aspect of the process concerns the identification of the origin of any harmful errors, and the facilitation of their reduction through reporting and analysis, along with the implementation and monitoring of any new policies that may apply.

### **2.5.6 Promoting the development of a learning organisation**

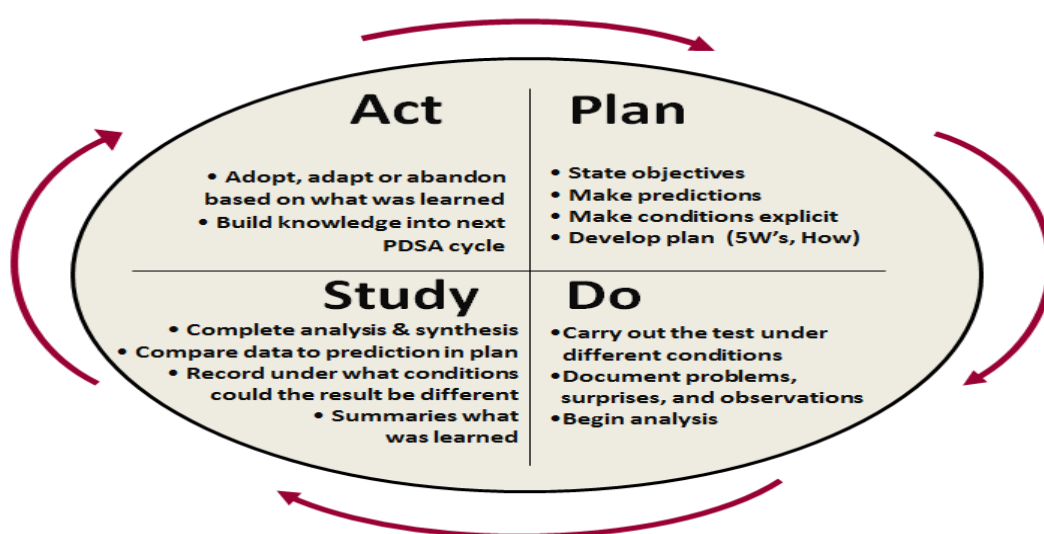
Improvements to patient safety result primarily from organisational and individual learning. To improve patient safety, an organisational culture that encourages learning to occur at every level is required; particularly learning that arises from occasions in which errors occur, or care could be improved. A piece of empirical research that used questionnaires was conducted by Alas and Vadi (2006), and was based on three different case studies in different organisations. It employed two surveys utilising three instruments at 44 Estonian organisations. The authors examined the organisational factors influencing the implementation of change, concluding that the creation of a culture promoting life-long learning through the ongoing development of knowledge and skills was important for implementing change designed to promote a safe environment within the workplace. Meanwhile, the Nursing and Midwifery Council (NMC) in the UK (2015) placed responsibility on nurses to adopt a culture of life-long learning to develop their professional knowledge and support changes in practice, as well as to enhance good practices thereby improving patient safety.

Communication remains key to the successful implementation of a safety culture (Amos et al., 2005), and any planned changes must be successfully communicated to all those directly involved in it, by means of both verbal and non-verbal communication methods (Rice et al., 2010). Under such circumstances, change can occur in direct proportion to positive outcomes, thus reflecting a positive level of management if the philosophy of change intended to facilitate an improved, safer culture (Drucker and Senge, 2001). A recommended model of change management is the 'Plan, Do, Study, Act' (PDSA) cycle, which is an approach widely employed to develop and implement transformation in healthcare delivery.

This model is best suited to managing a process of change in healthcare systems, as it promotes a gradual cycle of change (Figure 2.7).

The purpose of the PDSA method is to discover as quickly as possible whether an intervention works in a particular setting, and to make adjustments accordingly, to increase the chances of delivering and sustaining the desired improvement. In contrast to controlled trials, the PDSA approach allows new learning to be inbuilt into the experimental process. If problems with the original plan are identified, the theory can be revised to progress the learning, and a subsequent experiment conducted to assess whether the problem has been resolved, and to identify whether any further problems must also be addressed. In the complex social systems involved in healthcare, the flexibility and adaptability of the PDSA approach are important features that support the adaption of interventions to work in local settings.

However, the process of change rarely progresses directly or easily. The way in which the PDSA cycle functions can reveal other related issues that must be addressed to achieve an improvement goal. Such issues might relate to minor changes to current practice, or care processes, but can often reveal larger cultural or organisational issues that must be addressed and overcome. This model is best suited to managing a process of change in the Omani healthcare system, as it promotes a gradual cycle of change (Figure 2.7).



**Figure 2.7** PDSA Cycle of Change

**Reference:** Carnegie et al. (2011).



This engenders the conclusion that for a hospital to attain an effective level of organisational practice, it is necessary to actively establish an environment that encourages effective communication and openness amongst the staff. An organisation with a learning culture encourages continuous learning, and believes that systems influence each other. Since constant learning elevates an individual as a worker and as a person, it also facilitates opportunities for an establishment to transform moving towards a better and safer practice culture. Hence, the following section covers effective communication and openness, and its influence on the practice of a safety culture.

### **2.5.7 Communication and openness**

A further dimension noted in the literature as having an effect on patient safety is communication and openness. Baker et al. (2004) argued that the most reliable organisations have human factors, supporting teamwork, opening up communication, and encouraging the reporting of events. The USA Joint Commission on Accreditation of Healthcare rated human factors and communication very highly. An analysis of 2,455 adverse event incidences in hospitals in the US found failures in communication to be responsible for 70% of incidents, and that 75% of the patients involved in these communication failures had died (Leonard et al., 2004).

Further research, including an observational study conducted by Christian et al. (2006), revealed the impact of poor communication on patient safety. A total of 10 surgery cases were examined to establish the impact on patient safety of the systems in place in the operating room. The study found ineffective communication between members of staff was one of the main issues threatening patient safety. A report by the WHO (2009) asserted the existence of five benefits resulting from the investment in, and improvement of communication in healthcare organisations: improved patient safety, improvement in the quality of healthcare and patient outcomes, a decreased length of hospital stay for patients, an increased degree of patient and family satisfaction, and improved job satisfaction and staff morale.

Furthermore, communication plays an important role for nurses in providing knowledge, establishing relationships and behavioural patterns, and supporting leadership and team co-ordination (WHO, 2009). Leonard et al. (2004) emphasised the significance of effective communication in protecting patient safety, indicating that failures of communication can inadvertently cause patient harm. The researchers employed a detailed case study of the experiences of communication and teamwork within training related to human factors, identifying issues within a large, not-for-profit healthcare system in the USA. Their study concluded that failures of communication and teamwork occurred in circumstances, such as when hospital departments failed to follow recognised policies and protocols. These failures may also have been due to nurses being interrupted and distracted during their work, and to differences in the skill mix, together with varying degrees of professionalism, the workload, and cultural and gender differences. The researchers suggested that challenges arising from inter-professional communication between nurses, physicians, and other care workers can negatively impact patients (Baggs, 1999; Hudson, 2001; Alvesson and Sveningsson, 2008).

Similarly, Reader et al. (2007) conducted a cross-sectional study in four hospitals in the UK, aiming to investigate whether nurses and doctors in Intensive Care Wards (ICU) had a shared perception of interdisciplinary communication. The study employed a survey design, using a sample of 48 doctors and 136 nurses, which identified the existence of differing perceptions among the staff, with nurses reporting the presence of a low level of open interdisciplinary communication with doctors. The study also revealed low levels of communication and openness between trainee doctors and senior doctors. However, the study was limited because its sampling method involved a small, unequal sample of different categories of staff, and the number of senior doctors surveyed was small in comparison to the numbers of nurses and trained doctors, which could lead to bias. The authors acknowledged that the study would have been improved by employing an alternative data collection method, such as an observational methodology.

Conversely, Reader et al. (2007) demonstrated that to overcome inter-staff communication problems and overcome their effects on patient safety in

hospitals, communication between staff can be improved through the use of communicative tools. For example, a prospective cohort study conducted by Pronovost et al. (2003) in three healthcare settings demonstrated that the quality of healthcare for patients was improved by the use of a daily goals, including an effective communication plan, and the identification of staff tasks. This reduced the time the patients spent in hospital.

Similarly, an intervention research project was conducted by Clark et al. (2009) to evaluate patient assessment, assertive communication, continuum of care, and teamwork with trust (PACT) in a private hospital in Victoria, Australia. This project sought to improve inter-staff communication during the handover of patients, and revealed that communication between nurses and doctors was improved following written reports, background, assessment, and the recommendation (SBAR) of reviews into patient care during the handover procedures. The findings of both studies demonstrated the effectiveness of communication as a tool to improve the quality of healthcare and patient safety practices (Clark et al., 2009). However, the research findings could have proven more reliable if the tools had been utilised in more than one area of work, and if they had been employed in both public and private hospitals.

Healthcare professionals must be made aware of the risks of ineffective communication, including the provision of conflicting information, and failure to communicate risks, such as the violation of policies and procedures, fatigue, stress, and not addressing discrepancies (Dayton and Henriksen, 2006). Research has revealed that issues with communication occur not only between healthcare professionals in hospitals, but also between staff and managers. For instance, a recent cross-sectional study conducted by Braaf et al. (2013), with 281 healthcare professionals from three general Australian hospitals in the perioperative pathway, concluded that patient safety in hospitals can be affected by poor organisational communication during the transfer of information between managers and healthcare professionals. Furthermore, they found that problems with patient safety can result from a lack of communication in healthcare delivery resulting from the poor documentation of patient information, and miscommunication during patient handover procedures, and between medical shifts. Moreover, several weaknesses in the communication system might also exist

during the transmission of patient information between hospitals, such as during safety alert scenarios. Issues concerning status may also play a role, with junior staff potentially being fearful of expressing their concerns (WHO, 2009 and Vincent et al., 1999).

The evidence suggest communication among healthcare team members influences the quality of their working relationships, and job satisfaction, and has a profound impact on patient safety. Effective communication can significantly improve patient safety practices, and reduce healthcare errors. In addition, improvements to communication can also have a positive impact on further important aspects of patient safety culture practice that require commitment and practice, and the use of appropriate tools. The following section discusses teamwork and its relevance to patient safety.

### **2.5.8 Teamwork and patient safety**

A number of studies have revealed the importance of teamwork in healthcare settings, resulting in an increase in the emphasis on teamwork in healthcare settings (Barrett et al., 2001; Clements et al., 2007 and Gözlü and Kaya, 2016). There are many potential benefits resulting from the adoption of a teamwork approach in health organisations, including improvements to the quality of patient care, and a reduction in errors (McCulloch et al., 2009; Manser, 2009); conversely, a lack of teamwork between staff can increase the risk of error, potentially resulting in the death of patients (Mazzocco et al., 2009).

An empirical study conducted by Grogan et al. (2004) in different departments of a university hospital in the USA employed end-of-course critique questions to a course that adopted the aviation Crew Resource Management (CRM) style of training to sessions that focussed on the creation and management of teams, recognising adverse situations such as red flags, cross-checking and communication, decision making, performance feedback, and the management of fatigue (Figure 2.8). The study focussed on 489 members of staff in the CRM training session. Staff completed a questionnaire, which identified that the staff agreed training sessions could reduce the occurrence of issues compromising with

patient safety, and improve patient safety practices in hospitals. The large sample involved in the study was drawn from a variety of different healthcare professional settings, although caution is required when employing the study's findings, since, while such an approach could have proved reliable and effective when evaluating this form of intervention, the research lacked a case and control study design (Grogan et al., 2004).



**Figure 2.8** Crew Management Resource (CRM) Cycle

**Reference:** Alan (2013).

Similarly, Siassakos et al. (2009), McSherry et al. (2013), and Van Bogaert et al. (2014) highlighted the importance of the application of a multi-disciplinary healthcare group teamwork approach for improving patient safety, and enhancing the quality of healthcare. McSherry et al. (2013) conducted a retrospective observational cohort study in a University Hospital in the UK to assess whether the multidisciplinary training of teams was associated with improvements in the management of cord prolapses in maternity settings, specifically during the diagnosis-delivery interval. A comparison of the management of cases prior to, and following the staff training, led the study to the conclusion that such training resulted in improved staff performance. However, the findings of the study failed to demonstrate a strong connection between the intervention, and improvements in staff practice. Furthermore, the researchers acknowledged that progress might also have been influenced by previously implemented clinical governance programmes. In addition, based on the discursive analysis of the main elements involved in the provision of excellent standards of safe nursing care for patients,

the authors concluded that it was essential for healthcare environments to facilitate genuine working hospital collaborations, partnerships, and teamwork between leaders, educators, and nurse managers, and their respective organisations.

An observational study was conducted by Lingard et al. (2004) in Canada to develop a teamwork checklist for an operation room (OR). This recorded 90 hours of observation of 48 surgical cases, and included 94 team members from different healthcare professions. The study found ineffective team communication was a particular issue arising between staff during a medical team shift exchange. Likewise, Flin et al. (2006) conducted a quantitative study in 17 Scottish hospitals, employing a questionnaire to examine the attitudes of surgical staff to safety and teamwork in the operating theatre. The study involved a sample of 352 individuals, representing consultant surgeons, trainee surgeons, and nurses, and found that the staff gave positive responses concerning the impact of teamwork practice on patient safety. However, these findings must be treated with caution, as the authors acknowledged a low response rate to their research, in particular from nurses and trainee surgeons, causing a limitation in the representativeness of the study sample.

Meanwhile, Bristowe et al. (2012) conducted a focus group discussion in four large maternity wards in England to assess the experience of staff in relation to teamwork effectiveness during medical emergencies. The study findings revealed good leadership was essential to ensure effective teamwork for the provision of high quality healthcare for patients in medical emergencies. The study participants described a good team leader as one that communicates effectively with both staff and patients.

Moreover, an Arabic study conducted by Abualrub et al. (2012), which employed a questionnaire with a convenience sample of 381 nurses in a Jordanian hospital, established a positive correlation between a climate of safety and teamwork. It further revealed a correlation between teamwork, and the intention of nurses to remain committed to providing good quality healthcare for their patients. Although this study addressed an important aspect of teamwork and the safety climate, the results could have proven more beneficial. For instance, further

research employing a qualitative research design, such as interviews and focus groups, would have enabled a more detailed exploration of the respondents' perceptions, particularly if they had included different healthcare professionals.

This section indicates that teamwork plays a vital role in the promotion of patient safety in hospitals. Effective teamwork in healthcare delivery can have an immediate and positive impact on patient safety. Hence, collaboration and enhanced communication in interdisciplinary teamwork is an important model for delivering healthcare to patients. Concurrently, teamwork can reduce workload through the sharing of tasks between staff, in particular if staffing levels prove insufficient for the number of patients in a work area, as discussed in the following section.

### **2.5.9 Staffing level and patient safety**

A further important dimension determining the standard of patient safety concerns staffing levels. The World Health Professions Alliance (2002) identified that a shortage of healthcare professionals is considered a serious threat to patient safety. Research has revealed that understaffing is associated with negative healthcare outcomes for patients (Weber, 2010). In a study undertaken by Rogers et al. (2004), 393 hospital staff nurses in the USA were asked questions concerning their officially scheduled working hours using a questionnaire, in conjunction with the actual hours they worked, the number of hours they slept, how much overtime they worked, and how many days off they had. The scheduled hours and the true number of hours worked during each shift were aggregated and calculated per nurse, and per week. Logbooks were used to collect information about the number of hours worked, both scheduled and actual; the times of the day worked, overtime, days off, and sleep patterns. The subjects completed 17 to 40 items per day, with all 40 questions completed only on days when the nurses worked. Questions regarding errors and near errors were included, and space was provided for the nurses to describe any errors, or near errors, that might have arisen during their work periods. On their days off, the nurses were asked to complete the first 17 questions concerning their sleep patterns, mood, and

caffeine intake. All of the items in the logbook, and the logbook format itself, were pilot-tested before the study commenced. The logbooks revealed the nurses generally worked longer than their scheduled hours, and of the 5,317 shifts worked, approximately 40% were logged as having exceeded 12 hours per shift. By using the logbook, the risk of error was found to increase if the nurses worked over 12 hours, along with working overtime, and over 40 hours a week. Hence, the anecdotal reports suggested the hospital staff nurses were working longer hours, with few breaks, and often with little time for recovery between shifts. The authors demonstrated that the escalation of overtime, and exceeding shift hours, as a result of the hospital management attempting to address a shortage of Registered Nurses (RNs), resulted in more errors. However, the study findings were drawn from a single hospital with a small number of nurses, and exhibited a low response rate, thus indicating a degree of bias (Polit and Beck, 2014). Such limitations have the potential to reduce the validity and generalisability of the research (Creswell and Clark, 2011).

Research conducted by Todd et al. (1993) employed a repeated-measures study of 10 wards, using activity analysis to describe patterns of care in an 8-hour relative to a 12-hour shift system. The authors tested the effect of the number of hours worked against the quality of nursing care, and established that nursing staff working under eight hours scored a better level in a test of their performance than those who had worked over 12 hours (Bloodworth, 2001; Richardson et al., 2007; Gözlü and Kaya, 2016 and Weber, 2010). A considerable drop in output was found over the last four hours of a shift, a decrease that was especially prominent in 12-hour shifts. Output was more evenly sustained in eight-hour shifts. The RN4CAST survey of nurses in over 450 hospitals across 12 European countries was part of an international research programme evaluating connections between nursing workforce issues and patient outcomes (Weber, 2010 and Griffiths et al., 2014). The results showed nearly a third of nurses in England were working shifts of more than 12 hours, with hospitals adopting a pattern of long shifts to reduce the number of handovers between nurses, and to save costs. The nurses working these long shifts were 30% more likely to report poor quality of care, compared with the nurses working traditional eight-hour shifts. They were also 41% more likely to report failing, or poor, standards of safety, and reported leaving more necessary



nursing care tasks unattended than the nurses who worked shifts lasting eight hours. The nurses working overtime during their last shift were also likely to report lower standards of care, safety, and incomplete care tasks (Griffiths et al., 2014).

While there is a lack of research in the context of Arab countries concerning staffing levels, and their impact on patient safety, an observational study conducted by Aiken et al. (2014) in European countries indicated that giving a nurse one extra patient increased the likelihood of an inpatient dying within 30 days of admission by 7%. However, placing greater emphasis on degree-level education for nurses could reduce preventable hospital deaths (Aiken et al., 2014). Al-Kandari and Thomas (2009) and Aboul-Fotouh et al., (2012) undertook an important research study using a cross-sectional survey developed from the Improving Health Outcomes for Children (IHOC) survey in the USA. Their study was undertaken in five general medical and surgical Kuwaiti hospitals, focussing on 780 registered nurses. The data was collected using a self-administered questionnaire comprising three sections, designed to elicit information concerning the sample's characteristics, their perception of their workload, and perceived adverse patient outcomes during their most recent shift, and their most recent working week. Descriptive and inferential analysis using SPSS-11 was employed, with a response rate of 95%. The study demonstrated a positive correlation between the nurses' workload and adverse patient outcomes. Despite the size of the study sample, it included just one professional healthcare group, meaning the findings cannot be generalised to the experiences of other healthcare professionals concerning the impact of workload on patient safety. However, the findings correlated with a study undertaken by Al-Ahmadi (2010) in hospitals in Riyadh, in Saudi Arabia, and another by Aboul-Fotouh et al. (2012), in Egypt. The latter employed a cross-sectional survey, focussing on a sample of 1,224 healthcare professionals in nine public, and two private, hospitals. It identified the shortage in staffing levels as one of the key areas impacting on patient safety in both public and private hospitals. However, the study findings should be treated with caution, due to the low response rate (47.4%).

The nature of their hospital duties ensures that nurses are required to work on a rota basis, and the handover of duties at the end of each shift is a crucial time for patient safety considerations. Moreover, nurses play a critical role in patient

safety through their constant presence at the patients' bedside, and nursing is a vital factor when determining the quality of care in hospitals, and the nature of patient outcomes. The study undertaken by Aiken et al. (2014) provided evidence in favour of appropriate nurse-patient ratios, together with support for graduate-level education for nurses. Recent evidence obtained in cross-sectional studies by Aiken et al. (2017), and Ball et al. (2017) has demonstrated that the skills that staff acquire at university creates the conditions necessary for safe staffing practices. Nurse staffing issues and suboptimal working conditions can impede nurses' ability to detect and prevent adverse events, and the connection between nurse staffing and poor outcomes has been noted in the field, and has engendered certain changes. The fact that nurse staffing is a crucial health policy issue has met with consensus on an abstract level.

### **2.5.10 Handover and patient safety**

The handover of care is one of the most hazardous moments in healthcare, and when conducted improperly, it can be a major contributory factor to subsequent error and result in harm to patients. A high proportion of claims of malpractice relate to failures to implement appropriate measures during handovers (Patterson et al., 2004; National Patient Safety Agency, 2004 and Williams and Irvine, 2009). The WHO (2007) emphasised that many issues with patient safety and adverse events in hospitals arise as a result of ineffective communication during the handover of patients between either healthcare professionals and departments. A handover within a healthcare setting includes the transfer of accountability and responsibility for a patient between healthcare professionals, along with an exchange of information specific to the individual patient (National Patient Safety Agency, 2004). Handovers can be between inter-healthcare professionals, such as between an anaesthetist and the surgeons in an operating room. They can also be inter-departmental, or between ambulance services and emergency departments, and can take the form of exchanges that occur between medical shifts, or upon the discharge of a patient from a hospital (Wong et al., 2008).

The goal of any handover is to provide timely, accurate information concerning a patient's care plan, treatment, current condition, and any recent, or anticipated, changes (The Joint Commission, 2007). A weak handover can contribute to gaps in patient care, and failures in patient safety, including medication errors, wrong-site surgery, and patient death (Beach, 2006 and Wong et al., 2013). An accurate handover of clinical information is critical to the continuity and safety of care. If clinically relevant information is not shared accurately, and in a timely manner, it can delay treatment and diagnosis, and result in inappropriate treatment or the omission of care. Cook et al. (2000) expressed concern about the gaps potentially occurring in the continuity of patient care following handovers, asserting that this is a 'high-risk' process, while Coffey et al. (1988) revealed the influence of the length of shifts on the quality of healthcare handovers. The latter researchers employed a questionnaire survey of 463 registered nurses from five hospitals in the south-eastern region of the USA to examine the influence of the time of day, and the rotation of shifts, on nurses' stress, and the quality of their work. They established an important positive association between the performances of nurses working day shifts, compared with those working night shifts. The complexity and nuance of the type of information, communication methods, and various caregivers for each of these factors impacted on the effectiveness and efficiency of the handover, as well as on patient safety. However, the research failed to measure the important variable of the total number of staff working on each shift, which might have influenced the positive correlation. For example, there were a greater number of staff working on the day shift than on the night shift.

A systematic review conducted by Bost et al. (2010) concerning handovers in emergency departments and hospitals reviewed 252 documents, and eight studies of handover procedures between emergency departments and ambulance services. The study identified three themes. Firstly, it noted the potential for important information to be missed during a clinical handover; secondly, it identified that structured handovers, which include both written and verbal components, may improve the exchange of information; and thirdly, it highlighted the significance of multidisciplinary education as influencing the clinical handover process and encouraging teamwork. Moreover, the authors recommended a number of practical improvements during handovers, including the use of written

notes, and the adoption of standardised formats for handover, together with the development and use of national guidelines to improve commitment to teamwork, and to identify when the transfer of responsibility occurs. These guidelines also state the necessity for on-going staff learning and needs for training. The WHO (2009) designed a patient safety checklist for use by surgical departments to ensure that members of staff comply consistently with standard procedures prior, during, and following an operation to reduce potential errors and complications.

A further study, conducted in Denmark by Siemsen et al. (2012), explored the attitudes and experiences of staff in relation to the chief factors influencing procedures for the handover of patients from ambulance services to hospitals, or within departments. The study employed qualitative methods, and conducted 47 semi-structured interviews with healthcare professionals, concluding that a number of factors involved in the handover procedure had an effect on patient safety, such as organisational factors, teamwork awareness, communication, professionalism, and infrastructure. Although the study provided comprehensive information concerning the factors impacting on patient safety during handover procedures, it employed only one data collection approach, and consequently failed to identify variations in the impact of handover procedures on patient safety between hospital departments. However, the results of this study were supported by those of Pezzolesi et al. (2013), who established that issues during handover procedures were particularly related to shortcomings in human factors, including communication, and teamwork between different professional groups. The authors noted that this could be improved through the use of a handover procedure instrument.

Observational studies undertaken by Nagpal et al. (2013) sought to improve postoperative handover practices in a British hospital. A trained researcher evaluated the procedures employed during 90 handovers, observing 50 handover practices prior to the introduction of a clinical handover protocol, and 40 thereafter. The findings revealed important improvements in the quality of the handover, particularly regarding communication and teamwork between staff, and a reduction in adverse events due to a lack of information. The study confirmed the importance of employing a protocol to improve handover procedures in hospitals. However, the authors acknowledged that their evidence

was drawn from a small sample size, and only one hospital department, and therefore the findings could not be generalised to other healthcare settings.

The British Medical Association (BMA, 2004) suggested improvements for hospital management and staff to ensure a high standard of handover for their patients, such as the maintenance of coordinated measures during the handover of shifts. They further suggested an adequate timeframe is crucial to an effective handover procedure, and that clear leadership assists staff in conducting their handovers effectively. In addition, the BMA (2004) reported that safe handovers require information systems and technology.

A further qualitative study undertaken in the UK by Nagpal et al. (2010) focussed on the principal issues that occurred during postoperative handovers. Eighteen healthcare professionals were interviewed for the study, identifying the fact that a significant number of transfer information and communication problems occurred during their handovers. These were primarily due to the informal nature of the handover procedures, such as their being unstructured and inconsistent, and containing incomplete information.

This section demonstrates that there is a growing awareness that high-quality handover practices are crucial for ensuring the continuity of care and patient safety. However, inadequate patient handovers consistently occur across healthcare settings and nurses. The use of proper tools for patient handovers between shifts is now a necessary component of routine practice to reduce the risk of healthcare errors.

## **2.6 Assessment of patient safety culture**

Safety culture has become a major issue for healthcare organisations seeking to improve patient safety (Kennedy, 2006). The assessment of patient safety culture is considered the first critical step for the improvement of quality care in any healthcare organisation (Kohn et al., 2000). It commences with such measures as a data-based assessment of the current safety culture, and the employment of surveys focussing on the perceptions of staff and managers towards their

commitment to safety issues (Clarke, 1999). In 2000, the Institute of Medicine (IOM) revealed that investment in healthcare that omits a commitment to a positive safety culture is insufficient for reducing healthcare errors (Kohn et al., 2000). This view was supported by Shostek (2007), who stated that it is vital to establish a culture of safety before other patient safety practices can be successfully introduced. For example, it is insufficient to redesign hospital structures, clinical guidelines, and information technology to achieve safe systems, because it is also vital to address both the culture and the infrastructure (Smits et al., 2008; Ker, 2011 and Stirling et al., 2012).

A study conducted by Cooper (2002) stated that the purpose of assessing the safety culture of organisations is to limit accidents and reduce injury rates, and to ensure adequate attention to, and commitment to issues relating to safety. Sorra and Nieva (2004) and Colla et al. (2005) described the assessment of patient safety as a diagnostic tool for an organisation's safety practice. Furthermore, assessment can increase staff awareness of safety issues, and assist in the identification of strengths and weaknesses, thus enabling managers to improve safety, evaluate interventions, and employ existing practice as a benchmark within a particular hospital, or in comparison with other hospitals. Although Flin et al. (2006) accepted this position, they also highlighted the importance of the use of a reliable and valid questionnaire to ensure an accurate assessment to identify weaknesses in an organisation's approach to patient safety, thus enabling managers to implement appropriate interventions. However, Guldenmund (2000) warned that, unless they are combined with other assessment instruments, questionnaires fail to address the core issues related to an organisation's safety culture (Appendix 4). Pronovost et al. (2006) reviewed feedback from 500 hospital nurses and managers concerning the reliability of questionnaires in relation to attitudes towards safety. They concluded that it is vital to understand the source of any variation in culture between healthcare professionals and their areas of work, as unreliable safety culture assessments can engender bias and misleading results, causing managers to approve inappropriate interventions, thereby diverting limited resources, and potentially rewarding inappropriate behaviour.

Safety culture in Omani hospitals, including focussing on a number of different professional healthcare groups with different perspectives. This will lead to the

development of a comprehensive picture, capable of revealing the strengths and weaknesses of patient safety culture, and thus ensuring health managers respond in an appropriate manner. However, nurses comprise the largest healthcare professional group and have the most continuous contact with patient and so their perceptions of patient safety are important to study. A variety of questionnaires have been developed to measure the dimensions of safety culture within healthcare settings (Singer et al., 2003; Sorra and Nieva, 2004; Weingart et al., 2004; Sexton et al., 2006), with the majority assessing similar dimensions known to impact on patient safety. Surveys are usually designed to assess the perceptions and attitudes of healthcare professionals and their managers towards patient safety culture. In addition, questionnaires have typically focussed on the main aspects of patient safety culture, as identified in the literature, a fact that must be considered when assessing the safety culture within health organisations. These aspects primarily relate to supporting the leadership and management in relation to patient safety; to error reporting systems, and non-punitive responses to errors; and to organisational learning and feedback concerning errors. They are also related to communication, teamwork, and handover procedures. The following section discusses the most common measures introduced in patient safety culture in more detail.

Healthcare organisations are becoming increasingly aware of the importance of the need to transform organisational culture to improve patient safety. Growing interest in safety culture has often been accompanied by the need for assessment measures focused on cultural aspects of patient safety improvement efforts.

### **2.6.1 Theoretical Framework using the Manchester Patient Safety Framework (MaPSaF)**

This research utilised the Manchester Patient Safety Framework (MaPSaF) as its theoretical framework (Kirk et al., 2007). The MaPSaF uses critical dimensions of patient safety, and for each of these it offers a description of what an organisation would look like at five different levels of safety culture maturity. Critical safety dimensions include key areas where perceptions, attitudes, values and behaviour around patient safety are likely to be reflected in the organisation's working

practices (Kirk et al., 2007). The MaPSaF can be used to focus on the development of knowledge into practice to facilitate improvement. This section will discuss the MaPSaF. Additional discussion is provided when applied in Chapter 7. The theoretical frameworks of attribution and motivational theories were considered but were found not to fit well with the data in this PhD thesis. However, the MaPSaF aligns better with the study, as its aims and content resemble key research objectives and dimensions within both phases of the study.

In a healthcare organisation, the safety of both patients and staff is influenced by the emphasis placed on safety across the organisation. The concept of a 'safety culture' is a novel concept in the healthcare sector in Oman, and for this reason can be a difficult one to evaluate and adapt. The MaPSaF was developed to render the assessment of a safety culture more accessible for all healthcare staff. This framework has already been shown to improve healthcare professionals' understanding of the term safety culture (Kirk et al., 2007), and can be used to engage frontline staff with the organisational dimensions of safe practice. It can also be used to stimulate discussions about how to improve the safety culture within healthcare organisations (Kirk et al., 2007). For example, an organisation should ideally start by addressing the highest performing areas and then aim to pull up the next lowest and so forth, so that by the time the poorest performing area is tackled, it will have automatically been raised up when addressing the other areas. The importance of a theoretical framework relies on the quality of the research-based evidence found, and its theoretical development (Appendix 5). Additional details associated with this discussion are provided in Chapter 7.

A study conducted by Parker et al. (2006a) and Parker (2009) drew on the theoretical typology of organisation culture, as proposed by Westrum (1993), and their design of the MaPSaF. Westrum (1993) developed a theoretical typology explaining that one method for distinguishing between cultures relates to how an organisation handles information. This typology distinguishes between three different levels of organisational culture: pathological, bureaucratic, and generative. This concept of typology was based on each medical unit's style of information processing. It was further linked to the underlying belief that leaders, through their preoccupations, shape a unit's culture through symbolic actions. This includes the dispensation of rewards and punishments, which communicate



dimensions that they feel to be important, and which then preoccupy the workforce (Westrum, 2004). Westrum (2004) extended this by suggesting that good information flow and processing has an important effect on patient safety, and that an open and generative culture will result in improved uptake of innovation and better responsiveness to danger signals.

In the context of the petrochemicals industry, Parker et al. (2006b) adapted Westrum's framework to support an empirical study by extending the number of levels of culture to five and then applying these to a range of dimensions of the safety culture (Table 2.5). The development of this framework has been further discussed by other researchers (Ashcroft et al. 2005; Kirk et al. 2007; Parker 2009). The Westrum typology provides a foundational framework that offers a normative structure within which to consider what constitutes a "good" or "bad" safety culture. It illustrates how safety culture could be improved within the context of a framework, and facilitates the comparison of organisational cultures and subcultures (Lawrie et al., 2006). The researchers proposed a model in which a range of safety dimensions could be characterised according to five levels as shown below (Lawrie et al., 2006; Table 2.5).

**Table 2.5** Levels of Organisational Safety Culture

Level of Organisational Safety Culture	Characteristics
<b>LEVEL 1</b> <b>Pathological</b>	Why do we need to waste our time on risk management and safety issues? <i>The 'pathological' stage sees safety as 'a problem caused by workers' with an attitude of 'who cares as long as we're not caught'.</i>
<b>LEVEL 2</b> <b>Reactive</b>	We take risk seriously and do something every time we have an incident. <i>In the 'reactive' stage organisations start to take safety more seriously, but action is only taken after incidents have occurred.</i>
<b>LEVEL 3</b> <b>Bureaucratic</b>	We have systems in place to manage all likely risks. <i>In the 'calculative' stage, the approach is still very top down with management systems being put in place to manage hazards and a focus on collecting data.</i>
<b>LEVEL 4</b> <b>Proactive</b>	We are always on the alert, anticipating risks that might emerge. <i>In the 'proactive' stage, there is more workforce involvement around identifying and working on problems.</i>
<b>LEVEL 5</b> <b>Generative</b>	Risk management is an integral part of everything we do. <i>In the final 'generative' stage, there is active participation at all levels based on increasing trust and 'informedness': 'Safety is how we do business around here'</i>

Reference: Kirk et al. (2007), Hudson, (2003), Lawrie et al. (2006) and Parker et al. (2006b)

## 2.6.2 Manchester Patient Safety Framework (MaPSaF)

The MaPSaF is designed for professional teams wishing to self-reflect on their workplace culture. Previous studies have used questionnaires alongside the MaPSaF and used it as a self-reflection tool (WHO, 2016; Kirk et al., 2007). The framework is presented in the form of a matrix, providing a short description of a healthcare organisation at each of five levels (Table 2.5). There are ten dimensions for the acute setting, as assessed at each of these levels (Stages) and derived from research proven to have high reliability, leading to the development of the MaPSaF (Kirk et al., 2007). These ten dimensions are identified in Table 2.6:

**Table 2.6** Ten Dimensions of Patient Safety Culture

Dimension	Description
Commitment to overall continuous improvement	This dimension has statements reflective of the investment in the quality agenda and the purpose of policies and procedures.
Priority given to safety	This dimension reflects statements about how seriously safety is taken in the organization in relation to patient and public involvement and patient safety practices.
System errors and individual responsibility	This dimension reflects how reports are received and viewed – as either an opportunity to blame or improve.
Recording incidents and best practice	This dimension relates to the use of reporting systems (i.e., user friendly) and the types of incidents that are reported (i.e., full incidents and near misses).
Evaluating incidents and best practice	This dimension relates to how the incidents are being investigated and analyzed and the output of the investigations.
Learning and effecting change	This dimension outlines statements reflective of what happens after an event, what mechanisms are in place to learn from the incident and how changes are introduced.
Communication about safety issues	This dimension is reflective of the systems in place to communicate, the quality of information sharing and communications with patient about safety.
Personnel management and safety issues	This dimension discusses the way in which safety issues and staff problems are managed as well as the link between safety and recruitment and retention practices.
Staff education and training	This dimension reflects training aims, resources and the purpose of training in regards to patient safety information.
Teamwork	This dimension is related to the structure of teams, the function of the teams and how information is shared across team members.

**Reference:** Law et al.,(2010a) and National Patient Safety Agency (2006)

For each of the dimensions (Table 2.6), there are statements reflecting the five levels (stages) of the safety culture, ranging from the classification of a poor

safety culture (pathological), through increasing levels of development (reactive, bureaucratic and proactive) to the highest level of a safety culture (generative) (Appendix 5). The ten dimensions included in the framework were elicited from a literature review concerning culture, safety and High Reliability Organisation theory, and by interviewing experts in the field (Parker et al., 2006a). The descriptions contained in the matrix highlight the level of safety culture involved in each dimension (Appendix 5), based on 35 semi-structured interviews undertaken with a range of managers and clinicians working in six Primary Care organisations in the North West of England (Kirk et al., 2007). Following this, the MaPSaF framework for the acute setting was implemented to serve concerned individuals.

The content of the MaPSaF was refined through developmental work undertaken in collaboration with the National Patient Safety Agency (NPSA). This involved a series of workshops and expert reviews with healthcare professionals in acute, mental health and emergency healthcare sectors (Parker et al., 2006a). After extensive use of the framework during interactive workshops, decision makers and leaders requested a quantitative tool to provide them with an organisation-wide assessment of these dimensions. A drive from leaders was undertaken in response to a growing need to attribute value and deliver outcome indicators, also reflecting specific efforts implemented to change culture. It was believed that if they were able to measure the culture at different points, with a wider sample from within the organisation, they would then be able to establish a greater sense of whether cultural change interventions could be successful. This resulted in the developed of the Manchester Patient Safety Culture Assessment Tool (MaPSCAT) (Parker, 2009 and Law et al., 2010b).

The MaPSCAT supplies an additional tool to examine patient safety culture. The tool is based on a multidimensional framework (MaPSaF), and underwent a rigorous development and validation process among a UK sample as well as in Canada, Australia and New Zealand (Parker et al., 2006a; Law et al., 2007). The tool can be used to evaluate the current situation in terms of safety culture among healthcare organisations in the UK, and then subsequent changes can be made to introduce higher levels of safety (Law et al., 2010b). The tool has also been used in other settings and countries, such as New Zealand, where it was modified

according to the hospital context (Wallis and Dovey, 2011). Hence, study findings suggest that the MaPSaF can be modified and used in different settings when assessing a safety culture (Wallis and Dovey, 2011).

The MaPSaF is the tool most commonly used in the UK to assess patient safety culture (Mannion et al., 2009). Validation work is ongoing, and performed by the University of Manchester based on informal feedback from hospital trusts within the UK. Since its introduction in 2006, as part of the National Patient Safety Scheme, the MaPSaF has had its reliability assessed in multiple studies (Parker, 2009 and Mannion et al., 2009). Each of the five levels of MaPSaF have been compared with other tools to determine its reliability. However, the MaPSaF has not been revalidated since its use eleven years ago, and this needs to be done (The Health Foundation, 2013; Parker, 2009 and Mannion et al., 2009). This is due to studies being regionally limited to providing ways of understanding how staff members' shared values can create a practical safety culture (The Health Foundation, 2013). However, the data collected has been favourable, suggesting the MaPSaF has provided useful insights into patient safety, identified strengths and weakness, and promoted suggestions for improvement (Parker, 2009 and The Health Foundation, 2013).

Although the MaPSaF has not been validated for 11 years, it provides a valuable input in assessing the risk within any organisation and guide in promoting the improvement of safety culture with the organisation. The Dimensions of MaPSaF, however, reflects directly on the HSoPSC survey tool that directly reflects the research question. However, for the purpose of background of safety culture development, Flin's et al. (2006) dimensions were discussed in earlier sections because of its valuable theoretical background development of safety climate surveys, risk management and leadership. Hence, the MaPSaF in this thesis assists in integrating the results and findings that reflects on the organisation to assess their progress in implementing and sustaining a safety culture.

### **2.6.3 Measuring safety culture**

Safety culture is an important facet of care delivery, which focuses on the potential risks to patients. While surveys can provide an understanding of the attitudes and beliefs of employees, a number of authors have recommended supplementing this quantitative form of data with richer qualitative data, by means of interviews, focus groups and/or observations to gain a greater understanding of the underlying culture (Flin et al., 2006; Sorra and Nieva, 2004; Singer et al., 2009). Hence, undertaking audits is another aspect of patient safety culture which is explained in section 2.6.8.

Tools enabling an understanding of the role of safety culture in promoting and sustaining patient safety within healthcare have been improved. A number of studies by The Health Foundation (2011) employed different aspects of the components of safety culture, focussing on combinations of organisational behaviours, processes, or structures, and/or outcomes, when representing safety culture. These studies involved questionnaires for measuring the safety culture of an organisation, which can provide insight into areas for improvement, and help monitor changes over time. A range of tools have been employed in various healthcare settings. For example, the most rigorously tested and well-known tools are: the Safety Attitudes Questionnaire, Patient Safety Culture in Healthcare Organisations, the Hospital Survey on Patient Safety Culture, the Safety Climate Survey, and the Manchester Patient Safety Assessment Framework (Appendix 4). From the available research, it is not possible to recommend one tool as the most effective or efficient for use by any healthcare team. Furthermore, the literature highlights the need for caution, with some studies suggesting tools are not always transferable from one context to another. This emphasises the importance of testing, validating, and sharing the results of any safety culture tool employed in a healthcare organisation, as opposed to assuming that the tools constructed for use elsewhere will be sensitive and appropriate for a specific setting (The Health Foundation, 2011).

In a comprehensive review of safety culture questionnaires, Flin et al. (2006) identified 10 common dimensions of safety culture, including management and supervision, safety systems, perception of risk, job demands, reporting and

speaking up, safety attitudes and behaviours, communication and feedback, teamwork, personal resources, and organisational factors. Sorra and Dyer (2010) also identified a number of ways of employing the assessment of the safety culture of healthcare organisations, including diagnosing safety culture specifically to identify areas for improvement and to raise awareness, and evaluating interventions and changes over time, together with undertaking benchmarking, and fulfilling regulatory requirements. Vincent (2010) and Zohar (2011) stated that there are critical processes for achieving maximum benefit during assessments involving key care providers, and when selecting a suitable assessment tool. Moreover, appropriate and effective data collection procedures should be employed, action plans implemented, and changes initiated. Safety culture can be measured in a number of ways, including via individual health centre audits, questionnaires, and focus groups.

Similarly, there is the Safety Attitudes Questionnaire (SAQ), developed by the University of Texas, in which Sexton et al. (2006) incorporated constructs from Vincent's (1999) framework for analysing safety, and Donabedian's (1988) model for assessing quality. The SAQ was adopted in a number of areas, such as Intensive Care Units (ICU), and ambulatory care, and these can be used to compare safety cultures across a number of different wards and units. Furthermore, the SAQ included open-ended questions, to elicit provider feedback concerning recommendations on how to improve safety culture (Appendix 4). In addition, Robb and Seddon (2010) conducted a review seeking to identify the patient safety survey tools available, as these possess good validity and reliability. They identified 12 instruments that can be employed to evaluate the safety climate in healthcare settings, all of which had been reviewed by previous researchers (Colla et al., 2005; Flin et al., 2006; Singla et al., 2006). Robb and Seddon (2010) indicated that these instruments showed considerable variation with respect to the dimensions of patient safety covered, the number of items included, and their psychometric properties, recommending the SAQ and the HSoPSC were suitable tools for evaluating the safety climate of hospitals.

Jackson et al. (2010) examined studies that utilised staff surveys of hospital safety climates, identifying four questionnaires, the HSoPSC, SAQ, Patient Safety Climate in Health Organisations (PSCHO), and the Hospital Safety Climate Scale, all of

which are used widely to evaluate the safety climate across different clinical areas, and to demonstrate acceptable psychometric properties. They also found the HSoPSC, and the SAQ, had been used previously to evaluate the effectiveness of patient safety interventions in healthcare settings. Furthermore, Singer et al. (2003) employed the Stanford, or the Patient Safety Center of Inquiry (PSCI), culture survey, which was created through the analysis and compilation of a number of previously validated, and reliable, unit- or sector-specific tools to assess the safety culture of 15 hospitals in California. The survey assesses a number of dimensions of safety culture for each organisation, including reward and punishment, perception of risk, fatigue and stress, employee training, time, and resources. In addition, the survey examines five different factors of safety culture: organisation, department, production, reporting/seeking help, and shame and self-awareness. The questionnaire was constructed entirely of closed questions, and was extensively piloted and tested on a large sample size of respondents from 15 diverse hospitals around California (n= 6312).

Qualitative methods have also been employed to develop a framework to analyse safety culture within organisations (Cooper and Finley, 2013), and the use of multiple methods would permit the collection of a richer and more expansive range of evidence than would have been possible using any other single method.

A small number of studies have adopted Westrum's (2004) industry-focused typology of organisational cultures into varying models of cultural maturity for healthcare settings. Cultural maturity has been conceptualised as describing the status of a particular organisation's safety culture, positioned along a continuum, from a low to a high maturity level of safety, based on varying dimensions of safety culture. Westrum (2004, Figure 2.6) identified the five phases of safety culture maturity as:

- ⇒ **Pathological:** Who cares about safety, so long as we are not caught?
- ⇒ **Reactive:** Safety is important - we do a lot each time we have an accident.
- ⇒ **Bureaucratic:** We have systems in place to manage all hazards.
- ⇒ **Proactive:** We try to anticipate safety problems before they arise.

⇒ **Generative:** Safety is how we do business around here.

Three studies have adapted Westrum's model (Westrum, 1993; Westrum, 2004) to suit their healthcare contexts, developing new tools, including the Manchester Patient Safety Framework (MaPSaF), and the Patient Safety Culture Improvement Tool (PSCIT) (Ashcroft et al., 2005; Kirk et al., 2007; Fleming and Wentzell, 2008).

The MaPSaF (Ashcroft et al., 2005) was developed in a workshop setting, providing a number of discussion points, including commitment to patient safety, and the perceptions of the causes of incidents and their reporting. It also considered incident investigation and learning following an incident, together with communication, staff management and safety issues, staff education and training concerning risk management, and teamwork. The participants rated their organisational safety culture individually, based on a five-point scale ranging from a pathological to a generative culture, with scores subsequently discussed by the remainder of the group, in a similar approach to that suggested by Westrum (2004), and more details of which are discussed in Section 2.6.1. This approach proved effective for targeting interventions and engaging clinical staff, but there remained a lack of data regarding its validity and reliability (Fleming and Hartnell, 2007). The previous three examples, provided by Ashcroft et al. (2005), Kirk et al. (2007), and Fleming and Wentzell (2008) targeted direct providers and clinician input for measuring safety culture, however, the following fourth tool incorporated feedback from all levels of an organisation, including from managers and high-level administrators (Ashcroft et al., 2005; Kirk et al., 2007; Fleming and Wentzell, 2008).

Strategies for leadership were developed by the American Hospitals Association in 2000 (AHA, 2010) to provide a report card, based on seven dimensions, as a means establish an organisation's safety culture. The dimensions included were leadership, strategic planning, information and analysis, human resources, process management, inclusion of patient and family, and an overall summary of key safety aspects (AHA, 2010). The team members were also instructed to review each dimension, and discuss their findings within the team. Each member indicated the level of implementation, and assigned each dimension a grade from A to E. The inclusion of demographic information at the end of the tool enabled



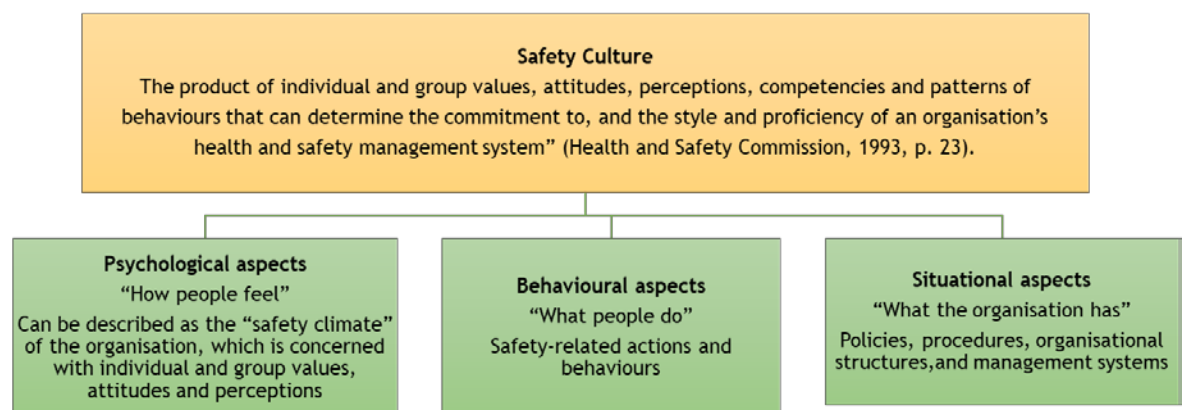
the hospitals to compare their results with those of other organisations. The dimensions were then scored overall, and the teams instructed to identify and develop improvement plans to be implemented throughout the organisation in relation to the activities scoring low, for example, between 3 and 5, with annual measurements encouraged to evaluate progress. The strength of the Voluntary Hospitals of America (VHA) audit, as with the MaPSaF tool, lies in it being solution-based in terms of assessing and correcting deficiencies. Furthermore, it provides the opportunity for discussion across the spectrum of healthcare personnel, with the inclusion of both clinicians and administrators.

A similar study conducted by Fleming (2005) provided a 10-step process for successful safety measurement and implementation in healthcare, by comparing and analysing key instruments of patient safety culture. These 10 elements focused on improving the application of safety culture to healthcare through lessons gained from other high-risk sectors, such as nuclear energy and aviation, and included building capacity, and selecting an appropriate survey instrument, together with obtaining informed leadership support, and involving healthcare staff. Also included were survey distribution and collection, data analysis and interpretation, and feedback of results. The study involved agreeing interventions via consultation, implementing interventions, and tracking changes. Fleming (2005) cautioned that, although safety culture assessments are important, and can engender positive change, improper measurement and implementation can have a negative impact on any advances. As such, it is important for organisations to consider carefully the measurement of the safety culture, and to ensure ongoing support from staff and management.

The definitions and components of safety culture presented above reflect two major elements of safety culture. First is the individual component, including the intrinsic elements of values, beliefs, assumptions about who and what we are, and what we find important. Second is situation and behaviour, including extrinsic elements pertaining to behaviours, norms, and rituals and symbols, such as 'how we go about things around here'. The intrinsic elements represent inner personal and psychological factors, while the extrinsic elements characterise behavioural factors, and both may be represented differently within an organisation, due to the presence of different individuals, and multiple groups and subgroups. Safety

culture therefore comprises a collection of cultures related to individuals, groups, and subgroups within organisations (Cooper and Finley, 2013). Measures for each of these factors are discussed below. Oppenheim (2001) proposed the availability of different quantitative and qualitative data collection tools that can be employed to measure the psychological, behavioural, and situational aspects of safety culture. Hence, a relationship is found to exist between those aspects that can influence safety culture within health organisations.

Organisational culture is a concept often employed to describe shared corporate values that affect and influence members' attitudes and behaviours. However, it has also been noted that safety culture can be a sub-facet of organisational culture; as it informs members' attitudes and behaviour in relation to an organisation's ongoing performance (Figure 2.9).



**Figure 2.9** A Three-Aspects Approach to Safety Culture

**Reference:** Human Engineering (2005)

Figure (2.9) indicates psychological aspects refer to how people feel about safety and safety management systems. It can be described as the safety climate of the organisation (Human Engineering, 2005). They include the beliefs, attitudes, values and perceptions of individuals and groups at all levels of an organisation and can be measured subjectively using safety climate surveys, often used to explore a workforce's attitudes and perceptions toward safety at a particular point of time. Behavioural aspects are focused on what people do within the organisation, and include safety-related activities, actions and behaviours exhibited by employees (Human Engineering, 2005). Situational aspects are what the organisation has, they describe organisational elements such as policies and

procedures, management and control systems, and communication and workflow systems (Human Engineering, 2005).

#### **2.6.4 Psychological factors**

Measuring individual perceptions of patient safety is essential. Demonstrating this, a study conducted by Zohar (2011) employed a safety climate survey questionnaire to measure psychological factors, proposing a number of questions designed to measure individuals' beliefs, values, attitudes, and perceptions concerning the safety dimensions considered to be important to the development of safety culture, such as management commitment. Cooper (2009) explained Zohar's (1980) questionnaire revealed the views of practitioners concerning the strengths and weaknesses of safety management practices in reference to appropriate remedial action. In addition, researchers have employed Zohar's questionnaire to examine the relationships between safety dimensions, including the relationship of each to outcome measures, such as accident rates (Cooper, 2000). A number of researchers, including Mearns et al. (1997), and Lee (1998) have developed questionnaires to establish the main factors contributing to a safety climate. Frequently safety climate measures also tend to be used as substitute measures for evaluating safety culture more widely. Recent interest in the measurement of safety culture has resulted in a number of reviews of the area, which demonstrate that a wide range of assessment tools have been developed, typically including self-reporting questionnaires.

A review of the safety climate literature has revealed that employees' perceptions of management's attitudes and behaviours towards safety, production, and issues such as planning and discipline are the most useful measures of an organisation's safety climate (Zohar, 2011; Mearns et al., 1997; Lee, 1998). This research has indicated that different levels of management can influence health and safety in different ways, for example managers through communication, and supervisors by deciding how fairly they choose to interact with workers (Zohar, 2011). Thus, a key area for any intervention of an organisation's health and safety policy should be management's commitment and actions as regard safety.

### **2.6.5 Behavioural factors**

Observance of a range of self-reporting measures are essential to encourage an embedded safety culture. A study conducted by Cooper and Finley (2013) stated that the behavioural factors relating to a safety culture can be examined through peer observations, self-reporting measures, and/or outcome measures, while Cooper (2000) analysed the history of an organisation over a period of two years, and established that a small number of unsafe behaviours were implicated in the majority of the accidents that occurred. The safe behaviours identified were placed on observational checklists, and a number of trained observers subsequently monitored the actions of personnel relative to the checklist. The observations were translated into safety percentage scores, to provide feedback to those monitored. These types of behavioural measures can also be developed for self-monitoring purposes for different layers of management, thereby enabling the monitoring of managerial safety behaviours, while other behavioural measures could also encompass leadership behaviours. The same view was supported by Thomas et al. (2005) in their study concerning the importance of leaders' walk-arounds to improve safety culture. Similarly, composite outcome measures, such as number of corrective actions completed, risk assessments and/or the number of reported near-misses, number of people receiving safety training, the number of weekly inspections completed, and the number of safety audits conducted, might also provide alternative behavioural measures.

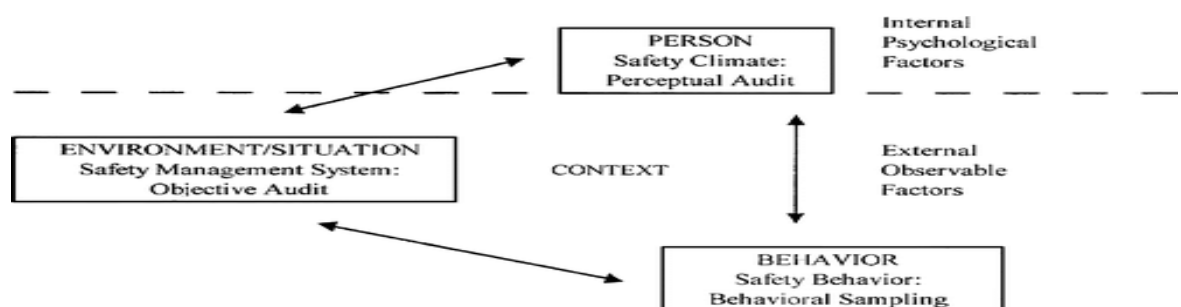
### **2.6.6 Situational factors**

The situational factors of a safety culture can be observed in the structure of an organisation's policies, operating procedures, management systems, control systems, communication flows, and workflow (Najjar et al., 2013). Such factors are also revealed by the immediate working environment, such as noise, heat, light, and physical proximity (Cooper and Finley, 2013). Audits of safety management systems make it possible to measure a wide range of safety-related factors (Cooper, 2009).

As discussed in the following sections, a general review of the health and safety literature engendered identification of three techniques for measuring safety culture: direct observation, paper audit, and surveys.

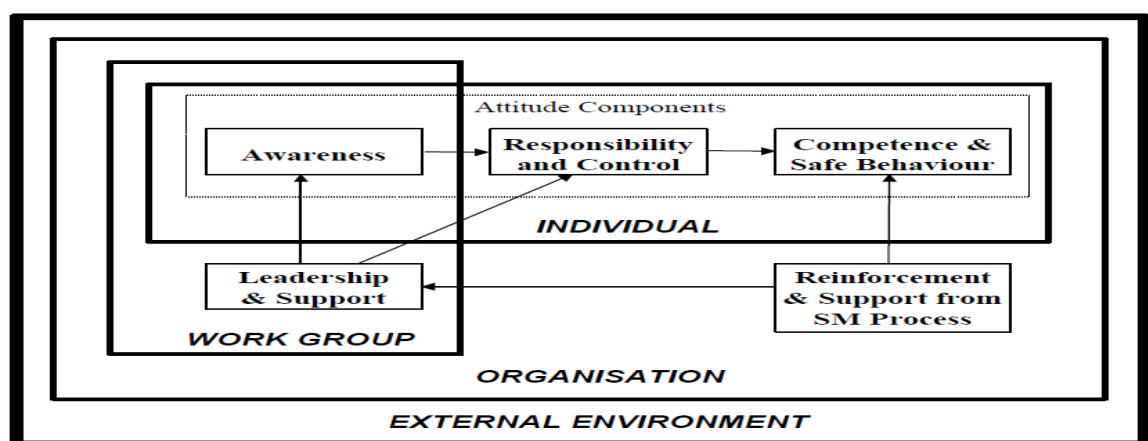
### 2.6.7 Observation

Behaviour is one of the three major dimensions of Cooper's Reciprocal Safety Culture Model (Figure 2.10), which are measured by means of observation (Cooper, 2000). A number of organisations have introduced methods of Behaviour-Based Safety (BBS) to reduce the frequency of work-related incidents and accidents. Behavioural methods do not focus on individual accidents, but rather on the behaviours leading to such accidents. This is because accidents are relatively infrequent, and difficult to investigate in an objective manner, while attitudes are viewed as more difficult to change. Zohar (1980) believed that it was unnecessary to measure behaviours; assuming that attitudes measured by means of a survey are enacted as behaviour. Cox and Cheyne (2000) incorporated behavioural indicators in their 'Safety Assessment Toolkit', along with interviews with employees, and assessments of attitudes. Cox and Cheyne (2000) suggested that one way of identifying the number and nature of minor accidents and near mishaps consists of direct observation of employees, engendering the production of a behavioural checklist enumerating behaviours associated with the prevention of incidents and accidents. For example, wearing eye protection when working with chemicals. Behavioural indicators create a global picture of the prevailing safety climate within an organisation (Cox and Cheyne, 2000). However, it remains difficult to establish an empirical association between safety climate dimensions, and measures of safety behaviour (Glendon and Stanton, 2000).



**Figure 2.10** Cooper's Reciprocal Safety Culture Model  
**Reference:** Cooper (2000).

The UK Health and Safety Executive Safety Climate Measurement User Guide and Tool, cited in Cox and Cheyne (2000), noted that observations are either direct or indirect. Indirect observations involve collecting data by means of reports and organisational records, while direct observations are guided by the use of checklists tailored to the operation in question (Figure 2.11). Cooper et al. (1994), and Cooper (2000) noted that, in addition to behavioural factors, a safety culture can be examined by means of observation, self-reporting, and/or outcome measures. Situational aspects of safety culture can be seen in the structure of an organisation, and include policies, working procedures, and management systems, while behavioural components can be measured through self-reporting measures, outcome measures, and observations. The psychological component, however, is most commonly examined using safety climate questionnaires for self-reporting; these are devised to measure people's normal behaviours, values, attitudes, and perceptions of safety.



**Figure 2.11** A Systems Model of Safety Culture

**Reference:** Cooper (2000).

### 2.6.8 Audits

Audits are beneficial when measuring whether an organisation's policies and procedures are being followed, and how they might be improved. Moreover, audit tools provide feedback to an organisation, enabling it to maintain, reinforce, and develop its ability to manage and reduce risks. The auditing process includes the collection of information concerning health and safety management systems, and judging whether these are adequate. Qualitative approaches might also be

employed to identify those areas of the safety management system that influence level of risk. For example, analysis frameworks assessing the safety culture of an organisation are conducted by measuring the presence of safety performance indicators (Kirwan et al., 2013).

Many organisations possess safety systems that include self-auditing, or peer review audits, such as The Health and Safety Executive's Guide (2013), which assesses health and safety-related matters. Safety management is also considered a key element of the audit process, in terms of policy, organisation, planning and implementation, measuring, auditing, and review (POPMAR). Items from an audit are scored, and tend to be weighted to provide an assessment of risk (Kirwan et al., 2013). Fuller (1999) used the POPMAR criteria to audit a UK water utility, establishing that the employees generally found the approach a realistic measure of the organisation's health and safety operations. Glendone and McKenna (1995) stated that the safety culture of an organisation can influence the effectiveness of a safety audit in a number of ways, including the willingness of management to undertake a safety audit, and the provision of adequate resources for the auditing process, such as auditor training and time management. In addition, this might involve the inclusion of both employee representatives and line managers in the audit, and the actions resulting from the audit's findings, together with the organisation's commitment to auditing over the long term.

One of the most popular methods for obtaining an initial picture of a safety culture consists of employing a survey questionnaire, the aim of which is to understand the resulting statements of beliefs, assumptions, and values. Zohar (1980) was the first to measure the safety climate in 400 subjects from four different types of organisation. Zohar (1980) developed an eight-dimensional model, which included the importance of safety training, and management attitudes towards safety, together with the effects of safe conduct on promotion, and the level of risk in the workplace, the impact of the required pace of work on safety, the status of the safety officers, and the impact of safe conduct on social status, and the status of the safety committee.

The questionnaire comprised 40 items intended to measure the organisational safety climate, and was distributed to workers across a stratified sample of 20

factories. The questionnaire measured the workers' perceptions, attitudes, and values rather than the accident and incident frequency rates. Zohar (1980) established that the most influential factor concerning the success of safety programmes is management commitment to safety, and he recommended a genuine change in management attitude to increase commitment as a pre-requisite for any successful attempt at improving the levels of safety in industrial organisations.

A number of further studies were conducted following initial work by Zohar (1980). Brown and Holmes (1986) employed an identical questionnaire with a sample of American production workers, establishing only three safety climate factors: management concern, activity, and risk perception, while Dedobbeleer and Beland (1991) attempted to validate these three factors in the context of American construction workers, but found two factors associated with management commitment and worker involvement were more appropriate. Coyle et al. (1995) administered Zohar's (1980) safety climate questionnaire with two different Australian clerical and service organisations, with a sample of total (n=880) people, (n=340, 38.6%) clerical, and (n=540, 61.4%) service. They found their survey evaluating the measurement of a safety climate was not stable across the two organisations. They therefore developed a survey questionnaire of between 30 and 32 items, based on a seven-dimensional model, including maintenance and management, company policy, accountability, attitudes towards training and management, the working environment, policy/procedures, and personal authority. During their measurement of the safety climate, they identified a lack of stability across the two organisations, arguing that modifying the attitudes of management and the workforce toward health and safety should improve the organisation's safety climate, and ultimately its safety record. Varonen and Mattila (2000) employed the safety climate variable structures used by Coyle et al. (1995) and Zohar (1980) to establish a relatively stable climate among the Finnish workers in one organisation. They reduced Zohar's dimensions to the two factors of management attitudes and actions, together with the perceived levels of risk, the pace of work, the status of the safety advisor and committee, the importance of safety training, and the effects of safe conduct on



promotion. Subsequent studies have attempted, with limited success, to replicate Zohar's structure, generally reducing it to two or three factors.

## **2.7 Summary of the literature and perceived gap in research**

The extant literature has highlighted a number of areas relating to patient safety, yet it has not identified nurse's perceptions of patient safety by describing the factors related to the organisational working environment, or the culture of healthcare organisations. Thus, there remains a limited understanding of the interplay of patient safety components, and the perceptions of nurses, as earlier studies have not considered how personal perspectives affect results. As care providers, nurses' perceptions of patient safety are important, since they can help uncover the motivations behind their opinions and their behaviours regarding patient safety, thus providing a greater insight into methods for enhancing patient safety, and increasing the integration of patient safety improvement strategies. While previous research has discussed the perceptions of nurses, and their likelihood of engaging in actions positively associated with patient safety, it has not explored the narratives of nurses via qualitative inquiry. It is worthwhile to investigate the perceptions of nurses, to understand their views of patient safety and patient safety culture, along with identifying the contributing factors, to ensure safe clinical skills in a simulated environment (Ker, 2011; Stirling et al., 2012). It is important to assess the perceptions of patient safety culture in health organisations, since this will be of value to patients' healthcare professionals, managers, and healthcare policymakers, providing them with a clearer picture of the situation to engender improvements.

There is currently an important gap existing in research into this area, which limits the ability for researchers and practitioners to implement best practice. As such, this current research study will close the loop between healthcare organisations, and among nurses, in understanding perceptions of patient safety and factors influencing their involvement in patient safety practices.

A culture of patient safety has yet to be established and developed in Omani healthcare organisations. Hence, hospitals in Oman are currently responding to the increased demand to reduce healthcare errors, and to improve other aspects of patient safety by actively seeking to improve their quality of care. In addition, initiatives are required to improve safety culture; this will include viewing errors as an opportunity to learn, and as important for constructing a positive patient safety culture. However, there is currently a lack of knowledge about patient safety culture, and no previous studies have examined this aspect in Omani hospitals. This study, therefore, explores nurses' perceptions of the patient safety culture, and identifies the factors to be addressed to develop and maintain that safety culture in one hospital in Oman. The main research aim for this PhD thesis is 'to identify and explore nurses' perceptions of patient safety culture in Oman. To discover this, the following questions will be answered:

1. What understandings do nurses have of patient safety?
2. What factors that influence nurses' perceptions of patient safety?
3. What are nurses' attitudes and behaviours towards patient safety?
4. What understandings do nurses have of patient safety within the context of hospital?

The next chapter details the literature pertaining to methods underpinning this PhD thesis.

## **3. Chapter Three: Literature Pertaining to Methods**

### **3.1 Introduction**

The previous two chapters introduced the background, context and literature to support the development of this PhD thesis. This chapter provides details about the methods underpinning the research and analysis processes. Critical Realism (CR) is introduced first, as the philosophical assumption informing the selection of a mixed methods approach to the data collection.

### **3.2 Research Paradigms**

The design of a research study begins with the selection of a topic and a paradigm. A paradigm is essentially a worldview, providing a general perspective on the complexities of the world (Polit and Beck, 2014). It also serves as a framework of beliefs, values and methods within which the act of research takes place. The two main methodologies of research employed by researchers are quantitative and qualitative. Quantitative research aligns with the positivist paradigm, whereas qualitative studies observe a naturalistic paradigm (Polit and Beck, 2014). Although somewhat simplistic, it is often assumed that quantitative approaches draw on positivist ontologies, whereas qualitative approaches are more frequently associated with interpretive and critical paradigms. Hence, positivist and post-positivist research is most commonly aligned with quantitative methods of data collection and analysis. An emerging third paradigm is the post-positivist critical realist paradigm, wherein the researcher recognises that all observations are fallible and subject to error, and thus all theory is revisable (Parahoo, 2014). Critical realism does not assume reality to be a single, observable, measurable, determinable layer whose actions and events are independent of the mind; and so it emphasises attaining understanding by exploring experiences and perspectives. In other words, the critical realist combines two perspectives, positivism and naturalism. Critical realists can appreciate the value of identifying features of reality that are quantifiable, without simultaneously asserting that the only characteristics of the world that can be known are those that can be reduced to a quantity. Similarly, critical realism allows for qualitative exploration of aspects

of reality, without claiming that knowledge revolves only around the identification of such concepts (Schiller, 2016).

### **3.2.1 Positivist Paradigm**

In the positivist research paradigm, the researcher is concerned with gaining knowledge in a world which is objective, using scientific modes of enquiry (Bryman, 2016). Positivism reflects a broader cultural phenomenon that is referred to as modernism, and which emphasises rational and scientific thought or discovery (Polit and Beck, 2014). A fundamental assumption of positivism is that an objective reality exists independent of human observation (Polit and Beck, 2014). Hence, the features of positivism include viewing research as a series of logical steps, using rigorous and multiple methods of data collection and analysis, and relying purely on facts that can be deemed external and objective (Collins, 2010). Within the positivist paradigm, research studies are directed at understanding the underlying cause of a phenomenon (Polit and Beck, 2014).

Positivists value objectivity and attempt to hold personal beliefs and biases in check to avoid contaminating the phenomena under study (Polit and Beck, 2014). Crowther and Lancaster (2008) state that as a general rule, positivist studies usually adopt a deductive approach, employing quantitative research methods. Moreover, positivism espouses the view that the researcher needs to concentrate on facts. Studies with a positivist paradigm are typically based purely on facts and consider the world to be external and objective (Collins, 2010).

The positivist scientific method uses disciplined procedures to acquire information (Denzin and Lincoln, 2011). Quantitative researchers use an objective, deductive reasoning approach to generate predictions that can be tested in the real world (Polit and Beck, 2014). By doing this, the researcher seeks a solution to problems systematically by applying a series of steps, according to a specific plan of action (Polit and Beck, 2014). Quantitative researchers use various control strategies that involve imposing conditions on the research situation to minimise bias and therefore maximise precision and validity (Polit and Beck, 2014). In addition,

quantitative researchers gather empirical evidence that is rooted in objective reality, and gather results that are grounded in reality rather than in the researchers' personal beliefs (Polit and Beck, 2014).

Methods associated with this paradigm include experiments and surveys where quantitative data is the norm (Collins, 2010). In quantitative research, the investigator relies on numerical data (Collins, 2010). A quantitative approach is often concerned with searching for evidence to either support or contradict an idea or hypothesis. Hypotheses are formulated to predict answers to research questions. The researcher uses positivist claims for developing knowledge, such as cause and effect thinking, the reduction of specific variables, use of measurement and observation to test theories. The researcher typically isolates variables and relates them causally to determine the magnitude and frequency of relationships (Ary et al., 2013). In addition, a researcher determines which variables to investigate and chooses instruments expected to yield highly reliable and valid results.

Quantitative results are likely to be generalisable to an entire population or sub-population because of the nature of sampling: if the sample was powered to detect a significant difference in parameters. Hence, generalisability, refers to research results that can be generalised to individuals' other than those who participated directly in the study (Polit and Beck, 2014). When sampling, data analysis can be facilitated by using statistical software packages (Ary et al., 2013). However, the positivist research paradigm does not offer or critique the common meanings of social phenomenon (Denzin and Lincoln, 2011). It also fails to ascertain deeper underlying meanings and explanations. In addition, quantitative research cannot account for how social reality is shaped and maintained, or how people interpret their actions and those of others (Blaikie, 2011). A further weakness of the quantitative research approach is that if it is cross sectional, it takes a snapshot of a phenomenon whereby it measures variables at a specific moment in time with no follow up (Hulley et al., 2007). Quantitative research can involve longitudinal, randomised controlled trials; for example, drug trials that can take a long time to study the impact of an intervention on the variables

measured. Hence, the quantitative research paradigm overlooks respondents' experiences and perspectives in highly controlled settings (Ary et al., 2013).

### **3.2.2 Naturalistic Paradigm**

Naturalistic approaches are heavily focused on understanding human experiences as they are lived. Researchers applying naturalism do so by exploring narratives and subjective reports, utilising inductive research approaches common to qualitative research (Polit and Beck, 2014). The methods employed ensure an adequate dialogue between the researchers and those with whom they are interacting, to collaboratively construct a meaningful reality, allowing meanings to emerge from the research process. Naturalistic researchers use descriptive, subjective, inductive approaches to problem solving and to studying social phenomena (Polit and Beck, 2014). Naturalistic researchers avoid the rigid structural frameworks preferred in positivist research. Naturalism demands more personal and flexible research structures that readily capture the meanings that underlie human interactions and decode what is perceived as reality (Parahoo, 2014).

Naturalistic research stresses understanding by looking closely at people's words and actions. The naturalism paradigm concentrates on uncovering the patterns of meaning which emerge from data, which is often presented in the participants' own words. The task of the naturalistic researcher is to identify patterns within those words and actions and present them for others to inspect while also portraying as closely as possible the world as the participants originally experienced it (Parahoo, 2014).

Naturalism requires an inquiry process to attain understanding, and through this process the researcher develops a complex, holistic picture, analyses words, reports detailed views from informants, and conducts the study in a natural setting (Polit and Beck, 2014). When applying this approach, the researcher makes knowledge claims based on constructivism or advocacy and participatory perspectives (Polit and Beck, 2014). When conducting qualitative research, data

is collected from those immersed in the everyday life of the setting in which the study is framed. Data analysis is based on the values that the participants hold concerning their world. Ultimately, Johnson and Gray (2010) stated that through data analysis, and several related factors, a problem can be understood.

There are many benefits to using qualitative research approaches and methods. First, naturalistic research produces a thick detailed description of participants' feelings, opinions, and experiences; and interprets the meaning behind their actions. Second, there are some who argue that the naturalism research approach holistically understands the human experience in specific settings. Third, the naturalism research approach is regarded as ideographic research, the study of individual cases or events (Richardson, 2012) and has the ability to understand different people's voices and meanings. Thus, the source of knowledge in this approach is the meaning of different events (Richardson, 2012). Fourth, naturalistic research encourages researchers to discover their participants' inner experiences, to reveal how meanings are shaped relative to a specific cultural context (Corbin and Strauss, 2008). Fifth, naturalistic research design has a flexible structure, which can be constructed and reconstructed to a great extent (Maxwell, 2012). Finally, qualitative research utilises various data collection methods for example, participant-observation, unstructured interviews, and direct observation (Cohen et al., 2011). During data collection, researchers interact with participants directly, such as happens when collecting data in interviews. Consequently, data collection is subjective and detailed. Thus, a thorough and appropriate analyses of an issue can be produced utilising qualitative research methods, which allow participants sufficient freedom to determine what is consistently arising for them (Flick, 2011). As a result, complex issues can be explored, analysed and understood relatively easily.

However, there are disadvantages to qualitative research. Silverman (2013) argues that approaches to qualitative research sometimes omit contextual sensitivities, and focus more on meanings and experiences. In addition, policy-makers may attribute low credibility to results from the qualitative approach (Flick, 2011). The smaller sample size required raises the issue of transferability to the whole research population (Harry and Lipsky, 2014; Thomson, 2011). In addition, data

interpretation and analysis might be more difficult and complex, and the data analyses may take a considerable amount of time, and results can only be transferable to the larger population in a very limited way (Flick, 2011).

In real world research, neither approach is appropriate in isolation; therefore, in modern thinking, combining both positivist and naturalist approaches creates a deeper insight and understanding of the phenomenon under study. Hence, critical realism has emerged to address both the positive and negative aspects of the positivist and naturalist paradigms.

### **3.2.3 Critical Realism Paradigm**

Critical realism is increasingly being highlighted as a viable option underpinning meaningful research, particularly research related to the social and practice-based sciences such as nursing (Schiller, 2016). Critical realism is also increasingly being recognised as a philosophical paradigm for grounding mixed methods approaches to research (Schiller, 2016 and Walsh and Evans, 2014); as its stratified ontology suggests changes occurring at the empirical level can be sought from many different sources (Schiller, 2016 and Walsh and Evans, 2014). Critical Realism supports the inclusion of both quantitative and qualitative research methods within a single study. In mixed methods studies the nature of the research question determines the inclusion of these methods and the design of the study, rather than the philosophical paradigm underlying either method (Tashakkori and Teddlie, 2010). Mixed methods research combines research approaches, and is described as the third methodological paradigm (Creswell and Clark, 2011; Tashakkori and Teddlie, 2010). The basic premise of this methodology is that such integration permits a more complete and synergistic utilisation of data than performing quantitative and qualitative data collection and analysis separately.

Critical realism is a middle ground philosophy aimed at resolving a research problem. The context of a research study is not necessarily to explore research phenomena using only quantitative or qualitative methodologies. Hence, the problem area identified and developed does not necessarily assume that answers



can be found from a single methodology or a single philosophical perspective, such as absolutism or relativism (Schiller, 2016 and Walsh and Evans, 2014). The researcher then operates on the premise that answers can be found via an integrated approach involving both quantitative and qualitative approaches. This means, with critical realism addressing events at the ontological level, a study can extend beyond the research question, locating answers to the research problem relative to a research project. Critical realism has been used in nursing to explore their perception (Schiller, 2016 and Walsh and Evans, 2014). In this thesis an in-depth exploration of nurses' perceptions of patient safety culture in Oman is investigated within the reality of their health care organisation that reflects the nurses' experiences. The assumption proposed here is that the problem area identified can result in the development of philosophical assumptions about reality, which then lead to the development of research questions sequentially, and ultimately the selection of a methodology and research approaches (Schiller, 2016 and Walsh and Evans, 2014).

Critical realism is a middle ground philosophy for reviewing a research problem. Post-positivism focusses overly on quantitative information at the methodological level, whilst pragmatism focusses on changes made at the practical level. Critical realism, however, suggests both quantitative and qualitative approaches are important when completing a single research project, in order to fully explore and understand the structures and mechanisms that can be observed and experienced.

### **3.3 Mixed Methods Research Design**

The strategy of combining quantitative and qualitative methods within a single study is an approach that has been evaluated by a number of writers (Creswell and Clark, 2007; Morse, 2010; Tashakkori and Teddlie, 2010). These evaluations arose from a lack of common definitions in mixed methods research. They also result from the foundation and structure of mixed methods study designs. Tashakkori and Teddlie (2010) stated that mixed methods research provides clearer inferences and minimises method bias.

Furthermore, the advocates of mixed methods research support its role as a new research paradigm (Creswell and Clark, 2007; Tashakkori and Teddlie, 2010), basing their claims on the long documented history of the successful blending of mixed methods research (Tashakkori and Teddlie, 2010). There is recognition from mixed methods researchers that confusion often proceeds from the interpretation of what constitutes a mixed methods design, as terms such as multi-methods, mixed approach and mixed methods research are often disordered (Creswell and Clark, 2007; Tashakkori and Teddlie, 2010). These authors suggest ways to address the critique raised above, including the suggestion that mixed methods research studies employ a similar terminology and identifiable designs. There are different types of mixed methods research designs, which can be identified according to particular procedures and the sequence of data collection and analysis used.

Applying a mixed methods approach reflects on participants' point of view, by giving voice to the study participants. This ensures that study findings are grounded in participants' experiences. The use of a mixed methods approach also fosters researcher interaction. In this situation, mixed methods studies add breadth to multidisciplinary team research, by encouraging interactions between quantitative, qualitative, and mixed methods scholars (Creswell and Clark, 2011). In addition, mixed methods studies provide a flexibility that can be adapted to suit many study designs, including observational studies and randomised trials. This flexibility clarifies that additional information can be obtained in quantitative research. Mixed methods studies collect rich, comprehensive data, reflecting on the way individuals naturally collect information through the integration of quantitative and qualitative data.

However, Creswell and Clark, (2011) highlighted that mixed methods studies are challenging to implement, especially when the design is used to evaluate complex interventions. Mixed methods studies are complex to plan and conduct especially when complex evaluations are being conducted. Mixed methods studies rely on a multidisciplinary team of researchers. Therefore, conducting high-quality mixed methods studies requires a multidisciplinary team (Wisdom et al., 2011). Finally, mixed methods studies require more resources and time would be required to conduct a single method study. The Medical Research Council (MRC) (2006) offers

guidance on how to evaluate complex interventions that support the value of well-designed mixed methods studies (MRC, 2006; Craig et al., 2008).

Researchers designing mixed methods studies can choose from four major types of mixed methods designs: Triangulation, Embedded, Explanatory, or Exploratory. Mixed methods researchers can then choose a design based on what best addresses the research problem and the advantages inherent to each design (Creswell, 2014; Table 3.1).

**Table 3.1** Mixed Methods Type

Design Type	Variants	Timing	Weighting	Mixing
<b>Triangulation</b>	<ul style="list-style-type: none"> <li>• Convergence</li> <li>• Data transformation</li> <li>• Validating quantitative data</li> <li>• Multilevel</li> </ul>	Concurrent: quantitative and qualitative at the same time	Equal	Merge the data during the interpretation of analysis
<b>Embedded</b>	<ul style="list-style-type: none"> <li>• Embedded experimental</li> <li>• Embedded correlational</li> </ul>	Concurrent or sequential	Unequal	Embed one type of data within a larger design using the other type of data
<b>Explanatory</b>	<ul style="list-style-type: none"> <li>• Follow-up explanations</li> <li>• Participant selection</li> </ul>	Sequential: Quantitative followed by qualitative	Quantitative	Connect the data between the two phases
<b>Exploratory</b>	<ul style="list-style-type: none"> <li>• Instrument development</li> <li>• Taxonomy development</li> </ul>	Sequential: Qualitative followed by quantitative	Qualitative	Connect the data between the two phases

**Reference:** Creswell and Clark (2007).

The **Triangulation Design** is a one-phase design in which researchers implement quantitative and qualitative methods over the same timeframe, according both data sets equal weight. The single-phase timing of this design is the reason it has also been referred to as concurrent triangulation design (Creswell and Clark, 2011). It generally involves concurrent, but separate, collection and analysis of quantitative and qualitative data, so that a researcher can successfully understand a research problem. The researcher attempts to merge the two data sets, typically by bringing separate results together for interpretation, or by transforming data

to facilitate the integration of two types of data during analysis. There are four variants of the Triangulation Design: the convergence model, the data transformation model, the validating quantitative data model, and the multilevel model. The first two models differ in terms of how the researcher attempts to merge the two data types; either during interpretation or during analysis, the third model is used to enhance findings from a survey, and the fourth is used to investigate different levels of analysis (Creswell, 2014).

Triangulation refers to the use of multiple methods or data sources in qualitative and quantitative studies, to develop a comprehensive understanding of phenomena (Patton, 2014). Triangulation has also been viewed as a qualitative research strategy to test validity by correlating information from different sources (Carter et al., 2014). According to Polit and Beck (2014) one of the advantages of triangulated study designs is that they are efficient, because both types of data are collected simultaneously. However, a major drawback is that such designs typically accord equal weighting to qualitative and quantitative data, which can be a challenge for a researcher working alone. Another difficulty arises if the data from the two strands proves incongruent (Creswell, 2014); however, if this occurs, it usually demonstrates there are more complexities involved in understanding the phenomena being researched.

**The Embedded Design** is mixed methods design in which one data set provides a supportive, secondary role in a study, which is based primarily on the other data type (Creswell, 2014). Within this design, quantitative or qualitative data collection takes place according to a quantitative or qualitative procedure. The premises of this design are that a single data set offers insufficient evidence, that different questions need to be answered, and that each type of question requires different types of data. Researchers employ this design when they need to include qualitative or quantitative data to answer a research question within a largely quantitative or qualitative study. For example, within a randomised controlled trial, qualitative data collection and analysis can be added. Within this type of study, the researcher collects and analyses both quantitative and qualitative data. The qualitative data can be incorporated into the study at the outset, for example, to help design an intervention; during an intervention, for example, to explore

how participants experience the intervention; and after the intervention, for example, to help explain the results (Palinkas et al., 2011).

In addition, Creswell and Clark (2007) featured two models within this design. The first is used in intervention-based research and the second is the correlational model. According to Polit and Beck (2014) embedded designs, specifically the correlational model, provide a practical approach to conducting mixed methods research, mainly when resources are limited. Creswell and Clark (2007) noted that such a design is appealing more to graduate students, because focused effort is needed primarily for one strand only.

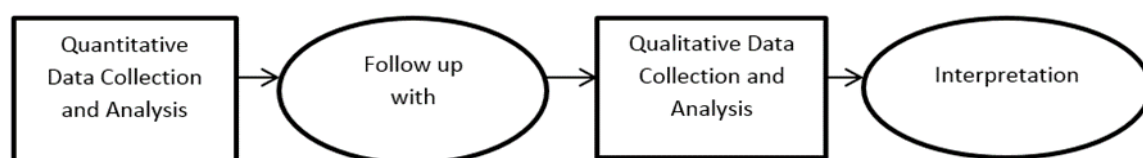
**The Explanatory Sequential Design** typically involves two phases: first an initial quantitative phase, followed by a qualitative data collection phase, in which the qualitative phase builds directly on the results from the quantitative phase (Figure 3.1). In this way, the quantitative results are explained in more detail through the qualitative data. For example, findings from a research instrument can be explored further with qualitative focus groups, to better understand how the personal experiences of individuals match up to the results. This kind of study illustrates the use of mixed methods to explain qualitatively how quantitative mechanisms might work (Creswell, 2014).

The mixed methods explanatory sequential design is very popular among researchers and implies collecting and analysing first quantitative and then qualitative data in two consecutive phases within a single study. Its characteristics are well described in the literature (Creswell, Clark, 2011; Creswell, 2014), and the design has been applied in both social and behavioural sciences research (Tashakkori and Teddlie, 2010). Despite its popularity and straightforwardness, a mixed methods design is not easy to implement. Researchers who choose to conduct a mixed methods explanatory sequential study have to consider certain methodological issues. These issues include the priority or weight given to the quantitative and qualitative data collection and analysis in the study, the sequence of the data collection and analysis, and the stages of the research process at which the quantitative and qualitative phases are connected, and the results are integrated (Morgan, 2013).

An explanatory sequential mixed methods design is used to address the current research problem (Ivankova et al., 2006). It comprises two interactive phases: the first involves the collection and analysis of the quantitative data; the second is the collection of the qualitative data, which is informed by specific findings from the first phase (Creswell and Clark, 2011).

The rationale for using an explanatory sequential mixed methods design is that quantitative data and analysis of the first phase might not always be sufficient to provide a complete understanding of the research problem. It provides a general understanding of nurses' perceptions concerning patient safety, but the collection and analysis of qualitative data is needed to refine and explain the quantitative results in depth. Ivankova et al. (2006) explained the rationale behind this approach as that quantitative data and its subsequent analysis provides a general understanding of a research problem. Qualitative data and its analysis refines and explains statistical results by exploring participants' views in more depth. The combination of quantitative and qualitative methods enables researchers to produce a more comprehensive analysis, and broaden their understanding of the research topic (Ivankova et al., 2006). Moreover, it provides researchers with the flexibility to use all available data collection methods, rather than being restricted to one type (Creswell and Clark, 2011).

An explanatory mixed methods study can be used in two ways; either to follow-up and explain significant quantitative findings, or, to utilise quantitative data to select participants for the qualitative phase (Creswell, 2014). The follow-up explanatory sequential design places emphasis on expanding on results obtained in the quantitative phase by adding thick qualitative data.



**Figure 3.1** Explanatory Sequential Mixed Method Study  
Reference: Creswell (2014).

The purpose of an explanatory sequential design is to use qualitative results to assist in explaining and interpreting the findings of a primarily quantitative study. In addition, it is easy to implement, describe and report. However, a weakness is

the length of time required for the data collection, which is lengthened by the two separate phases (Creswell, 2014; Figure 3.1).

**The Exploratory Sequential Design** involves first collecting qualitative exploratory data, analysing that information, and then using the findings to develop a psychometric instrument that is well adapted to the sample being studied. This instrument is then, in turn, administered to a proportion of the sampled population (Creswell, 2014) to produce quantitative data. According to Polit and Beck (2014), the advantages and disadvantages of the explanatory sequential design can also apply to exploratory sequential designs. However, although a separate design makes any inquiry easy to explain, implement and report; it can be time consuming. In addition, because the second phase typically depends on what transpires in the first phase, it can be difficult to acquire upfront approval from ethics review committees (Polit and Beck, 2014). However, researchers are routinely encouraged to acquire ethical approval for a full study and not for the individual components.

In summary, in mixed methods designs, the integration of quantitative and qualitative data has great potential to strengthen the rigour and enrich the analysis and findings of the evaluated research. It has been argued that mixed methods research can be useful in the contexts of nursing and health sciences, because of the complexity of the phenomena studied. However, the integration of qualitative and quantitative approaches is widely debated, and there is a need for a rigorous framework when designing and interpreting mixed methods research (Östlund et al., 2010).

Mixed methods research requires that the process of data collection and the criteria for data analysis be clearly identified at the design stage (Creswell, 2012). The design phase requires consideration of three components: (1) implementation; (2) priority and theoretical perspective; and (3) integration (Creswell, 2014).

- 1) **Implementation:** The implementation component requires quantitative or qualitative data that is collected sequentially (Creswell, 2012). Sequential

collection is used only when one set of data is a prerequisite to determining what data should be collected subsequently (Figure 3.1).

- 2) **Priority and Theoretical Perspectives:** The priority component relates to the relative weighting or emphasis on either the quantitative or qualitative constituent when answering the research question (Creswell and Clark, 2007). This weighting can be either equal or biased towards one approach. Weighting is also dependent on a study's theoretical perspective (Creswell, 2012; Morse, 2010). Where the theoretical perspective is critical realism, the data priority can be either equal or unequal in a research study (Morse, 2010).
- 3) **Integration:** The integration or combining of data might occur during data collection, during data analysis, at the interpretation stage, or at any of a combination of these stages (Creswell, 2014). When data is integrated at analysis for interpretation, stronger inferences about that data are drawn to better capture and understand divergent views (Tashakkori and Teddlie, 2003).

Hence, the mixed methods explanatory sequential design was considered in the context of this study to draw a base line of the safety culture in the first phase followed by the exploration in the second phase. This approach however, is considered best to answer the research question compare to other approaches that may not fully answer the research question being asked.

### 3.4 Survey

Survey research is one of the most important areas in applied social research. Survey research broadly encompasses any measurement procedures that involve asking respondents questions. A survey is defined as the evaluation of experiences or opinions of a group of people via questions as opposed to a questionnaire which is defined as a collection of written or printed questions with an answer choice made to conduct a survey (Morgan, 2013). However, a questionnaire is a set of questions typically used for research purposes which can be both qualitative as well as quantitative in nature. Hence, a questionnaire may or may not be delivered



in the form of a survey, but a survey always consists of questionnaire (Creswell and Clark, 2011). In addition, a survey is a quantitative research method comprised of a questionnaire with the intention of efficient gathering of data from a set of respondents. A survey mainly consists of closed ended questions with very few open-ended questions for free form answers (Polit and Beck, 2014). Quantitative data is most often characterised by the collection of close-ended information, as exemplified by attitude, behaviour, and performance instruments (Creswell and Clark, 2011). Surveys elicit close-ended information through the selection of predetermined responses whereby participants choose from a range of answers that best match their responses to a question. Surveys, therefore, are better able to obtain scaled responses from participants than focus groups, and typically cover a greater number of topics (Morgan, 2013). For this reason, surveys tend to provide more breadth of information on the topic at the expense of the depth that can be achieved through qualitative data collection. Nonetheless, surveys allow for the collection of quantitative data from large population samples, and for the transformation of data through statistical analysis. By doing so, hypotheses can be tested, and generalisations made about target populations. Surveys can also include open-ended questions whereby respondents are encouraged to add their own comments. However, open-ended questions are used less frequently and have been shown to reduce the reliability of a study (Morgan, 2013). Consequently, some researchers have begun combining surveys with other qualitative methods to explore data in depth when using purely quantitative methods.

Moreover, the use of web-based survey questionnaires is an economical approach and can yield a dataset that is readily amenable to analysis, without requiring someone to enter data onto a file. Internet surveys also provide opportunities to offer participants customised feedback and prompts to minimise responses (Polit and Beck, 2014).

### **3.5 Data Collection**

Data collection is a process of collecting information from all the relevant sources to answer a research problem, test a hypothesis, and evaluate outcomes (Polit

and Beck, 2014). However, data collection methods can be divided into two categories: secondary methods of data collection and primary methods of data collection. Depending on the nature of the information to be gathered, different methods are implemented to collect data and answer the research questions (Bryman, 2012). Secondary data is a type of data that has already been published in books, newspapers, magazines, journals, and online portals. As discussed above, primary data collection methods can be divided according to methodology, and so are either quantitative or qualitative.

Quantitative data collection methods rely on various tools, such as questionnaires, measurements and other equipment to collect numerical or measurable data (Bryman, 2012). Quantitative data collection methods are based on mathematical calculations in various formats. Methods of quantitative data collection and analysis include questionnaires with closed-ended questions, methods of correlation and regression, mean, mode, and median among others. In quantitative research, quantitative data collection methods rely on random sampling and structured data collection instruments to code diverse experiences into predetermined response categories. Quantitative data collection methods produce results that are easy to summarise, compare, and generalise. Quantitative research focuses on testing hypotheses derived from theory, and/or being able to estimate the size of a phenomenon of interest. Depending on the research question, participants may be randomly assigned to different treatments. If this is not feasible, the researcher may collect data about participants and situational characteristics, in order to statistically control for their influence on the dependent, or outcome, variable. If the intention is to generalise from the research participants to a larger population, the researcher will employ probability sampling to select the participants (Brace, 2013 and Bryman, 2012).

On the other hand, qualitative studies aim to ensure a greater level of depth of understanding and qualitative data collection methods include interviews, questionnaires with open-ended questions, focus groups, observation, game or role-playing, and case studies. There are a variety of methods of data collection in qualitative research, including observations, textual or visual analysis, such as books and videos, and interviews either individual or group, and other elements that are non-quantifiable. The most common methods used, particularly in

healthcare research, are individual in-depth interviews, structured and non-structured interviews, focus groups, narratives, content or documentary analysis, participant observation and archival research (Silverman, 2011). Furthermore, qualitative methods can be used to improve the quality of survey-based quantitative evaluations by helping to generate evaluative hypotheses; strengthening the design of survey questionnaires and expanding on or clarifying quantitative evaluative findings (Silverman, 2011).

### **3.5.1 Questionnaires**

A questionnaire is essentially a structured technique for collecting primary data. It comprises a series of written questions, for which respondents have to provide answers (Brace, 2013 and Oppenheim, 2001). In addition, a questionnaire involves the systematic collection of information from different individuals and is used for scientific purposes to provide information to address the research question. However, success is dependent upon how the population is represented by the respondents; costs, coverage, flexibility, willingness to participate, and the accuracy of the responses can influence how a survey is conducted (Fowler, 1995 and Colla et al., 2005). Hence, a questionnaire can serve as an inductive method, with the aim of formulating new theory, whereas open-ended questions are used to 'explore a substantive area' (Brace, 2013 and Oppenheim, 2001).

Questionnaires rank amongst the most popular tools for data collection (Bryman, 2012), and a questionnaire is a research tool that uses questions to gather information from multiple respondents (Dillman, 2007). Bryman (2012) defines the questionnaire as a research instrument completed by study participants and used to collect data to identify knowledge and behaviour in participants.

When constructing questionnaires some guidelines can be followed. The first is to formulate statements that can be interpreted in different ways by different people offering different answers. The second is to use positive statements only and provide an open answer category after each possible answer. The third is to never make any assumptions about the respondent and avoid multiple choice questions (Bryman, 2012). Designing and compiling a questionnaire that produces

reliable and valid data is not an easy process (Brace, 2013; Oppenheim, 2001 and McDowell et al., 2007).

The use of questionnaires however, like all other methods of data collection has key advantages and disadvantages. Questionnaires as data collection tools provide both researchers and respondents with many advantages. Questionnaires not only allow researchers to ask the same questions in the same order to all respondents, but also to tabulate and compare answers easily and consistently (Bryman, 2012). The issue of consistency in questionnaires helps to eliminate bias and allows the objective collection of answers.

In addition, the popularity of questionnaires as a data collection tool is largely owing to their cost effectiveness, and flexibility (Bryman, 2012). Researchers can disseminate questionnaires simultaneously to a large and diverse sample, for example, via the internet, allowing for swift collection of data and less effort than when conducting interviews (Polit and Beck, 2014). Questionnaires allow anonymity, which offers the possibility of more complete responses (Polit and Beck, 2014). Questionnaires without respondents' names or location traces remain the best way to ensure anonymity, as the researcher does not know the respondent's identity. According to Polit and Beck (2014), a guarantee of anonymity can be crucial as a way of obtaining candid responses, especially if some questions are sensitive. Anonymous questionnaires often result in a higher proportion of socially unacceptable responses than interviews (Polit and Beck, 2014).

Questionnaires can also be impersonal, as the researcher is not directly interacting with the participant (Bryman, 2012). However, the absence of the interviewer and interviewee dynamic ensures there is no interviewer bias (Polit and Beck, 2014). The non-intrusive nature of a questionnaire is an advantage when researching sensitive or controversial topics, in that the respondent feels free to answer without embarrassment or fear of reprisal. The absence of a researcher waiting to write down answers and ask the next question allows respondents time to think and answer, resulting in a high-quality response (Bryman, 2012).

However, this level of anonymity also has a disadvantage, in that the interviewer is unable to capture the information conveyed by gestures, visual cues and subtle mannerisms, which might be significant to interpreting responses accurately (Polit and Beck, 2014). The anonymity or non-interactive nature of questionnaires also leads to an increased probability of misunderstanding or miscommunication, as the respondents might interpret a question differently from the researcher's intention, with no chance to seek clarification or make amends. Additionally, the researcher has no way to ascertain whether the intended respondent or someone else completed the questionnaire (Bryman, 2012). Furthermore, questionnaires do not allow for follow-up questions or further probing based on the answer given, which could be critical for the research (Bryman, 2012). Similarly, questionnaires do not encourage respondents to contribute anything additional to what is asked for, and some respondents may have some crucial information that is very relevant for the research that is consequently not learned. Closed-ended questionnaires that allow only a yes-no answer or points ranking do not allow a respondent to expand on specific points. However, open-ended questionnaires allow free text to be added by respondents. Despite this, researchers find analysing the data from questionnaires much easier when using data analysis software (Polit and Beck, 2014).

The literature review completed for this thesis identified a number of surveys using questionnaires specifically developed to measure safety culture within a healthcare setting (Colla et al., 2005; Singla et al., 2006). Published reviews on the topic of safety culture surveys in the healthcare setting reported a wide variation in the quality, theoretical development, and validity of various psychometric properties measured (Colla et al., 2005; Flin et al., 2006; Singla et al., 2006). The HSOPSC tool was developed to measure safety culture at the level of the hospital or unit (Colla et al., 2005; Singla et al., 2006; Appendices 6 and 7). However, Manchester Patient Safety Culture Framework were used to interpret the results and findings in this study. The framework covers multiple dimensions of safety culture, and five levels of safety culture development. This helps in generating of organisation's profile of safety culture in terms of areas of relative strength and challenge, which can be used to identify focus issues for change and

improvement more details are indicated in Section 2.6.1 and presented the interpretation in Chapter 7.

### **3.5.2 Hospital Survey of Patient Safety Culture (HSoPSC) Tool**

The HSOPSC tool assesses the perceptions of nurses towards patient safety culture in healthcare settings. The tool was previously employed for collecting primary data in research assessing patient safety (Sorra and Nieva, 2004; Singer et al., 2003; Colla et al., 2005). Table 3.2 displays the reliability of the factors accordingly.

The tool captured the majority of the components included in the literature through 12 dimensions divided into 3 main dimensions (Table 3.2). The outcome dimensions contain the overall perceptions of safety and frequency of event reporting. The ward level dimensions are as follows. First, is the expectations of a supervisor/manager concerning actions to be taken to promote safety. Second is organisational learning/continuous improvement. Third is supportive teamwork within wards. Fourth is communication openness. Fifth is feedback and communication concerning errors. Sixth is non-punitive response to error, and finally seventh, is the staffing levels. Hospital level dimensions include hospital management support for patient safety; teamwork across hospital wards and handovers and transitions between units (Appendices 6 and 7; Table 3.2).

Nevertheless, the tool utilises a Likert scale, which is a method of ascribing quantitative value to qualitative data, to make it amenable to statistical analysis (Polit and Beck, 2013). The Likert Scale is the most commonly used scale in quantitative research and is designed to determine the opinion or attitude of a subject. It also contains a number of statements arranged according to a scale after each statement. The original version of the scale included 5 response categories, and each response category was assigned a value. Usually, the most negative response is given a numerical value of 1, whilst the most positive response is awarded a numerical value of 5, and the midpoint a numerical value of 3.

**Table 3.2** HSoPSC Dimensions and its Reliability

HSoPSC	Dimensions	No of Items	Cronbach's alpha
HSoPSC	Total	42	
Outcome Dimensions	Overall positive perceptions of patient safety	4	0.74
	Frequency of events being reported	3	0.84
Ward Level Dimensions	Manager expectations and actions to promote patient safety	4	0.75
	Continuous Improvement for organisational learning	3	0.76
	Supportive teamwork within units	4	0.83
	Communication openness	3	0.72
	Receiving good feedback and communication about error	3	0.78
	Non-punitive response to errors	3	0.79
	Sufficient staff numbers	4	0.63
Hospital Level Dimensions	Management support for patient safety	3	0.83
	Positive teamwork across units	4	0.80
	Good handover and transitions between units	4	0.80

**Reference:** Sorra and Neiva (2004) and Najjar et al. (2013).

### 3.5.3 Hospital Survey on Patient Safety Culture Questionnaire (HSoPSC)

The tool was developed by the USA Agency for Health Care Research and Quality by researchers at Westat, under an AHRQ contract in the USA (Sorra and Dyer, 2010), based on a rigorous literature review focussing on four key areas. These are:

1. Safety management and accidents;
2. Organisational safety climate and culture;
3. Healthcare errors and error reporting; and
4. Patient safety.

There was a further assessment of the safety climate and culture, leading to the identification of key dimensions regarding patient safety culture and the development of the survey (Sorra and Dyer, 2010). Following the HSoPSC tool's

introduction in November 2004, its use was recommended by the WHO (Sorra et al., 2014). The Agency for Healthcare Research and Quality (AHRQ) was also set up to assess views of staff concerning patient safety culture in hospitals. The tool was piloted in 2003, in 21 hospitals across six US states, with 1437 respondents. It was tested and reviewed by researchers and hospital administrators (Sorra and Nieva, 2004). The results revealed all twelve dimensions possessed high levels of reliability, with a Cronbach's alpha ranging from 0.63 to 0.84 (Sorra and Nieva, 2004 and Sorra and Dyer, 2010; Table 3.2)

A key strength of this questionnaire (the HSoPSC) is its ability to assess a number of dimensions directly relating to patient safety, by focusing on issues both throughout the hospital and at ward and hospital level. In addition, the AHRQ HSOPSC assesses hospital staff in relation to key issues surrounding safety, communication about errors in the healthcare setting; learning and responsiveness to error reporting. It provides guidance for safety improvement by considering the multi-approach dimensions included in this tool. Furthermore, the results can be utilised to assess and diagnose the current state of an existing safety culture and raise staff awareness. The tool also effectively evaluated the impact of patient safety interventions and programmes, as well as benchmarking trends in culture, and changes that are necessary for hospital accreditation (Table 3.2).

In response to the international interest in patient safety, the WHO has encouraged hospitals in those countries in which the AHRQ HSoPSC has been implemented to undertake a baseline assessment of patient safety culture, as a multi-year 'high 5' project to track cultural changes alongside the progress of the initiative (Sorra and Dyer, 2010 and Alvesson and Sveningsson, 2008). In addition, the European Network for Patient Safety aims to establish a network of European Union member states and stakeholders to encourage and enhance collaboration, while promoting a culture of patient safety (Sorra and Dyer, 2010).

### **3.5.4 Reliability and Validity of the HSoPSC Tool**

Following the collection of questionnaire responses, the first task is to establish the reliability of the questionnaire as a tool. Reliability checking helps to verify



the internal consistency of responses, this is especially relevant in the case of a questionnaire, as responses are frequently found to be inaccurate (McPeake et al., 2014).

Reliability refers to the accuracy and precision of measurement procedures (Sorra et al., 2014), which establish whether research results can be repeated (Bryman, 2012). The measurement of the reliability of the results included the following three factors: equivalence, stability, and internal consistency, also known as homogeneity. Equivalence refers to the level of agreement between two or more instruments, when administered at approximately the same time. Stability refers to whether similar or identical scores are obtained if tests are repeated with the same group of respondents, to establish whether the scores recorded are consistent between one specific occasion and another. In addition, internal consistency, homogeneity, refers to the degree to which items on an instrument or test measure an identical aspect, and the degree to which a questionnaire is free from random errors (Bowling, 2002; Miller, 2014). Internal consistency can be estimated through use of the Kuder-Richardson split-half reliability index; or the coefficient alpha index (Agency of Healthcare Research and Quality, 2012).

Quantitative researchers, including Sekaran (2003) and Crano et al. (2008), have observed that study findings are more reliable the closer a reliability coefficient is to 1.0. They have also noted that research findings can be considered unreliable if reliability has a value below 0.6 (Crano et al., 2008). This is discussed in further detail in Section 3.11.1. However, a number of items were discarded by the development team in the USA as a result of a psychometric analysis, resulting in sets of items comprising independent and reliable safety culture dimensions. Many studies have demonstrated that HSoPSC possessed good psychometric properties (Sorra and Dyer, 2010). Specifically, Sorra and Dyer (2010) analysed survey data from 2,267 hospital wards and 50,513 respondents to examine the psychometric properties of the items and composites of HSoPSC from 331 USA hospitals. The results provided overall supporting evidence to illustrate that the twelve dimensions and forty-two survey items had acceptable psychometric properties at all levels of analysis. The survey was finalised and made available by AHRQ in November 2004 (Sorra and Dyer, 2010).

The AHRQ' HSoPSC has been translated into eighteen languages and administered in over thirty countries, thus highlighting its global value as a patient safety culture assessment tool (Appendices 6 and 7). Furthermore, psychometric results have been published, based on assessments administered by a number of researchers in several different countries (Najjar et al., 2013 and Khater et al., 2015). These assessments have afforded a greater understanding of patient safety culture internationally, as well as establishing a method for conducting cross-cultural comparisons of survey results. For instance, Smits et al.'s (2008) analysis in the Netherlands established strong psychometric support for eleven dimensions, with considerable unit-level variation.

Analysis of studies conducted in countries using the survey, such as the USA; UK; Canada; Iran; Lebanon; Saudi Arabia; and Egypt (Blegen et al., 2010) confirmed the validity of HSoPSC on eight subscales. Validity was confirmed using the following methods: individual level factor analysis, confirmatory factor analysis, intra class correlations and design effect, multi confirmatory factor analysis, reliability analysis, inter-correlations, content and regression analysis (Blegen et al., 2010). In addition, the patterns of high and low scores across the subscales of HSoPSC in all studies proved similar to samples reported by AHRQ, and corresponding to the proportion of items worded negatively in each subscale, in which reverse scoring is used (Blegen et al., 2010). Furthermore, regression analysis indicates that the HSoPSC dimensions are the most effective predictors of the frequency of event reporting, along with the overall perception of safety culture.

The goal of any initiative concerning patient safety is to reduce the risk of injury or harm associated with an individual's healthcare. The overall applicability of tools possesses a validity considered moderate to strong, and a reliability that is beneficial for assessing the strengths and weaknesses of hospitals in relation to the patient safety culture.

The HSoPSC questionnaire can be used to assess the general safety culture at a hospital, as well as specific wards within hospitals. It can also be used to track changes in patient safety culture over time and to evaluate the impact of patient safety interventions (Al Mandhari et al., 2014). Smits et al. (2008) conducted a

study using HSoPSC to measure the patient safety culture in selected Dutch hospitals, confirming that the survey instrument proved equally effective when assessing individual and group attitudes to safety culture (see Appendices 6 and 7 for additional details about the HSoPSC tool, its items and dimensions).

### **3.5.5 Focus Groups**

In qualitative studies, the researcher collects data that produces a narrative description (Polit and Beck, 2013). However, various types of instruments can be used to collect data for qualitative research. A focus group is a form of qualitative research consisting of interviews, in which a group of individuals are asked about their perceptions, opinions, beliefs, and attitudes towards a service, concept, idea, or packaging. Questions are asked in an interactive group setting, where participants are free to speak with other group members. During this process, the researcher either takes notes or records the interviews from the group (Morgan, 2013). Focus groups and in-depth interviews are among the instruments most frequently utilised by researchers (Dillman, 2007).

Over time, focus groups are used as both a self-contained method, and in combination with surveys and other research methods (Kairuz et al., 2007). Comparisons between focus groups and both surveys and individual interviews help show the specific advantages and disadvantages of focus group interviews, concentrating on the role of the focus group in producing interaction, and the role of the moderator in guiding that interaction (Bryman, 2012). The advantages of focus groups can be maximised through careful attention to research design issues, at both the project and the group level. Important future directions include: the development of standards for reporting focus group research; more methodological research on focus groups; paying additional attention to data analysis issues; and greater engagement with the concerns of the research participants (Krueger and Casey, 2009).

According to Morgan (2013), focus groups can be used to collect data through group discussion concerning a specific topic, as established by a researcher. A

focus group implies a group discussion undertaken to identify the perceptions, thoughts and impressions of a selected group of people regarding a specific topic under investigation (Kairuz et al., 2007). Focus group participants should perceive discussion as non-threatening and feel free to express any opinion, no matter whether or not it is shared by the other participants. However, it is important to differentiate focus groups from other methods, as the primary aim of a focus group is data collection, and so the process should be reviewed at the piloting phase. Hence, the main objective of a focus group is to engage in an organised discussion that is structured in a flexible way. This will ensure it is possible to draw upon respondents' attitudes, feelings, beliefs, experiences and reactions in a way that would not be feasible using other methods; for example observations, one-to-one interviewing, or questionnaire surveys (Morgan, 2013). Krueger and Casey (2009) listed some of the chief characteristics of focus groups; for example, that they involve individuals possessing certain characteristics, produce qualitative data, aim to ensure a focused discussion, help researchers to understand topics of interest. Individuals involved in a focus group are brought together solely for research purposes and are then encouraged to interact with one another. Therefore, previously established groups, and group interviewing that prevents participants from interacting are not focus groups (Morgan, 2013). Focus groups provide researchers with a forum to gather rich data from participants, whom they view as representative of the target population. Although focus groups can be used independently as a qualitative research tool, they are increasingly being used in conjunction with quantitative research methods, to provide a fuller understanding and explanation of previously acquired results (Bryman, 2012).

Focus groups bring together a single group of people into one setting, either in-person or online, and a moderator then facilitates group discussion about a topic. The group dynamic leads to brainstorming, creative feedback, ideas generation, and a deepening of the discussion, because of the variety of participants and their experiences. Focus group participants are selected because of their experience within the organisation and in their field of specialisation. Morgan (2013) stated that focus groups can be used to generate information on collective views, and the meanings that lie behind those views. They are also useful for generating a rich understanding of participants' experiences and beliefs.

The results obtained through these two qualitative methods vary according to the subject investigated. Polit and Beck (2014) state that the participants in in-depth interviews, are more confident, more relaxed and feel more encouraged to express their deepest thoughts about a certain subject, whereas the interviewer's function is to encourage and guide them on a topic. In contrast, in focus groups the participants act according to their personality. It is however, the role of the interviewer to ensure that all participants' views are expressed.

Focus groups are ideal for eliciting information pertaining to a range of values and opinions in a relatively short time span; the group dynamics present stimulate conversations and reactions. Interviews, by contrast elicit in depth responses allowing for an interpretive perspective (Doody and Noonan, 2013) which can be difficult to obtain if employing quantitative research data collection methods. A disadvantage of focus groups is that they can be susceptible to facilitator bias and the group dynamics need to be managed by a facilitator. The data collected is not necessarily representative of that provided by other groups. One main disadvantage of interviews is that the data is acquired from individuals who might not otherwise be representative of the population (Doody and Noonan, 2013) (Table 3.3).

**Table 3.3** Focus Groups and In-depth Interviews

	Appropriate for	Strength of method
Focus groups	Identifying group norms	Elicits information on a range of norms and opinions in a short time
	Eliciting opinions about group norms	Group dynamic stimulates conversation, reactions
	Discovering variety within a population	
Interviews	Eliciting individual experiences, opinions, feelings	Elicits in-depth responses, with nuances and contradictions
	Addressing sensitive topics	Gets at interpretive perspective, i.e., the connections and relationships a person sees between particular events, phenomena, and beliefs

**Reference:** Doody and Noonan (2013).

The focus group interview is one way to engage with participants for feedback and comment in order to explore perceptions of a research topic. Hence, focus group questions are developed by the researcher. According to Polit and Beck (2014), focus group sessions are carefully planned discussions when the advantages of group dynamics are taken into account for accessing the richness of the desired

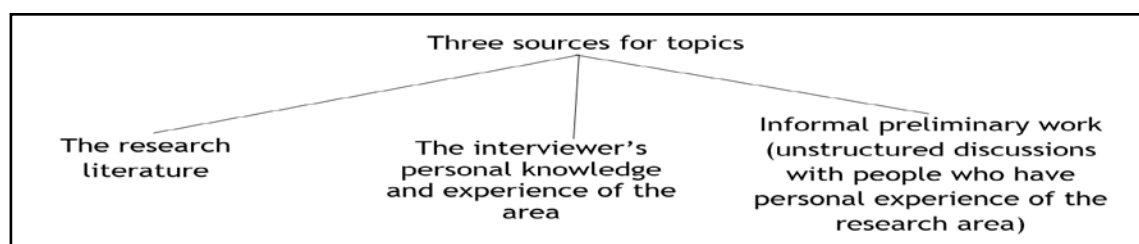
information. However, the facilitator guides these discussions according to the set of topics covered, as in semi-structured interview. The facilitator plays a critical role in focus group success, soliciting input from the group and not permitting any individuals to dominate the discussion (Polit and Beck, 2014) (Table 3.4).

**Table 3.4** Advantages and Disadvantages of Focus Groups

	Advantages	Disadvantages
<b>Focus Groups</b>	<ul style="list-style-type: none"> <li>• Quick and relatively easy to set up</li> <li>• Group dynamics can provide useful information that individual data collection does not provide</li> <li>• Is useful in gaining insight into a topic that may be more difficult to gather information through other data collection methods</li> </ul>	<ul style="list-style-type: none"> <li>• Susceptible to facilitator bias</li> <li>• Discussion can be dominated or side-tracked by a few individuals</li> <li>• Data analysis is time consuming and needs to be well planned</li> <li>• Does not provide valid information at the individual level</li> <li>• The information is not representative of other groups</li> </ul>

**Reference:** King and Horrocks (2010).

The facilitator (and any scribe), should select the setting of the focus group session carefully, ensuring it is a safe space, free from interruptions, and somewhere participants will consider convenient (Doody and Noonan, 2013). The location should be acoustically amenable to audio tape recording (Polit and Beck, 2014). In the naturalistic paradigm interview, there is no formal schedule of questions, instead there is an interview guide listing topic (Figure 3.2). The facilitator should attempt to cover the necessary topics during the focus group.



**Figure 3.2** Sources for Topics During Interview;

**Reference:** King and Horrocks (2010).

However, the focus group guide might be modified through use: adding probes or entire topics that would not otherwise have been included, but which emerge spontaneously in interviews; dropping or reformulating those which are

incomprehensible to participants or consistently failing to elicit responses in a way that is relevant to the research questions (King and Horrocks, 2010). Hence, according to Smith et al. (2009), the researcher must be able to rephrase questions and avoid topics based on the course of the discussion, as well as being willing to end the interview if necessary. In addition, the researcher must give the participants time to answer freely.

The justification to why focus groups was chosen as a data collecting method for this study was to gain an in-depth understanding of nurses' perceptions of patient safety culture in Oman. Omani nurses are developing their expertise in research and it was felt that group dynamics would elicit more meaningful responses than interviews. The author is also a senior nurse within the organisation and, junior nurses, may not respond honestly if interviewed, but may be more open if there were others being interviewed with them, through a focus group. Also, focus groups have the dynamics of group interactions where one idea leads to another and can expand into unexplored areas in this way. Also, focus groups can gain an insight of different experiences and backgrounds that cannot be achieved in individual interviews. In addition to that, focus groups allow for the observation of non-verbal communications that can be reflected through-out the focus group discussion.

### **3.6 Exploratory Descriptive Qualitative Research**

Exploratory research (ER) requires an examination into a subject in an attempt to gain further insight. According to Polit and Beck (2014), ER is a study that explores the dimensions of a phenomenon, or that develops or refines hypotheses about relationships between phenomena. With ER, a researcher starts with a general idea of interest and then uses research as a tool to identify issues and factors that are related to and could be the focus of future research. Qualitative approaches are valuable for exploring the nature of partially understood phenomena. In addition, ER can be of use to investigate the various ways in which a phenomenon and any underlying processes are established (Polit and Beck, 2014 and Creswell, 2014). ER is the initial research phase, which then forms the basis of more

conclusive research, and so is frequently used to identify crucial details about new research problems. It can even assist in determining a research design, sampling methodology and data collection method.

### **3.7 Pilot Study**

The term pilot study is used in two different ways in social science research. A pilot study is a small-scale version of a main study, designed to test various components of the proposed main study to check that they all work together (Arian et al., 2010). Important goals of pilot studies include defining the optimum intervention, for example, frequency and duration; and providing parameters to enable a more accurate estimation of sample size (Arian et al., 2010; Hulley et al., 2007). In addition, pilot studies can establish whether the sampling frame and technique are effective, assessing the likely success of proposed recruitment approaches. However, a pilot study can also serve as a pre-testing stage before testing a particular research instrument (Arian et al. 2010). One of the advantages of conducting a pilot study is that it might offer advanced warning about where the main research project could fail, where research protocols may not be followed, and whether proposed methods or instruments are inappropriate or too complicated. Pilot studies can help researcher to design a research protocol and assess whether that protocol is realistic and workable. They also identify the logistical problems which might occur using proposed methods

These are important reasons for undertaking a pilot study, but there are additional reasons; for example, to convince funding bodies that the research proposal for the main study is worth funding (Arian et al., 2010). Certainly, a thorough pilot study can convince funding bodies that a research team is competent and knowledgeable, and that the main study is feasible and worthy of funding and supporting. Piloting can be used for quantitative and/or qualitative studies, and large-scale studies might employ a number of pilot studies before embarking on the main survey (Polit and Beck, 2014). Piloting is valuable for determining what resources, for example financial and staffing, are needed for a planned study, and



when assessing the proposed data analysis techniques to uncover potential problems.

### 3.8 Population and Sample

The research population comprises a group of individuals eligible to participate in a study. Sampling relies on deciding which individuals from a population will effectively represent it (Field, 2005). Sampling plays an important role in research and is linked to the study design (Creswell and Clark, 2007; Kemper et al., 2003). Generally, the size of a quantitative sample would be larger than that for a qualitative sample (Creswell and Clark, 2007; Tashakkori and Teddlie, 2010). In mixed method explanatory sequential design, data collection is not independent but dependent, with one form of data adding to or building upon another.

Two types of samples have been identified in healthcare research: the probability and non-probability sample. Probability samples are selected in such a way as to be representative of the entire population and have strict inclusion and exclusion criteria (Polit and Beck, 2014; Table 3.5).

**Table 3.5** Types of Sampling Methods

Probability	Random	Within random sampling every member of the population has an equal likelihood of being selected
	Stratified	With stratified sampling, the researcher divides the population into separate groups, called strata. Then, a probability sample (often a simple random sample) is drawn from each group.
Non-probability	Purposive	Also known as judgment, selective or subjective <i>sampling</i> ) purposive sampling is a <i>sampling</i> technique in which the researcher relies on his or her own judgment to select members of a target population to participate in the study.
	Convenience	Convenience sampling is a non-probability sampling technique whereby subjects are selected based on their accessibility and proximity to the researcher.

**Reference:** Parahoo (2014) and Polit and Beck (2014).

Both type of sampling provides valid and credible results, reflecting the characteristics of the population from which they have been selected.

Furthermore, one of the advantages of probability sampling is that it allows researchers to estimate the magnitude of sampling errors when referring to differences between values, such as average age of the population and sample values (Polit and Beck, 2014). There are two types of probability sampling: random and stratified. In order to obtain more accurate results, a population can be broken down into categories, and a random sample taken from each category. The proportions of the sample sizes are the same as the proportions of each category relative to the whole (Parahoo, 2014).

Non-probability samples are not representative; therefore, they are less desirable than probability samples. However, a researcher might be unable to obtain a random or stratified sample. Despite this, the majority of studies in the domain of healthcare rely on non-probability samples (Polit and Beck, 2014). The validity of non-probability samples can be increased by approximating random selection methods, and by eliminating as many sources of bias as possible. There are two types of non-probability samples: purposive and convenience.

Miles and Huberman (1994) suggest that sampling strategies can be evaluated according to six different attributes, which they present in the form of a checklist. First, a sampling strategy should be relevant to the conceptual framework and the research questions should be addressed by the researcher. Second, the sample should be likely to generate rich information concerning the type of phenomena that needs to be studied. Third, the sample should enhance the generalisability of the results and transferability of the findings. Fourth, the sample should produce believable descriptions and or explanations, in the sense of being true to real life. Miles and Huberman (1994) suggest that a researcher may consider whether the method of selection permits informed consent where this is required, and hence whether the sample strategy is ethical or not. Finally, Miles and Huberman (1994) encourage researchers to consider feasibility and accessibility in sampling in terms of time available and financial cost, practical issues of accessibility, and whether the sampling strategy is compatible with the researcher's work style.

Sample size is one element of research design that investigators need to consider when they planning their studies (Parahoo, 2014). Sample size calculations begin

with an understanding of the type of data and its distribution. Very broadly, data can be divided into quantitative, numerical, and categorical qualitative data (Gogtay, 2010).

### **3.8.1 Sample Size: Quantitative Research**

In quantitative research, reasons to accurately calculate the required sample size include achieving both a clinically and statistically significant result, and ensuring research resources are used efficiently and ethically (Field, 2013). The sample size needed is entirely dependent on the research questions. Hence, generalisability, repeatability and identification of sample size are essential requirements (Polit and Beck, 2014). Researchers can estimate the size of their sample through power analysis in order to test their hypotheses. This estimation is done prior to research or by implementing a pilot study (Polit and Beck, 2014). A common goal of survey research is to collect data that is representative of the population. The researcher uses information gathered from the survey to generalise findings from a sample back to a population, within the limits of random error (Suresh and Chandrashekara, 2015). Therefore, determining the optimal sample size for a study assures adequate statistical power. Sample size is an important feature of quantitative studies, in which the goal is to make inferences about a population from a sample. In addition, study participants consent to the study on the basis that it has the potential to lead to increased knowledge of the concept being studied; however, if a study does not include a sufficient sample size to answer the question being studied in a valid manner, then enrolling participants could be perceived as unethical (Charmaz, 2014).

### **3.8.2 Sample Size: Qualitative Research**

There is no definitive number of participants required for a qualitative research study. Although sample size is a consideration in qualitative research, the principles that guide the determination of sufficient sample size differ from those considered in quantitative research. A number of issues can affect sample size in qualitative research, as the guiding principle should be the concept of saturation

(Morse, 2010 and Walker, 2012). According to Polit and Beck (2014), saturation is the collection of qualitative data to the point where a sense of closure is attained because there is no new data generated. Samples for qualitative studies are generally smaller than those used in quantitative studies. While saturation determines the majority of a qualitative sample size, other factors can dictate how quickly or slowly this is achieved in a qualitative study. Charmaz (2014) suggests the aims of a study are the ultimate driver of project design, and therefore of sample size. However, if participants are good informants and able to reflect on their experiences and communicate effectively, saturation can be achieved using a small sample (Polit and Beck, 2014). Morse (2010) argued that data saturation is affected by sensitivity over the issue being studied, as participants may be reluctant to share their thoughts about certain topics. Thus, more data is required to achieve a deep understanding of sensitive or controversial phenomena. Ultimately, qualitative samples are acquired to reflect the purpose and aims of the study. The skills of an interviewer clearly effect the quality of data collected and this subsequently effects the point of saturation (Morse, 2010 and Walker, 2012). Hence, Polit and Beck (2014) suggested that a student researcher is likely to require a larger sample size to achieve data saturation than their more experienced supervisors.

### **3.9 Ethical Considerations in Research**

It is essential to address ethics in research to ensure that participants are not endangered and are treated equitably, justly, and fairly. Therefore, it is important for researchers to discuss the ethical implications of their research and to remain conscious of the need to uphold the moral integrity of their work. The major issue to consider as a researcher is the potential for over disclosure by participants, particularly if a research topic is sensitive. Researchers are obligated to ensure their study participants are not harmed physically or psychologically. To provide research participants with the safest environment possible, a researcher must have understanding and an ability to apply ethical theories to their situation. However, there are considerations to make when conducting research. These

relate to issues of consent, autonomy, coercion and risk to participants' confidentiality and data storage (Polit and Beck, 2014).

However, in qualitative research, consent might be seen as an ongoing process (Polit and Beck, 2014). Participants should be given time to reflect on their studies so that there is no coercion and they are able to attain written consent prior to participating. If face-to-face interviews are to take place, ongoing consent should be sought throughout the interviews themselves. Participants should be reminded that they are free to leave at any time without repercussions.

Individuals participating in a research study have a reasonable expectation that they will be informed of the nature of the study so that they can choose whether or not to participate. Participants must be autonomous when choosing. Participants also have a reasonable expectation that they will not be forced into participating (Polit and Beck, 2014). However, in a self-administered questionnaires, the researcher can assume implied consent if the questionnaire is returned voluntarily (Polit and Beck, 2014). Reminders to return a questionnaire should take the form of prompts not coercion.

Confidentiality and anonymity for participants is particularly important in qualitative research studies because of the in-depth nature of the data being collected (Polit and Beck, 2014). Anonymity provides a strong guarantee of privacy, although it can sometimes be difficult to accomplish, especially in situations where participants have to be assessed at multiple points.

Any individual participating in a research study has a reasonable expectation that the information they share with the researcher will be treated confidentially. Protecting anonymity means ensuring that individuals will not be identified in any written reports about a study (Polit and Beck, 2014). Anonymity is seen as preserving an individual's information in a confidential manner so that other people cannot link participants to the data they have provided (Polit and Beck, 2014). To achieve this, researchers might develop elaborate confidentiality procedures. These include securing confidentiality assurances from everyone with access to the research data. It also includes maintaining identifiable information in locked files. In addition, anonymity means substituting identification numbers

for participants' names on records and files, to prevent accidental breaches of confidentiality. Finally, reporting only aggregate data for groups of participants, or taking steps to disguise a person's identity in a research report (Polit and Beck, 2014).

Beauchamp and Childress (2013) addressed four principles that should be considered in research ethics. These principles include respect for autonomy, where individuals are in a position to make reasoned informed decisions. They have also elaborated on the issue of beneficence, for example, that healthcare professionals should act in a way that benefits patients. The third issue is non-maleficence, whereby no harm should be done to a patient by a health carer or researcher. Lastly, Beauchamp and Childress (2013) addressed the principle of justice, in which the equal and fair distribution of resources and their impact on any decision are considered.

### **3.10 Data Storage**

When conducting any research project that involves collecting data from human participants, the researcher needs to ensure the data collected is handled and stored securely and in accordance with the legislative frameworks governing data protection, research ethics and research governance (Data Protection Act, 1998; Iversen et al., 2006). All paper and electronic data sets must be stored securely for example, paper data in a locked cabinet, electronic data in password protected file space on the researcher's computer, and, or, on encrypted electronic devices. Data is usually retained for ten years in accordance with the Data Protection Act (DPA, 1998). It is essential that data is shared on a very limited basis and appropriately to guarantee no breaches of the ethical principles of confidentiality, anonymity and privacy. In addition, shared data ought to be anonymised as far as possible. It is therefore important that researchers address the issue of data sharing early in their research planning as part of the consent process, so that measures can be put in place to safeguard participants and the information they provide, and to obtain appropriate consent for a variety of data uses.

## 3.11 Data Analysis

In mixed methods research the analysis of data involves the analysis of both quantitative and qualitative data (Creswell and Clark, 2007). Each data set is analysed using an appropriate method of analysis (Creswell and Clark, 2007) and this organises the data according to a framework that is suited to extracting meaning from the data (Polit and Beck, 2013).

### 3.11.1 Quantitative Analysis

In quantitative data analysis, a systematic approach is adopted, whereby numerical data is collected and/or observed. It often describes a situation or event; answering the 'what' and 'how many' questions. Quantitative data may be analysed using a statistical package, for example, SPSS or Minitab (Field, 2013). Both these computer programmes assist with analysis and a number of statistical methods can be used including:

**Frequency Distribution analysis:** a descriptive statistical method that shows the number of occurrences of each response chosen by respondents. When using frequency analysis, the SPSS program can be used to calculate the mean, median and mode to help users analyse results and draw conclusions (Field, 2013).

Safety domains scoring  $\geq 70$  of average positive responses represented the cut off point for areas of strength considered good;  $\geq 50\%$  of average positive responses denotes the area for potential improvement; and 50% or less average positive responses describes the area of weakness (Sorra et al., 2014). These have been coloured coded to aid visual comprehension. In addition, items were worded both positively and negatively. Negatively worded items were reverse coded before analysis (Sorra et al., 2014).

**Reliability Test:** describes the overall consistency of a measure. A measure is said to have a high reliability if it produces similar results under consistent conditions (Reyes et al., 2013). To describe this a Cronbach's alpha is used which is a common measure of scale reliability (Field, 2013).

**Normality Test:** based upon an underlying probability distribution for example the normal distribution parameters that state statistical tests can be conducted to determine both mean and standard deviation (Parahoo, 2014). Normal distributions are symmetric, unimodal, and asymptotic, the mean, median, and mode are all equal. A normal distribution is perfectly symmetrical around a centre. That is, the right side of the centre is a mirror image of the left side (Field, 2013). A normal distribution plays a key role in inferential statistics (Polit and Beck, 2014).

Skewness can be quantified to define the extent to which any distribution differs from what would be considered a normal distribution. Kurtosis indicates whether the data is heavy-tailed or light-tailed relative to a normal distribution, which then indicates the flatness or peak of the curve. Values for asymmetry and kurtosis between -2 and +2 are considered acceptable in order to prove normal univariate distribution (George and Mallery, 2010), and therefore, there is no real skewness in such cases, which is considered a strength.

**Standard Deviation:** in statistics, this is known as SD or by the Greek letter sigma  $\sigma$ , which is a measure used to quantify the amount of variation or dispersion of a set of data values (Field, 2013). A low standard deviation indicates data points that tend to be close to the mean (also called the expected value) of the set, while a high standard deviation indicates the data points spread out over a wider range of values.

A standard deviation of between 0 and +/-2 indicates that the data points tend to be close to the mean of the set, while a high standard deviation indicates the data points are dispersed over a wider range of values (Field, 2015).

**Multiple Regression Analysis:** is a statistical process for estimating the relationships among variables. It includes many techniques for modelling and analysing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables or predictors. More specifically, regression analysis demonstrates how the typical values of the dependent variable or criterion variable changes when any one of the independent



variables is varied, while the other independent variables are held fixed (Parahoo, 2014). A T-Test is conducted as part of the multiple regression analysis.

**Pearson Correlation Coefficient:** is a technique for investigating the relationship between two quantitative, continuous variables. It is referred to as “ $r$ ”, which is a measure of the strength of the association between two variables (Parahoo, 2014).

### 3.11.2 Qualitative Analysis

Within qualitative research, it is important to identify the interpretive framework used by the researcher to conduct their study and analyse the data, as underlying philosophies and assumptions can explicitly or implicitly influence choices regarding the interpretation of data.

Qualitative analysis approaches are diverse, complex and nuanced, and thematic analysis is seen as a foundational method for use with qualitative analysis (Ward et al., 2013). Thematic analysis involves the coding of qualitative data to produce themes. Braun and Clarke (2006) and Ward et al. (2013) define a theme as a pattern found in the information that describes and organises observations and interprets aspects of a phenomenon. Thematic analysis allows the researcher to identify patterns, and from those patterns develop descriptive themes or typologies. Thus, themes should capture something important about the data in relation to the primary research questions (Braun and Clarke, 2006). Thematic analysis involves a number of steps from raw qualitative data to the identification of codes and themes. Braun and Clarke (2006) and Ward et al. (2013) have identified six phases that comprise thematic analysis (Table 3.6). Furthermore, thematic analysis can be either inductive or theoretical, meaning themes can either emerge from the data itself or be arranged according to pre-existing themes already established in the literature.

**Table 3.6** Phases of Thematic Analysis

Phase	Description of the process
1. Familiarising yourself with your data:	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes:	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes:	Checking in the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5. Defining and naming themes:	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells; generating clear definitions and names for each theme.
6. Producing the report:	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

**Reference:** Braun and Clarke (2006).

### 3.12 Issues of Rigour

As a concept, rigour is best thought of in terms of the quality of the research process. In essence, a more rigorous research process results in more trustworthy findings (Polit and Beck, 2013). Rigorous, trustworthy research is research that applies the appropriate method to meet the stated objectives of the investigation. Rigorous research must be both transparent and explicit; that is, researchers need to be able to describe what they did in clear, simple language. Researchers must also familiarise themselves with the broad range of methodological techniques available.

### 3.12.1 Rigour in Quantitative Research

Rigour in quantitative research is judged by how narrow, concise, and objective the design, data collection tools and analysis techniques are (Korb, 2012). Hence, rigour refers to the procedures the researchers implemented to enhance the quality of their studies. In quantitative research, this is achieved through validity and reliability (LoBiondo-Wood and Harber, 2013).

Validity is defined as the extent to which a concept is accurately measured in a quantitative study. There are three major types of validity: content validity, construct validity and criterion validity. Content validity considers whether the instrument adequately covers all the content it should with respect to the variable (LoBiondo-Wood and Harber, 2013). A subset of content validity is face validity, where experts are asked their opinion about whether an instrument measures the concept intended (Polit and Beck, 2014).

Construct validity refers to whether inferences can be drawn about scores related to the concept being studied (Polit and Beck, 2014). Three types of evidence can be used to demonstrate that a research instrument has construct validity. First, there is homogeneity, which means the instrument measures one construct (Korb, 2012). Second, there is convergence, when the instrument measures concepts similar to those of other instruments. If there are no similar instruments available this will not be possible (LoBiondo-Wood and Harber, 2013). Third, is the theoretical evidence employed for reasoning with uncertainty, in which it is evident when a behaviour is similar to theoretical propositions related to the construct measured in the instrument. In this case, understandings of the connections to other frameworks such as probability, possibility and imprecise probability theories are forged (Korb, 2012).

The final measure of validity is criterion validity. A criterion is any other instrument that measures the same variable. Correlations can be conducted to determine the extent to which different instruments measure the same variable (Field, 2013). Criterion validity is measured in three ways; first, the convergent validity, which shows that an instrument is highly correlated with instruments measuring similar variables (Korb, 2012). Second, divergent validity which

indicates that an instrument is poorly correlated to instruments that measure different variables (LoBiondo-Wood and Harber, 2013). Third, is predictive validity, which expects that the instrument should have a high correlation with future criteria (Korb, 2012).

Reliability relates to the consistency of a measure (Polit and Beck, 2014). Although it is not possible to give a precise calculation of reliability, an estimate of reliability can be achieved through different measures. There are three attributes of reliability. First homogeneity, internal consistency, is assessed using item-to-total correlation, split-half reliability, the Kuder-Richardson coefficient, or Cronbach's alpha (Laerd Statistics, 2013). Second, stability is tested using test-retest and parallel or alternate-form reliability testing. Test-retest reliability is assessed when an instrument is given to the same participants more than once under similar circumstances (Laerd Statistics, 2013). Third and last is equivalence, which is assessed through inter-rater reliability. This test includes processes for qualitatively determining the level of agreement between two or more observers (Laerd Statistics, 2013).

Determining how rigorously the issues of reliability and validity have been addressed in a study is an essential component in a research critique, as well as influencing decisions about whether to implement study findings in practice (Polit and Beck, 2014). In quantitative studies, rigour is determined through an evaluation of the validity and reliability of tools or instruments utilised in the study.

However, LoBiondo-Wood and Harber (2013) suggested there are broadly three reasons why results might not be valid; determining whether findings are due to chance is a key feature of a statistical analysis. In addition, a systematic error may be made when selecting the subjects for a study, when measuring outcomes, or analysing data, resulting in inaccuracies. Furthermore, there are numerous types of bias that could affect a study. Whereas bias involves error in the measurement of a variable, confounding variables involve errors in the interpretation of what may be an accurate measurement. Hence, a research finding might be entirely valid in one setting but not in another (Parahoo, 2014).

### 3.12.2 Rigour in Qualitative Research

Rigour in qualitative research is defined by the opposite set of criteria and is associated with being open to the data, rigorously adhering to a specific philosophical perspective, and requiring thoroughness when collecting data. Rigour is also judged by the logic of an emerging theory and whether results contribute to what is known about a phenomenon.

Rigour is, however, essential to verify the trustworthiness and credibility of qualitative data when pursuing research objectives (Polit and Beck, 2013). Guba's (1985) constructs correspond with the criteria employed by the positivist investigator (Lincoln and Guba, 1985). In this case the credibility of the findings is enhanced by the analysis that was explained in sufficient detail for someone knowledgeable in their field (Giorgi, 2009). In addition to credibility, dependability refers to stability, whereby the research process is carefully documented to show how the conclusion is reached, and the extent to which the findings would be consistent if the inquiry were replicated with the same subjects or in a similar context (Polit and Beck, 2013). Confirmability is seen as the extent to which the findings of the study are shaped by the respondents' bias but not that of the researcher; the degree to which the findings are a function of the participants and a condition of the research and not of other biases, motivations, and perspectives, to enhance the audibility process (Polit and Beck, 2014). Transferability refers to the degree to which the findings can be applied in other contexts, settings or groups (Polit and Beck, 2013).

The trustworthiness of qualitative research generally is often questioned by positivists, perhaps because the concepts of validity and reliability cannot be addressed in the same way in a naturalistic work. In addition, several writers discussing research methods, notably Silverman (2011), have demonstrated how qualitative researchers can incorporate measures that deal with these issues, and investigators such as Robson (2011) have attempted to respond directly to problems associated with validity and reliability in their own qualitative studies. Many naturalistic investigators have, however, preferred to use different terminology to distance themselves from the positivist paradigm. Guba proposed

four criteria (Table 3.7) to be considered by qualitative researchers to produce trustworthy findings (Guba, 1981).

**Table 3.7** Provisions that may be made by a qualitative researcher wishing to address Guba's four criteria

Quality Criterion	Possible provision made by researcher
Credibility	<ul style="list-style-type: none"> <li>• Adoption of appropriate, well recognised research methods</li> <li>• Development of early familiarity with culture of participating organisations</li> <li>• Random sampling of individuals serving as informants</li> <li>• Triangulation via use of different methods, different types of informants and different sites</li> <li>• Tactics to help ensure honesty in informants</li> <li>• Iterative questioning in data collection dialogues</li> <li>• Negative case analysis</li> <li>• Debriefing sessions between researcher and superiors</li> <li>• Peer scrutiny of project</li> <li>• Use of "reflective commentary"</li> <li>• Description of background, qualifications and experience of the researcher</li> <li>• Member checks of data collected and interpretations/theories formed</li> <li>• Thick description of phenomenon under scrutiny</li> <li>• Examination of previous research to frame findings</li> </ul>
Transferability	<ul style="list-style-type: none"> <li>• Provision of background data to establish context of study and detailed description of phenomenon in question to allow comparisons to be made</li> </ul>
Dependability	<ul style="list-style-type: none"> <li>• Employment of "overlapping methods"</li> <li>• In-depth methodological description to allow study to be repeated</li> </ul>
Confirmability	<ul style="list-style-type: none"> <li>• Triangulation to reduce effect of investigator bias</li> <li>• Admission of researcher's beliefs and assumptions</li> <li>• Recognition of shortcomings in study's methods and their potential effects</li> <li>• In-depth methodological description to allow integrity of research results to be scrutinised</li> <li>• Use of diagrams to demonstrate "audit trail"</li> </ul>

**Reference:** Shenton (2004).

### 3.12.3 Reflexivity

Reflexivity is an attitude of attending systematically to the context of knowledge construction, especially to the influence of the researcher, at every step of the research process. Hence, in order to conduct a high quality study, the qualitative researcher must be reflexive and conceptual throughout the research project (Polit and Beck, 2014). Bryman (2012) identified five ways to pursue the reflective approach: introspection, inter-subjective reflection, mutual collaboration, social critique, and discursive deconstruction. Bryman (2012) discusses utilising these techniques in order to understand the interviewer's role in the interview context

and to explain how to use this knowledge to enhance the trustworthiness, transparency, and accountability of the research. An awareness of misperceptions through reflexivity enables the interviewer to design specific questions for the interviewee, which help inform and clarify the interviewer's understanding of outcomes (Polit and Beck, 2014). Reflexivity, along with a reflexive journal, is one way that qualitative research designs can address the bias that might permeate the socially dependent nature of qualitative research. Introspective reflexivity along with peer debriefing adds considerably to the credibility and usefulness of qualitative research.

### **3.12.4 Audit Trail**

Strategies for establishing research confirmability need to be built into the qualitative research process. Several researchers recommend the development of a research audit trail (Creswell, 2014). An audit trail is conducted in a rigorous manner to persuade qualitative researchers that the research is valid (Creswell, 2014). Silverman (2011) suggests that a study's trustworthiness may be established if a reader is able to audit the events, influences and actions of the researcher, while Bryman (2012) suggests that an audit trails represent a means of assuring quality in qualitative studies. The development of a research audit trail is in line with Silverman's (2013) guideline to use reflexive methodological accounting when demonstrating that a research study is carried out with considerable care.

Audit trails document the course of development of the completed analysis. In developing an audit trail, a researcher provides an account of all research decisions and activities completed throughout the study. A researcher makes explicit all theoretical, methodological and analytic choices (Koch, 2006). In addition, the researcher examines the research process and the product of inquiry to determine the trustworthiness of the resultant findings. In order to develop a detailed audit trail, a researcher must maintain a log of all research activities, develop memos, maintain research journals, and document all data collection and analysis procedures throughout their study (Creswell, 2014). Research audit trails may be intellectual or physical in nature. An intellectual audit trail assists the researcher in reflecting on how his/her thinking evolved throughout all phases of

the study. A physical audit trail documents the stages of a research study, from identification of the research problem to the development of a new theory; and it reflects key methodological decisions (Creswell, 2014).

### **3.12.5 Member Checking**

In qualitative research, member checking, also known as informant feedback or respondent validation, is a technique used by researchers to help improve the accuracy, credibility, validity, and transferability or applicability, internal validity, or fittingness of a study (Creswell, 2014). Hence, member-checks are perceived to enhance study credibility and participant involvement.

With member checking, the validity procedure moves from the researcher to the study participants. Lincoln and Guba (1985) describe member checks as the most crucial techniques for establishing credibility in any study. They involve taking data and interpretations back to the participants so that they can confirm the credibility of the information and offer a narrative account. With the lens focused on the participants, researchers systematically check the data and any narrative account. Several procedures facilitate this process. A popular strategy is to convene a group of participants to review and discuss the findings. Alternatively, researchers may request that the participants view the raw data, for example, transcriptions or observational field notes to comment on their accuracy. Throughout this process, the researchers ask participants if the themes or categories make sense, whether they are developed with sufficient evidence, and whether the overall account is realistic and accurate (Creswell, 2014). In turn, researchers incorporate the participants' comments into the final narrative. In this way, the participants add credibility to a qualitative study by reacting to both the data and the final narrative.

Sharing qualitative research findings with participants, namely member-checking, is intended to enhance a study's credibility and participants' involvement (Carlson, 2010). However, despite its methodological benefits, there are attendant disadvantages. Member checking is often a single event that takes place only with the verification of transcripts or based on earlier interpretations at a



single moment in time (Creswell, 2014). The researcher regularly provides the participants with their interpretations of these narratives for the purpose of verifying information (Carlson, 2010). Hence, by the time the participants view the transcripts, they may not remember exactly what they said. If they were participants in a focus group, not all members of the group would be invited to member-checks, and this may be a problem in terms of the group's consensus. In addition, if the topic is emotionally charged, they might only attain closure if they share their experiences and no further discussion is welcomed at this stage (Polit and Beck, 2014). Polit and Beck (2014) suggested that member checking can lead to misleading conclusions inhibiting credibility if participants share common myths. In addition, some participants might fail to disagree with a researcher's interpretations. This could be from politeness or because of a belief that the researcher is more knowledgeable than themselves (Polit and Beck, 2014).

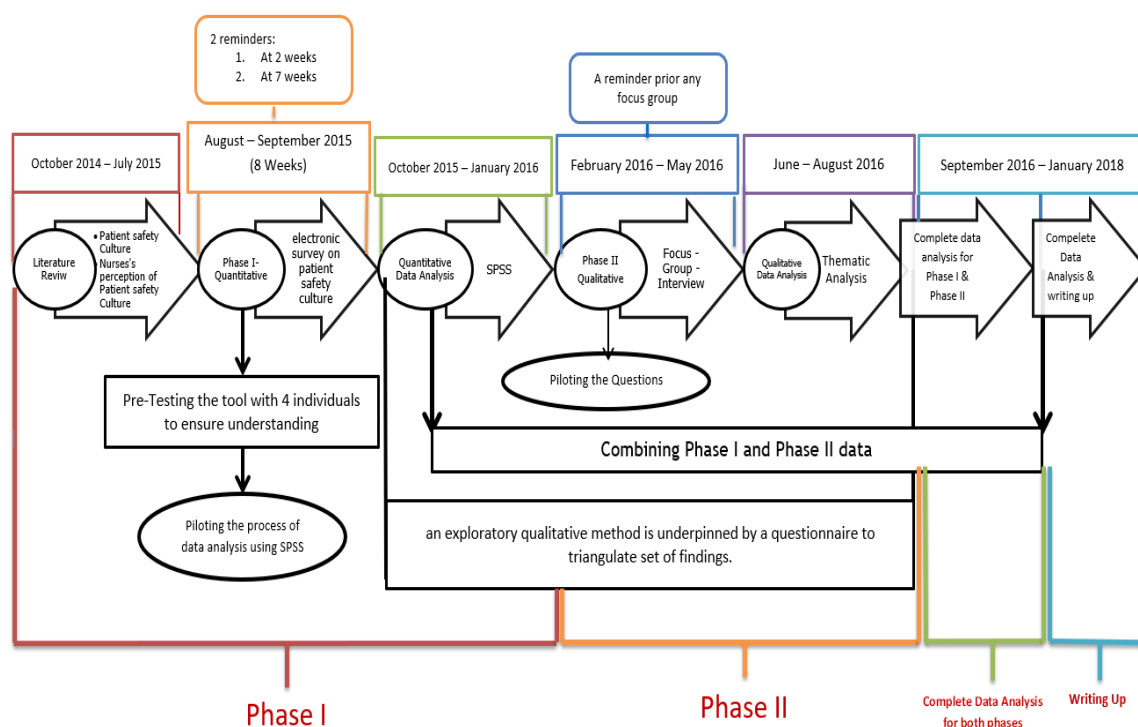
### **3.13 Conclusion**

This chapter has discussed the theoretical issues and philosophical assumptions underlying the research methodologies typically adopted for a mixed methods research study. It also described the characteristics of research settings and target populations, piloting, and issues of rigour in research before concluding with a discussion of key ethical issues. All these factors were evaluated and considered before this study was commenced. The next chapter details which of the research methodologies discussed in this chapter were adopted to meet the aims and answer the questions posed in this research, highlighting the explanatory sequential mixed methods design.

## 4. Chapter Four: Methods

### 4.1 Study Design and Research Plan

In this study, a two-phases explanatory sequential mixed methods research design was implemented to identify and explore nurses' perceptions of patient safety culture in Oman. The two phases addressed different aspects of the research questions; the first being quantitative (questionnaire) as discussed in (Sections 3.4 and 3.5) and the second qualitative (Focus Group Interviews) as discussed in (Section 3.5.5) (Figure 4.1). This methods chapter describes the collection, analysis and blending of both quantitative and qualitative approaches in this study, in order to achieve the most comprehensive understanding of the research problem possible (Creswell, 2014; Figure 4.2).



**Figure 4.1** Research Plan

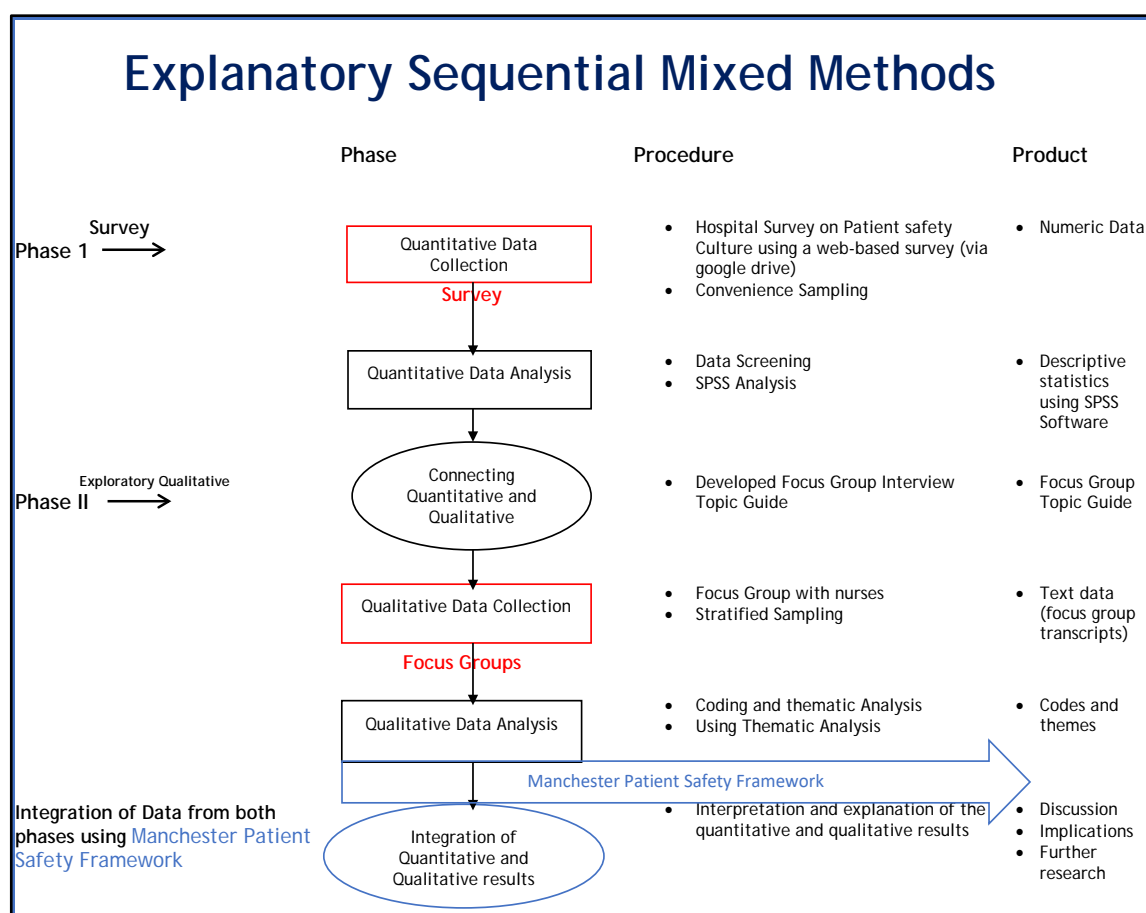
- 1) **Phase I:** this was a cross-sectional survey, in which an anonymous, voluntary, 5-point Likert-scaled validated questionnaire (Appendices 6 and 7) was used to gather data relating to patient safety culture (Sections 3.5.2 and 3.5.1) in the hospital setting from a nursing perspective. The questionnaire focused on patient safety culture and has been previously validated (Section 3.5.4). In this phase, the entire population of qualified

nurses on medical and surgical wards, with a minimum of 6 months experience (n=330) which composes 40% of the total nursing population of the teaching Hospital, medical and surgical wards' nurses were approached (Section 3.8.1) via email through the hospital's IT system. Also, an independent email address was used to communicate all data collection related documents via Nursing Directorate personnel. The exclusion criteria were highlighted within the email and communicated prior to the data collection. All staff members meeting the inclusion criteria were invited to complete the web-based-questionnaire, which was expected to take a maximum of 15 minutes to answer.

- 2) **Phase II:** Qualitative focus group interviews were conducted to explore the nurses' views, attitudes, and beliefs in relation to their perceptions of patient safety culture in their working units/areas in Oman in more depth. Individuals were approached via email and an independent person from the Nursing Directorate emailed all the 330 nurses in Medical and Surgical wards, with the exclusion criteria highlighted within the same email. Phase II recruitment was conducted independently of Phase I recruitment, and so the participants from Phase II may, or may not, be the same as those in Phase I. Individuals were requested to respond voluntarily, and to provide an expression of interest in participating in a focus group (Appendix 8). Four focus groups were set up using stratified sampling to include individuals with equivalent grade responsibilities, since there are 10 nursing grades in Oman's healthcare system, ranging from Grade 1 to Grade 10. The groups were allocated according to grades (where Grade 1 is the highest and Grade 10 the lowest), for the purpose of promoting freedom to speak as a result of being interviewed with equals in terms of the nursing hierarchy.

A maximum of 40 nurses were recruited, divided into four focus groups according to nursing grades (Section 3.8.2), or until data saturation was reached (as detailed in Section 4.6.2). Participants who had volunteered but were not selected to participate were thanked in writing.

Figure 4.2 indicates a summary of the method adopted in both phases and the integration of both phases; the quantitative and qualitative and the method used. It also highlights procedures used, type of data collects tools and its analysis.



**Figure 4.2** A Summary of the Methods (integration of quantitative and qualitative phases)

## 4.2 Study Site

The research study took place in one teaching hospital among one group of professional nurses working on the medical and surgical wards at the teaching hospital in Oman (as detailed in Section 1.4). The location of the study was a practical decision, based on a number of factors. The first was the researcher's ability to gain access to appropriate medical and surgical staff. Given the intention was initially to include only one site in the study, it was important that this had characteristics that were typical of the medical and surgical services in the capital of Oman (Section 1.4). The Hospital was selected because it is located in the capital city, where the researcher is based, thus enabling easy access, and it has

the largest clinical area in terms of bed numbers, staffing levels and the highest risk of patient safety issues had been identified.

### **4.3 Access**

Within the approved study site and prior to commencement of the study, a number of strategies were undertaken to seek access and support from senior hospital management and the nursing directorate. Eliciting support from leaders for research has been found to improve response rates, local engagement and ownership of any improvements or interventions suggested, as detailed in Section 1.4.

Three information meetings were held prior to the study commencing. These aimed to provide information about the study and to awaken the healthcare professionals' interest in the study, to achieve a higher response rate. The strategies used are as follows:

- 1) At Nursing Directorate level, an initial meeting was held with a local supervisor and Director of Nursing in June 2015. The aim of this meeting was to seek support and participation in the areas mentioned. At this stage, inclusion and exclusion criteria were highlighted and communicated to all managers of the respective areas. At this meeting verbal support was given to conduct the study in the hospital.
- 2) At Senior Management level, a meeting between the researcher, the Hospital Director, the Director of Nursing and a local supervisor was held in June 2015. The purpose of this meeting was to introduce the study and obtain senior management support; this was granted verbally.
- 3) At the IT level, a meeting was held in June 2015 between the researcher, a local supervisor and the Head of IT services. The objective of this meeting was to explain the aim of the study and identify the target population, as well as to arrange dissemination of

emails during the data collection phases. Agreement was made on all of these points at the meeting.

#### **4.4 Ethical Approval**

Approval for this mixed methods research study was granted, allowing the researcher to conduct the study at a teaching hospital run by the Oman Ethics Committee (reference number SQU-EC1098115) on 28<sup>th</sup> May 2015, and the Ethics Committee for Non-Clinical Research at the University of Glasgow, College of Medicine, Veterinary, and Life Sciences (reference number 200140166) on 3<sup>rd</sup> July 2015 (Appendices 9 and 10). In addition, the Furth of Glasgow also granted approval to conduct the study in Oman, (Reference Code RM), and the researcher received permission to conduct the study from the Director of the teaching hospital and the Director of Nursing.

All study data, including electronic survey files, interview tapes, and transcripts, were stored on a password protected computer with paper back-ups, kept in a locked metal filing cabinet in the researcher's office, which will be destroyed after a period of 10 years, in accordance with the Data Protection Act (Department of Health, 2014); more details are given in Section 3.10.

#### **4.5 Inclusion and Exclusion Criteria**

Inclusion and exclusion criteria were set to guide the research study about the study population in both phases (Section 3.8).

The main inclusion criteria applied were that the participant needed to be a registered nurse who had been working full time on the medical and surgical wards for more than six months. This included senior and junior nurses. All participants in Phase II also had to be comfortable communicating in English.

The exclusion criteria were any nurse not working in the medical or surgical ward, or those who had been working on the medical and surgical wards for fewer than six months, were part-time, or not registered nurses. These exclusion criteria were to ensure that the participants had sufficient exposure to their units and hospital policies and orientation programs to contribute to the study accurately.

Hence, they were excluded because they were not fully familiar with their current work environment, policies, and cultural aspect of the organisation. However, this may limit the findings.

## **4.6 Data Collection**

### **4.6.1 Phase I: Web-Based-Survey**

Phase I: A cross sectional questionnaire was administered via the hospital website (Section 3.5.1 and Appendix 6) using google drive, and accessed via a direct anonymous URL with an invitation letter (Appendix 11) and an information sheet (Appendix 12). The questionnaire focused on the patient safety culture; in which descriptive surveys are often referred to as cross-sectional, because data is collected from the population of interest at one point in time (Moule and Goodman, 2014). The tool was validated, and its reliability assessed for use in Europe and by Middle Eastern healthcare organisations (Sorra and Dyer, 2010). The questionnaires were all sent to nurses currently working on medical and surgical wards at the University Hospital (Section 1.4). Exclusion criteria were written on the same email and communicated verbally at the Nursing Directorate's meeting with nursing managers under Sections 4.2 and 4.3. In addition, an informed consent form was included on the opening page of the questionnaire (Appendices 6 and 7).

The data was collected over a period of eight weeks, and electronic email reminders were sent at 4-weekly intervals (half way through the survey collection period) and one week before the end of the survey collection period (at the end of week 7). The web-based survey was conducted between the months of July and September 2015. The details for the coding and data entry were explained in Chapter 5, in which details of the data analysis were further elaborated upon.

## 4.6.2 Phase II: Focus Group Interviews

Qualitative data was collected via four focus group interviews, with key staff; groups were arranged according to staff grades (Table 4.1). Grade 1 staff were not included in the study, since that is the grade of the Director of Nursing (Table 4.2). Recruitment for the focus group interviews took place between February 2016 and March 2016, and the interviews were conducted between April and May 2016 in the hospital setting. A stratified sampling technique was used according to the grade responsibilities of the participants. Those identified as consenting to participate had received a focus group confirmation letter (Appendix 13). A pilot study was also conducted, and this discussed in (section 3.7) and presented in (Section 4.8).

**Table 4.1** Focus Groups Allocations According to Grades

Grades	Grade 2-5	Grades 6 - 10
Focus Groups Allocation	Senior Groups (2 and 3 focus groups)	Junior groups (1 and 4 Focus Groups)

**Table 4.2** Nursing Grades according to the Omani Healthcare System

Grades	Grades 2	Grades 3 - 5	Grades 6 - 8	Grades 9 - 10
Positions	Administration Managers	Ward Managers/ Head Nurses	Shift leaders/ Team leaders	Newly Qualified Nurses

Consent was obtained from all the participants prior to the researcher commencing the focus group interviews (Appendix 14). The process for obtaining consent included issuance of a Voluntary Response Profile Expression of Interest to Participate Form (Appendix 8) and a letter of invitation (Appendix 15) (distributed during the initial recruitment phase), details regarding the consent form, and information about the voluntary nature of participation, as well as a request to record the interviews. The process also included distribution of a participant information sheet to explain the entire study phase (Appendix 16). All



the participants who were approached provided their written consent (Appendix 14).

Each focus group interviewee was given a brief overview of the study and some information about the planned interview. The participants were informed that they could request that the interview be stopped, or the recording paused at any time. All the interviews were recorded using a digital voice recorder and later downloaded to a password secured computer (Section 3.10).

All the focus group interview participants were assigned an ID number prior to the focus group interview. Only ID numbers were used to identify the interview transcripts and during the analysis. The names used in the focus group interviews were deleted and, where necessary, a pseudonym used to guarantee that the participants or individuals mentioned could not be identified. The list of participant IDs was kept securely in a separate location to the focus group interview data files, to safeguard confidentiality (Sections 3.9 and 3.10).

To promote group dynamics and a safe environment for discussion, each focus group commenced with a discussion of one of a number of scenarios that had been developed through expert consensus (Appendix 17). Thereafter, the researcher guided the focus group interviews according to a topic guide developed based on an analysis of questionnaire results (Appendix 17). The guide included a brief introductory stage, so the participants could share their first names and describe their workplace roles. This was done to ease the participants into the focus group session and to bring the participants together as a group. A number of ground rules were also set at this stage, including protecting each other's confidentiality, not speaking over one another, answering each other's questions respectfully, and giving answers when appropriate (Section 3.9). The guide was subject to change, to allow for the exploration of any unexpected topics that might arise during the focus group session. Hence, on reflection it appears that one scenario was needed. However, the main purpose was to facilitate the group talking and to ease their tension.

Eventually, saturation point was reached after the third focus group, as no new relevant information was being brought forward after this time concerning patient

safety in the hospital setting (Section 3.8.2). It was thus suggested that the data collected provided a comprehensive picture of the patient's safety situation. The fourth focus group was conducted to confirm saturation had been achieved.

## 4.7 Population and Sample

This study took place in one teaching hospital in Oman. Two specialities of nurses were selected to participate in the study (medical and surgical units). The participating units were chosen due to their high staffing levels, their ability to capture the eligible sample, and the fact that these two units were the largest units at the study site, thus improving the representativeness of the sample. Furthermore, details of inclusion and exclusion criteria, sample size, sampling techniques and recruitment process were indicated in (Section 3.8).

### 4.7.1 Phase I

As detailed in (Section 3.8.1), the sample size for the survey was calculated to establish a minimum sample size (SS). This should be 181, based on guidelines provided by Ary et al. (2009) when determining a sample size using a formula allowing for a  $\pm 5\%$  margin of error, at 95% confidence interval level, for a hypothesised proportion of the population, where N= population size; n=sample size and e=margin of error.

$$\text{Sample Size} = \frac{N}{1+n(e)^2} \quad S S = \frac{330}{1+330(.05)^2} = 181 \text{ sample}$$

The entire population of this group of nurses were targeted (n=330); because the response rate for an online questionnaire is normally 30-35% (Nulty, 2008) and therefore, to exceed the sample number with a view to acquiring a sample of 181, a target population of 330 people were needed.

### **4.7.2 Phase II**

A stratified sampling technique, as detailed in (Section 3.8), was used according to the grade responsibilities of the participants. This sampling method was used to obtain different perspectives and experiences (Tables 4.1; 4.2 and Section 3.8) and to provide a safe environment for discussion without professional or managerial influences affecting open responses.

The sample may have included nurses who had previously participated in Phase I or who had different perceptions of patient safety (Table 3.1). This helped to ensure the study sample appropriately represented each group of nurses based on their skill mix and the value of the knowledge they could contribute to the study (Section 3.8.2).

## **4.8 Pilot Study**

### **4.8.1 Phase I**

Prior to commencing Phase I, a pilot study was completed to ensure the survey was valid for use in the Omani context, specifically at a teaching hospital. The study was carried out with a small group of healthcare professionals in Oman as explained in (Sections 3.7 and 1.4.1).

### **4.8.2 Phase II**

The focus group interviews were piloted in the presence of the two supervisors (A O'N and JMcD) and 6 personnel (including nurses and ward managers). The main reason for piloting the focus group process was to evaluate the research instrument's feasibility, duration of interviews, and the topic guide presented. The researcher also evaluated how the participants responded to the scenario for setting the scene and the questions asked. More details can be found in (Sections 3.5.5; 3.7 and Appendix 17).

## **4.9 Data Analysis**

### **4.9.1 Phase I**

As discussed in detail in (Section 3.11.1); the analysis helped to identify differences in opinions among nurses on the issue of the patient safety culture. Further discussion is detailed in (Section 3.11.1) and Chapter 5. The measurement of the safety culture provided staff members' views at the time of the survey. The themes for this phase were derived from the survey dimensions.

### **4.9.2 Phase II**

For the purpose of this research, themes were generated inductively and semantically in nature, meaning the participant's responses were analysed based on what was said, not on their underlying meanings and conceptualisations. Semantic thematic analysis most closely resembles the post-positivist paradigm.

To ensure credibility throughout the process, a reflexive and methodological journal was kept to make explicit any biases and assumptions that might have impacted the development of codes and themes on the part of the researcher (Section 3.11.2 and Chapter 6). The themes formulated through analyses of transcripts were accomplished by immersion and familiarisation with the verbatim transcripts. To achieve this, the researcher carried out a thorough reading of the transcripts while listening to an audio recording. Once accuracy was established; the focus group transcripts were read together as a complete data set. Once this complete reading had taken place, each individual focus group transcript was then read once again individually. During this second reading, initial notes and thoughts regarding the data set were recorded in a journal. The next phase of the analysis was the generation of initial codes for the data, to capture the simplest features of the data that can be assessed meaningfully. In addition, both supervisors independently reviewed the transcripts and identified themes. Discussion was conducted with both supervisors and themes refined and concluded.

## **4.10 Issues of Rigour**

As detailed in (Section 3.12), the following section explains the steps undertaken to ensure a rigorous approach to the research process throughout the preparation of this thesis. The researcher undertook the steps detailed in (Section 3.12.3) and utilised a reflexive approach to the research process. Throughout, this information has been clarified regarding the production of data, the analysis process, and the decisions relating to the type of analysis employed. Notes were kept throughout the entire study period, detailing and specifying key decisions at all stages of the research process.

Throughout the study period, the evolving results and findings were presented in a peer reviewed journal (Appendices 18 and 19), and at national and international multidisciplinary conferences (Appendix 20). This step also ensured a continuous peer review of the process, along with output from this body of work. Throughout the research process, reflective debriefings were performed by supervisors. The use of reflective field notes with each focus group interviewee, ensured no assumptions were made by the researcher, and that the interpretations were based on the content of the focus group interviews rather than clinical insights, the knowledge or beliefs held by the researcher. The research student maintained focus, and established the perceptions of the nurses from their perspective as fully as possible, by transcribing interviews as swiftly as possible, and by frequently revisiting the framework analysis process.

Furthermore, throughout the interviews, the researcher sought to understand the context of the patient safety culture from the perspective of the nurses, by listening to them and exploring their viewpoints. This helped clarify the factors influencing their perceptions of safety and a safety culture.

### **4.10.1 Strategies to Enhance Rigour**

The dependability of the data is seen to evaluate the quality of the integrated processes of data collection, data analysis, and theory generation. The method and data analysis and interpretations were critically reviewed by the study's

supervisors. In line with dependability, an audit trail was maintained throughout the analysis and the data collection process, and this was followed and documented through comprehensive notes relating to the contextual background of the data (Ryan-Nicholls and Will, 2009; Houghton et al., 2013).

The use of MaPSaF helped to ensure rigour for both Phase I and Phase II by assessing and exploring the organisation and reflecting on their progress when developing a mature safety culture. As a mixed method study, the MaPSaF framework was used to illuminate analysis in both phases (more details are discussed in Section 2.6.1 and Chapter 8).

#### **4.10.2 Phase I**

A reliability test was conducted using the Cornbach's alpha test, in which a higher value of alpha signifies a more reliable response. The test measures the average of all questionnaire items and their correlation with 5 Likert scales. Further details are explained in (Section 3.12.1).

#### **4.10.3 Phase II**

In the focus groups it was essential to ensure the credibility of the responses, as this ensured the outcomes of the research were valid. A number of different credibility checks were conducted relating to the responses generated in the focus group discussions (Section 3.12.23.12.2).

The audit trail was coded for the analysis process with the categorisation of themes to help establish coding and categorisation procedures and to ensure the final framework fully captured the participants' responses (Sections 3.11.2 and 3.12.43.12.4). Furthermore, member checking was also conducted. Eight participants were randomly invited (two from each group) and provided with feedback, in order to study their emerging interpretations and reactions (Section 3.12.5). In addition, credibility was assured, as the researcher established confidence in the truth of the findings for the subjects and the context in which

the study was undertaken. This helped to capture a complete, contextualised picture of the phenomenon under review.

Phase II of the study contributed to the knowledge obtained in Phase I. Phase II yielded rich information providing additional insight into the views and opinions given by the nurses.

## **4.11 Conclusion**

This chapter has outlined the approach used in this mixed methods research study. A web-based-survey, together with focus group interviews was used to answer the research main aims and questions. More details of its application are discussed in Chapter 7. The next two chapters will present the results and findings of this mixed methods research study.

## **5. Chapter Five: Phase I Results**

### **5.1 Introduction**

This chapter presents the survey results from the questionnaire used in Phase I of the study (HSoPSC as in Section 3.5.2) using the positivist paradigm that is linked with natural science (Section 3.2.1). It applies beliefs about the nature of knowing and reality based on a realist ontology, which assumes there are real world objects that are separate from the human knower. In other words, there is an objective reality that exists and can be tested by applying quantitative methods to discover and evaluate consistent phenomena in the world. Descriptive and inferential statistical techniques were applied to present and interpret the results (Sections 3.11.1 and 4.9.1). This was done in accordance with the research objectives. An analysis of the survey and its interpretations was performed with the support and guidance of Professor Jeyaseelan, Professor of statistics and lecturer and statistician at Sultan Qaboos University.

The overall aim of this study was to identify and explore nurses' perceptions of patient safety culture in Oman. The following research objectives are addressed through this phase and explored in greater depth in phase II:

1. To identify and explore nurses' perceptions of patient safety culture in Oman.
2. To explore nurses' understandings of patient safety.
3. To identify factors that influence nurses' perceptions of patient safety.
4. To identify and explore nurses' attitudes and behaviours towards patient safety.
5. To identify and explore nurses' understandings of patient safety within the hospital context and at ward level.

### **5.2 Response Rate**

The researcher identified and distributed 330 questionnaires to nurses working at a teaching hospital in Oman. The teaching hospital is the only teaching hospital in the country, and as such is not under the control of the MoH. It can, however, be viewed as representative of other specialist hospitals in Oman, as it shares similar



organisational and managerial processes with them (as explained in Section 1.4). The questionnaires were distributed on medical and surgical wards, as detailed in (Sections 3.5.2 and 1.4). A total number of 204 questionnaires were completed and returned, giving a response rate of 62.9% (Sections 3.5.2 and 3.8.1), which is considered good (Pallant, 2011; Sorra and Dyer, 2010; Parahoo, 2014, Polit and Beck, 2014). Specifically, medical field researchers are expected to deliver a response rate of 60 to 70% (Fincham, 2008). Therefore, a response rate of 62.9% is acceptable for web-based surveys, such as the current study (Pallant, 2011; Sorra and Dyer, 2010; Parahoo, 2014).

**Table 5.1** Responses Rate

Questionnaires Distributed	330
Returned	204
<b>Response Rate (%)</b>	<b>62.90%</b>
Excluded from Analysis	6
Included in the Analysis	204

This rate was obtained by calculating the number of usable questionnaires, divided by the total sample minus unsuitable samples (Table 5.1). The six unsuitable surveys were judged to be so because they were either blank or partially incomplete.

### 5.2.1 Characteristics of Respondents

The characteristics profile of the respondents was analysed through a frequency distribution. The ratio of male to female nurses was approximately 3:7, as nursing is conventionally a female dominated occupation that mirrors the general related statistics for the hospital (Sultan Qaboos University Hospital Annual Report, 2016). The majority of respondents have over a year's experience of nursing and fewer than 20 years. Of these, over 57.7% (n=138) have between 1 and 10 years' experience. Details of the wards the nurses work on are given in Table 5.2.

**Table 5.2** Respondents' Characteristics

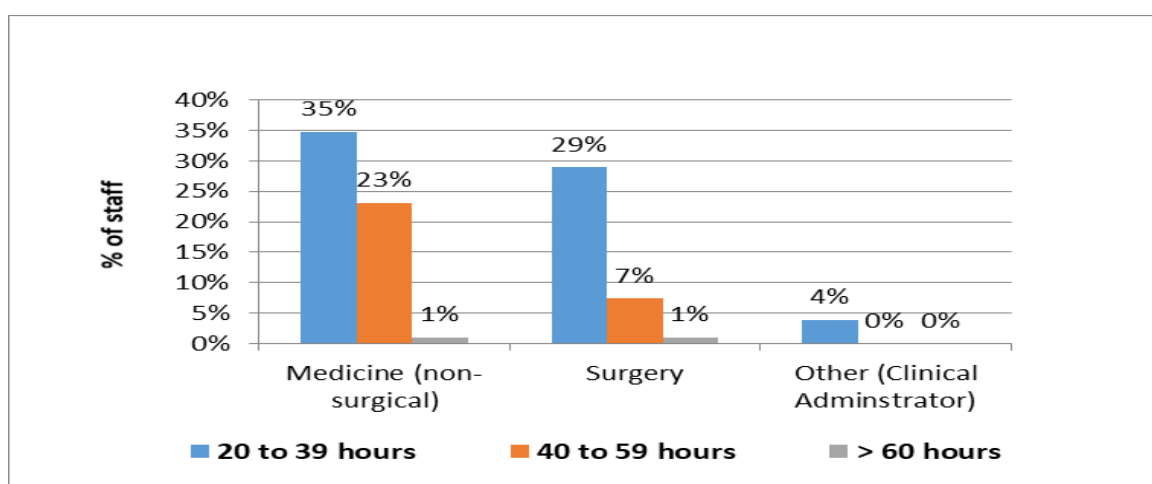
	Male n (%)	Female n (%)	Total n (%)
<b>Gender</b>	59 (28.9%)	145 (71.1%)	204
<b>Experience:</b>			
6 - <12 months	4	12	16 (7.8%)
1 - 5 years	20	52	72 (35.3%)
6 - 10 years	20	46	66 (32.4%)
11 - 15 years	10	20	30 (14.7%)
16 - 20 years	4	12	16 (7.8%)
> 21 years	1	3	4 (2%)
<b>Location:</b>			
Medical wards	26	98	124 (60.8%)
Surgical wards	33	47	80 (39.2%)

The majority of the participants have between 1 and 5 years (35.3%) experience, followed by those with 6 to 10 years (32.4%). The majority of nurses' work on the medical wards, which is in keeping with the staffing proportions between medical and surgical wards, and implies that this is representative of the population. Table 6.3 also illustrates the nurses' experience in relation to their grades, with the majority of respondents working at grade 7 followed by those working at grade 6 (Table 5.3).

**Table 5.3** Nursing Grades according to Oman Healthcare System

Junior Nursing Grades	Grades 6 - 10 where grades 10 or 9 are the new graduate	Total of 156 staff
Senior Nursing Grades	Grades 1 - 5 where grades 3, 4 and 5 are ward managers and team leaders	Total of 48 staff

Figure 5.1 illustrates the analysis of weekly working hours contributed by the nurses, in Medical wards indicating that almost 35% (n=71) of the respondents work between 20 - 39 hours per week. A total percentage of 23% (n=47) of respondents indicated that they work between 40 and 59 hours each week. In Surgical wards, however, there were a further 29% (n= 59) of nurses who worked between 20 - 39 hours per week. A total of 7 % (n=15) of the respondents work between 40 - 59 hours per week. Based on Figure 5.1, it was evident that the nurses assigned to medical wards worked longer hours than nurses on the surgical ward.



**Figure 5.1** Relationship between the location of Nurses and Number of Working Hours

## 5.3 Results

The data gathered from the respondents were analysed using the Statistical Package for the Social Sciences (SPSS-version 22). Features of the SPSS package include descriptive statistics such as plots, frequencies, charts and lists, sophisticated inferential, and multivariate statistical procedures, including analysis of variance (ANOVA), factor analysis, cluster analysis, and categorical data analysis (Sekaran and Bougie, 2010; Pallant, 2011). The 5-point Likert scales provided options for responders, as identified by the original AHRO survey (Sorra and Nieva, 2004; McPeake et al., 2014; Section 3.5.2).

### 5.3.1 Domains' Average Positive Response Rates

The level of agreement among respondents corresponding to safety culture domains has also been evaluated. The number of respondents agreeing with the safety culture was analysed and combined in Table 5.4 as detailed under section 3.11.1.

Table 5.4 illustrates the key responses. Furthermore, based on the guidelines of the survey to present the results more clearly, the answers of the 2 lowest response categories (Strongly Disagree/Disagree and Never/Rarely) have been combined and the 2 highest response categories (Strongly Agree/Agree and Most

of the time/Always) have also been combined to make a more clear distinction between positive and negative perceptions (Nieva, 2004). Therefore, for the purpose of this study, responses that scored 3.6 to 5 were categorised as positive, whilst responses scoring 2.5 to 3.5 were categorised as neither positive nor negative, and responses of 1 to 2.4 were categorised as negative. Scores were colour coded which indicates green as 'good', orange as 'needs improvement' and red as 'weak'. The following results show the frequency of positive (Strongly Agree/Agree) and negative answers (Strongly Disagree/Disagree) of participants on each of the questionnaire items.

Good		Needs Improvement		Weak			
Items	Strongly Disagree / Disagree	Neither	Strongly Agree / Agree	% Positive Response	Mean	SD	
<b>Section A: Your work Area / Unit</b>							
<i>Organisational Learning / Continuous Improvement</i>							
A6	We are actively doing things to improve patient safety	6 (2.9)	16 (7.8)	182 (89.2)	89.2	76.1	15.0
A9	Mistakes have led to positive changes here	24 (11.8)	58 (28.4)	122 (59.8)	59.8		
A13	After we make changes to improve patient safety, we evaluate their effectiveness	16 (7.8)	26 (12.7)	162 (79.4)	79.4		
<i>Team Work within Units</i>							
A1	People support one another in this unit	4 (2)	16 (7.8)	184 (90.2)	90.2	84.1	12.3
A3	When a lot of work needs to be done quickly, we work together as a team to get the work done	4 (2)	16 (7.8)	184 (90.2)	90.2		
A4	In this unit, people treat each other with respect	8 (3.9)	12 (5.9)	184 (90.2)	90.2		
A11	When one area in this unit gets really busy, others help out	38 (18.6)	32 (15.7)	134 (65.7)	65.7		
<i>Non-Punitive Response to Error</i>							
A8	Staff feel like their mistakes are held against them [R]	86 (42.2)	76 (37.3)	42 (20.6)	20.6[R]	20.9	9.0
A12	When an event is reported, it feels like the person is being written up, not the problem [R]	76 (37.3)	60 (29.4)	68 (33.3)	33.3[R]		
A16	Staff worry that mistakes they make are kept in their personnel file [R]	154 (75.5)	32 (15.7)	18 (8.8)	8.8[R]		
<i>Staffing</i>							
A2	We have enough staff to handle the workload	62 (30.4)	54 (26.5)	88 (43.1)	43.1	35.3	18.6
A5	Staff in this unit work longer hours than is best for patient care [R]	98 (48)	68 (33.3)	38 (18.6)	18.6[R]		
A7	We use more agency/temporary staff than is best for patient care [R]	34 (16.7)	52 (25.5)	118 (57.8)	57.8[R]		
A14	We work in "crisis mode" trying to do too much, too quickly [R]	112 (54.9)	48 (23.5)	44 (21.6)	21.6[R]		
<i>Overall Perception of Safety</i>							
A15	It is just by chance that more serious mistakes don't happen around here [R]	84 (41.2)	44 (21.6)	76 (37.3)	37.3[R]	54.2	15.8
A19	Patient safety is never sacrificed to get more work done	28 (13.7)	30 (14.7)	146 (71.6)	71.6		
A10	We have patient safety problems in this unit [R]	62 (30.4)	50 (24.5)	92 (45.1)	45.1[R]		
A17	Our procedures and systems are good at preventing errors from happening	34 (16.7)	42 (20.6)	128 (62.7)	62.7		
		Mean =	54.7				
% Average Positive Response for Section A		SD =	27.4				
** R indicates reversible answers							



Good		Needs Improvement		Weak			
Section F: Your Hospital		Strongly Disagree /disagree	Neither	Strongly Agree / Agree	% Positive Response	Mean	SD
Hospital Management Support for Patient Safety							
F1	Hospital management provides a work climate that promotes patient safety	18 (8.8)	38 (18.6)	148 (72.5)	72.5	59.2	32.1
F8	The actions of hospital management show that patient safety is a top priority	12 (5.9)	24 (11.8)	168 (82.4)	82.4		
F9	Hospital management seems interested in patient safety only after an adverse event happens	106 (52)	52 (25.5)	46 (22.5)	22.5		
Teamwork across Hospital Units							
F4	Hospital units do not coordinate well with each other [R]	108 (52.9)	40 (19.6)	56 (27.5)	52.9[R]	61.5	10.9
F10	There is good cooperation among hospital units that need to work together	36 (17.6)	58 (28.4)	110 (53.9)	53.9		
F2	It is often unpleasant to work with staff from other hospital units [R]	128 (62.7)	48 (23.5)	28 (13.7)	62.7[R]		
F6	Hospital units work well together to provide the best care for patients	16 (7.8)	32 (15.7)	156 (76.5)	76.5		
Hospital Handover (Handoffs) and Transitions							
F3	Things “fall between the cracks” when transferring patients from one unit to another [R]	82 (40.2)	76 (37.3)	46 (22.5)	40.2[R]	49.8	10.6
F5	Important patient care information is often lost during shift changes [R]	124 (60.8)	46 (22.5)	34 (16.7)	60.8[R]		
F7	Problems often occur in the exchange of information across hospital units [R]	84 (41.2)	82 (40.2)	38 (18.6)	41.2[R]		
F11	Shift changes are problematic for patients in this hospital [R]	116 (56.9)	50 (24.5)	38 (18.6)	56.9[R]		
% Average Positive Response for Section F		Mean =	56.6				
		SD =	17.5				
** R indicates reversible answers							

Table 5.4 above details the response rate according to the 5-point Likert scale and twelve of the fourteen dimensions. The questionnaire's authors (Sorra et al., 2014) recommend the Likert scale be condensed to produce positive, neutral, and negative values for each survey item. Positive responses include agree and strongly agree for direct questions and disagree and strongly disagree for reverse-worded questions. Neither agree nor disagree are neutral responses to all questions. Negative responses include disagree and strongly disagree for direct questions and agree and disagree for reverse-worded questions, as stated by Sorra et al. (2014), the authors of the questionnaire.

Fourteen items out of forty-two are variables known to influence nurses' perceptions of safety; and these scored  $\geq 70\%$  of average positive responses. Fourteen items out of forty-two items scored  $\geq 50\%$  of average positive responses, suggesting this is an area with potential for improvement within the teaching

hospital. The remaining fourteen items scored 50% or below average for positive responses, and so were considered areas for improvement.

The remaining two dimensions related to patient safety grades and the number of events reported. These dimensions were assessed according to a different scoring scale, and hence were scored and calculated separately. The results are presented in Sections 5.3.7 and 5.3.8.

The percentage of positive responses ranges from 8.8% to 90.2%. The gap between the least and most positive responses to survey items is relatively wide. The lowest average positive response was for the statement "Staff worry that mistakes they make are kept in their personnel file," reverse coding (8.8%). The highest average responses were for "People support one another in this unit" (90.2%), "When a lot of work needs to be done quickly, we work together as a team to get the work done" (90.2%), and "in this unit, people treat each other with respect" (90.2%).

### **5.3.2 Frequency Distribution Analysis**

The frequency distribution analysis was conducted to assess the normal distribution of the data constructs (Section 3.11.1). Table 5.5 demonstrates the frequency of values within each dimension, and thereby summarises the distribution of values in the sample. It also demonstrates the results of the normality test for the constructs, indicating the mean and standard deviation (Section 3.11.1). More details of the distribution plots for each dimension are given in Appendix 21.



**Table 5.5** Dimension Frequency Distribution and Normality Test

Dimensions	Teamwork Within Units	Manager Expectations & Actions Promoting Patient Safety	Organisational Learning-Continuous Improvement	Management Support for Patient Safety	Overall Perceptions of Patient Safety	Feedback & Communication About Error	Communication Openness	Frequency of Event Reported Theme	Teamwork Across Units	Staffing	Handover & Transitions	Non-punitive Response to Errors	Patient Safety Grade	Number of Events Reported
Statistical Analysis														
N	Valid	204	204	204	204	204	204	204	204	204	204	204	204	0
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	204
Mean		16.4902	13.0196	11.9020	10.6078	13.2157	12.2941	9.5784	12.4608	12.4608	12.2647	10.1569	10.5196	1.8578
Median		16.5143 <sup>a</sup>	12.8537 <sup>a</sup>	12.2553 <sup>a</sup>	10.6731 <sup>a</sup>	13.2632 <sup>a</sup>	12.5500 <sup>a</sup>	9.5250 <sup>a</sup>	12.4286 <sup>a</sup>	12.4286 <sup>a</sup>	12.2647 <sup>a</sup>	10.3448 <sup>a</sup>	10.3333 <sup>a</sup>	1.8110 <sup>a</sup>
Mode		16.00	12.00	13.00	11.00	12.00	12.00	9.00	12.00	12.00	12.00 <sup>b</sup>	10.00	10.00	2.00
Std. Deviation		2.66983	2.16547	2.10329	1.60760	1.95832	2.20429	1.76689	1.95351	1.95351	2.35276	3.13802	2.40168	.74569
Skewness		-.919	.104	-.832	-.851	-.330	-.992	.269	-.153	-.153	-.001	.002	.101	.381
Std. Error of Skewness		.170	.170	.170	.170	.170	.170	.170	.170	.170	.170	.170	.170	.170
Kurtosis		1.361	.039	.389	3.908	.024	1.149	-.015	1.321	1.321	-.208	-.240	-.636	-.661
Std. Error of Kurtosis		.339	.339	.339	.339	.339	.339	.339	.339	.339	.339	.339	.339	.339
Range		13.00	11.00	9.00	12.00	9.00	10.00	9.00	12.00	12.00	12.00	15.00	10.00	3.00
Minimum		7.00	7.00	6.00	3.00	8.00	5.00	6.00	6.00	6.00	6.00	4.00	5.00	1.00
Maximum		20.00	18.00	15.00	15.00	17.00	15.00	15.00	18.00	18.00	18.00	19.00	15.00	4.00
Sum		3364.00	2656.00	2428.00	2164.00	2696.00	2508.00	1954.00	2542.00	2542.00	2502.00	2072.00	2146.00	379.00

a. Calculated from grouped data.

b. Multiple modes exist. The smallest value is shown

As detailed in Section (3.11.1), based on skewness and kurtosis, the data sets of all constructs are judged to be normally distributed. A skew and kurtosis of less than  $\pm 1$  is based on a skew ranging from -0.992 to 0.381 and kurtosis ranging from -0.661 to 3.908 (Table 5.5 and Appendix 21).

The frequency analysis indicates that generally there is a normal distribution. All the results fall within the ranges of  $\pm 2$ , and those that are closest to zero indicate the bell shape for normal distributions. Skewness closest to zero relates to the dimensions of staffing, handover and transitions. The kurtosis dimensions closest to zero are used to manage expectations and actions for promoting patient safety, management support for patient safety, overall perceptions of safety and openness to communication.

Standard deviation is a measure commonly used to quantify the amount of variation or dispersion of a set of data values, as explained in Section 3.11.1. A 95% confidence interval results in a standard deviation of  $\pm 2$ , and according Table 5.5, there are 6 dimensions within the  $\pm 2$  standard deviation and 7 that fall outside it. The lowest standard deviation of 0.7 is for the patient safety grade dimension, and the highest at 3.1 is for the dimension of handover and transitions. It can be concluded that staff perceptions of patient safety culture within the teaching hospital are predominantly close to the mean (Appendix 21), and therefore there is almost no variability in their perceptions.

### **5.3.3 Reliability of Hospital Survey of Patient Safety Culture (HSoPSC) Responses**

An analysis of the responses by item was carried out to establish whether the measures were reliable. Reliability tests are conducted to examine each item for its discriminability. The data collected for the reliability test also evaluates the consistency, validity, and stability of the instrument (Pallant, 2011).

To check the reliability of the responses of the nurses, the researcher performed a Cronbach Alpha test. The result of the Cronbach's alpha test are given in (Table 5.6) for the 12 dimensions and the overall total scale. The normal range of values is between 0.00 and +1.00, and a higher value reflects a higher consistency (Polit

and Beck, 2014). Table 5.6 shows five out of 12 of the HSOPSC dimensions achieved an acceptable level on the Cronbach's alpha and two out of 12 achieved a good level.

**Table 5.6** Reliability of HSoPSC Scales

HSoPSC	Dimensions	No of Items	Cronbach's alpha
HSoPSC	<b>Total</b>	<b>42</b>	<b>0.637*</b>
<b>Outcome Dimensions</b>	Overall positive perceptions of patient safety	4	-0.35
	Frequency of events being reported	3	0.88**
<b>Ward Level Dimensions</b>	Manager expectations and actions to promote patient safety	4	-0.04
	Continuous Improvement for organisational learning	3	0.67*
	Supportive teamwork within units	4	0.72*
	Communication openness	3	-0.31
	Receiving good feedback and communication about error	3	0.79*
	Non-punitive response to errors	3	0.65*
	Sufficient number of staff	4	0.88**
<b>Hospital Level Dimensions</b>	Management support for patient safety	3	-0.34
	Positive teamwork across units	4	-0.27
	Good handover and transitions between units	4	0.72*
* Acceptable Cronbach's alpha			
** Good Cronbach's alpha			

However, five dimensions failed to achieve either an acceptable or good level of Cronbach's alpha. The five dimensions that achieved a low Cronbach's alpha levels are: Overall Positive Perceptions of Patient Safety ( $\alpha = -0.35$ ); and Manager Expectations and Actions to Promote Patient Safety ( $\alpha = -0.04$ ); Communication Openness ( $\alpha = -0.31$ ); Management Support for Patient Safety ( $\alpha = -0.34$ ); and Positive Team Work across Units ( $\alpha = -0.27$ ).

The overall Cronbach's alpha for the total HSOPSC items ( $n = 42$ ) is 0.64; which indicates an acceptable level of internal consistency. Therefore, the value of the Cronbach's alpha suggests the responses correlate with each other. This confirms the reliability of the responses and hence further analysis can be conducted.

### **5.3.4 Nurses' Perceptions of Patient Safety Culture**

The dimensions used to predict the patient safety culture in medical and surgical wards were analysed using a summary of total average frequency responses (Table 5.7). The responses were divided into three categories. The positive category comprised of strongly agree and agree options. The second category represents neutral responses and the third category is negative, integrating the options strongly disagree and disagree respectively (Section 5.3.1).

Hence, composite frequencies of positive response were calculated by grouping the 42 survey items into 12 patient safety culture dimensions. Each dimension included 3 or 4 survey items, which were used for the calculation of one overall frequency for each dimension. However, composition of the average positive score for all survey items in every dimension was calculated by adding the total number of positive responses on items (questions) within a composite (numerator) and dividing this by the total number of responses to all items (denominator).

The dimension that has the highest results in terms of positive responses concerns 'Supportive teamwork within units' to carry out healthcare duties (84%). This is followed by 'Receiving good feedback and communication about error' (81%) and 'Continuous Improvement for organisational learning' (79%).

On the other hand, only 11% of participants gave positive responses to 'Non-punitive response to errors', while 46% gave a negative response to this dimension,

suggesting there is a punitive culture towards error. While 18% gave a positive response to the statement 'Sufficient staff numbers', an equal number gave a negative response to this dimension, indicating that members of staff were unsure about what constituted sufficient staff numbers. While 37% answered positively regarding the dimension "Good handover and transitions between units", only 8% responded negatively to this dimension. However, the majority of the responses to this dimension were neutral, as will be discussed in the next chapter.

Three areas afforded interesting insights into the neutral responses; with over 50% ranging from Hospital wide, unit level and outcome dimensions (Table 5.6 and Table 5.7). The areas concerned included: 'Sufficient staff numbers' (65%); 'Overall positive perceptions of patient safety' (56%) and 'Good handover and transitions between units' (55%). These responses indicate members of staff are unsure about their perceptions related to these dimensions. Therefore, from the above analysis it can be concluded that the respondents have a range of perceptions. Despite the majority having worked in the hospital for 1 - 10 years, the staff neither agree nor disagree on several key aspects of patient safety.

**Table 5.7** Average Overall Responses of Patient Safety Culture Dimensions from the highest positive response to the lowest

No	Survey Dimensions	Positive Responses No (%)	Neutral Responses No (%)	Negative Responses No (%)
1.	Supportive teamwork within units	172 (84)	28 (14)	4 (2)
2.	Receiving good feedback and communication about error	166 (81)	30 (15)	8 (4)
3.	Continuous Improvement for organisational learning	162 (79)	32 (16)	10 (5)
4.	Frequency of events being reported	124 (61)	46 (23)	34 (17)
5.	Management support for patient safety	114 (56)	88 (43)	2 (1)
6.	Positive teamwork across units	108 (53)	84 (41)	12 (6)
7.	Manager expectations and actions to promote patient safety	98 (48)	96 (47)	10 (5)
8.	Communication openness	88 (43)	76 (37)	40 (20)
9.	Overall positive perceptions of patient safety	82 (40)	114 (56)	8 (4)
10.	Good handover and transitions between units	76 (37)	112 (55)	16 (8)
11.	Sufficient staff number	36 (18)	132 (65)	36 (18)
12.	Non-punitive response to errors	22 (11)	88 (43)	94 (46)

### 5.3.5 Regression Analysis

The good fitness of the regression model summary is expressed in Table 5.8. This shows the value of the R square for the model is 0.370, which signifies about 37% of the variability of the nurses' perceptions is explained by selected independent variables. R-squared is a statistical measure illustrating how close the data is to the fitted regression line (Parahoo, 2014). Therefore, it can be stated that an overall goodness of fit for a regression model is acceptable.

**Table 5.8** Fitness of the Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.609 <sup>a</sup>	.370	.334	2.17820	.370	10.271	11	192	.000	1.994
a. Predictors: (Constant), Non-punitive Response to Errors, Frequency of Event Reported Theme, Communication Openness, Staffing, Management Support for Patient Safety, Handover and Transitions, Teamwork Across Units, Overall Perceptions of Patient Safety, Manager Expectations and Actions Promoting Patient Safety, Feedback and Communication About Error, Organisational Learning-Continuous Improvement										
b. Dependent Variable: Teamwork Within Units										

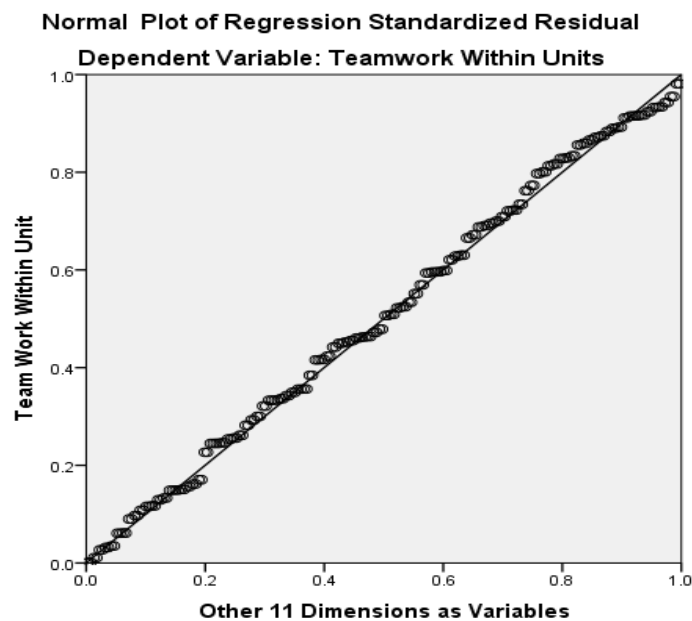
In order to identify the significant factors that influence perceptions of safety, a multiple regression analysis was conducted (Table 5.9) using a p value of <0.05 for statistical significance. Including 'Teamwork within the unit' as the dependent variable, because it has the highest average response (84%, Table 5.7) "Organisational learning - continuous improvement" was the only dimension to make a statistically significant contribution to the model (Beta=0.839, p<0.05) (Section 3.11.1).



**Table 5.9** Multiple Regression Analysis of the Dimensions

Model		Un-standardised Coefficients		Standardised Coefficients	t-test	Sig. P Value	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
	Manager Expectations and Actions Promoting Patient Safety	-.054	.086	-.044	-.621	.535	.206	-.045	-.036
	Organisational Learning-Continuous Improvement	.839	.128	.661	6.578	.000	.579	.429	.377
	Management Support for Patient Safety	.188	.113	.113	1.666	.097	.286	.119	.095
	Overall Perceptions of Patient Safety	-.065	.093	-.048	-.705	.482	.170	-.051	-.040
	Feedback and Communication About Error	-.188	.120	-.155	-1.567	.119	.386	-.112	-.090
	Communication Openness	.136	.096	.090	1.419	.157	.188	.102	.081
	Frequency of Event Reported Theme	.004	.052	.005	.076	.940	.128	.005	.004
	Teamwork Across Units	-.078	.090	-.057	-.866	.388	.136	-.062	-.050
	Staffing	.110	.070	.097	1.570	.118	.135	.113	.090
	Handover and Transitions	.028	.060	.032	.460	.646	-.257	.033	.026
	Non-punitive Response to Errors	-.086	.072	-.077	-1.198	.232	-.230	-.086	-.069
a. Dependent Variable: Teamwork Within Units									
P value P<0.05									

A Plot of linear regression using 'Teamwork within Units' as the dependent variable shows the strong linearity of this variable (Figure 5.2). This also depicts the normal distribution of the dependent variable.



**Figure 5.2** Linear Regression Plot

### 5.3.6 Pearson Correlation Coefficient

Table 5.10 indicates the values measuring the strength of the linear association (which means the pattern looks roughly like a line) between two variables and ranges between -1 (perfect negative correlation) and 1 (perfect positive correlation). The value of  $r$  is always between +1 and -1 (Polit and Beck, 2014) (Table 5.11). There are several types of correlation, but these are all interpreted in the same way. Cohen (1992) proposed these guidelines to interpret the correlation coefficient (Table 5.10):

**Table 5.10** Strength Values of Linear Associations

Correlation coefficient value	Association
-0.3 to +0.3	Weak
-0.5 to -0.3 or 0.3 to 0.5	Moderate
-0.9 to -0.5 or 0.5 to 0.9	Strong
-1.0 to -0.9 or 0.9 to 1.0	Very strong

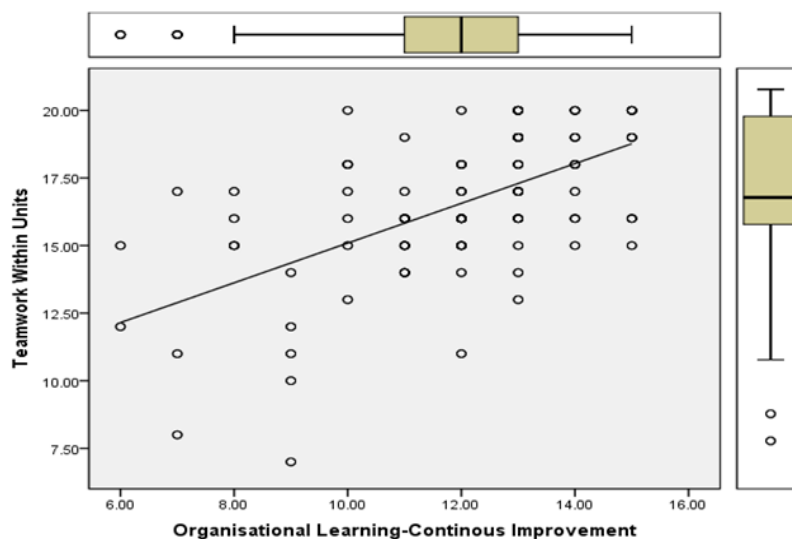
**Table 5.11** Correlation Coefficient for the 12 Dimensions

[illegible]

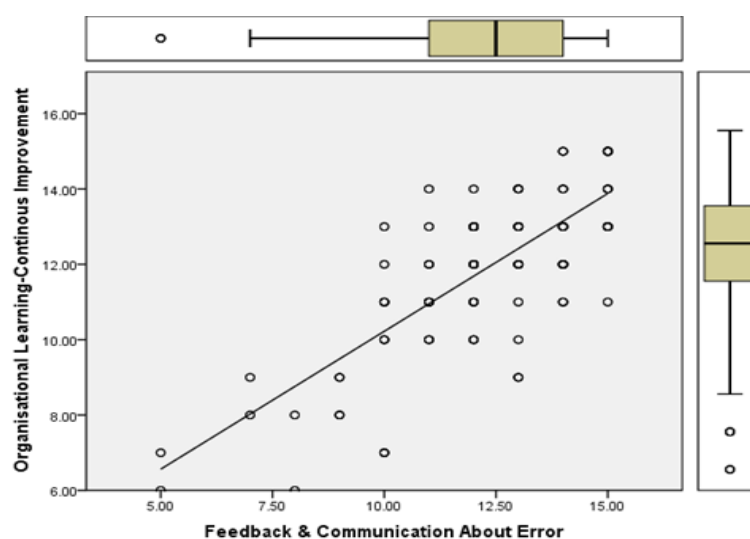
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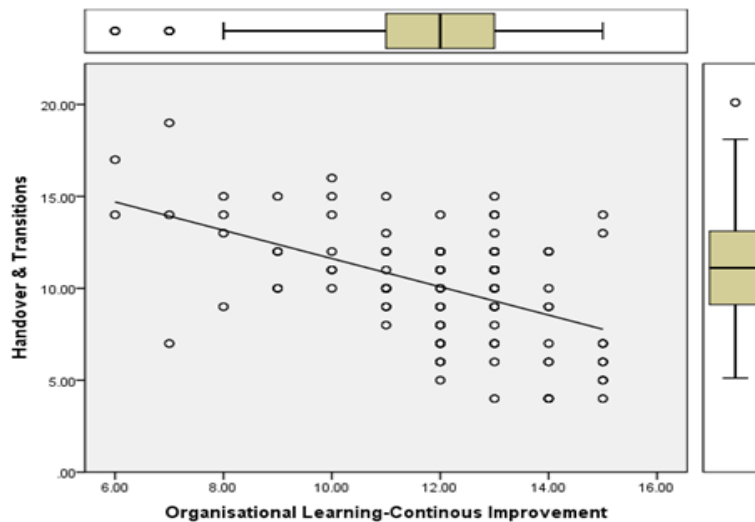
From the above table (Table 5.11), a Pearson's correlation was carried out to detect any relationships between the 12 dimensions. The results indicate that the majority of the correlations are based on moderate correlation related to the stated Cohens coefficient values given above. The dimensions 'Teamwork within unit' and 'Organisational Learning - continuous improvement' indicate a strong correlation and good linearity (Figure 5.3). In addition, 'Organisational Learning-continuous improvement' and 'Feedback and communication about error' have strong linearity (Figure 5.4). The dimension 'handover and transitions' has a strong negative correlation with 'Organisational Learning - continuous improvement' (Figure 5.5).



**Figure 5.3** Linearity of the dimensions 'Teamwork within unit' and 'Organisational Learning - Continuous Improvement'



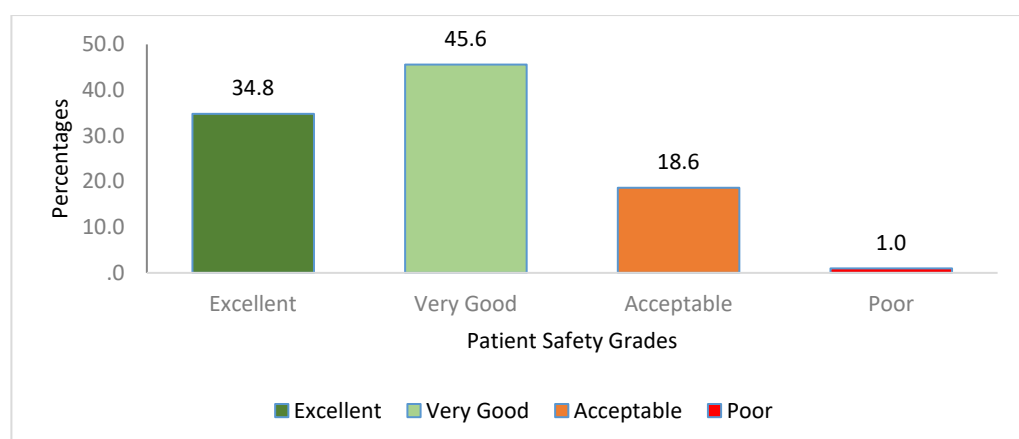
**Figure 5.4** Linearity of the dimensions 'Organisational Learning - Continuous Improvement' and 'Feedback and Communication about Error'



**Figure 5.5** Linearity of the Dimensions 'Handover and Transitions' has a strong negative correlation with 'Organisational Learning - Continuous Improvement'

### 5.3.7 Patient Safety Grades at the Hospital

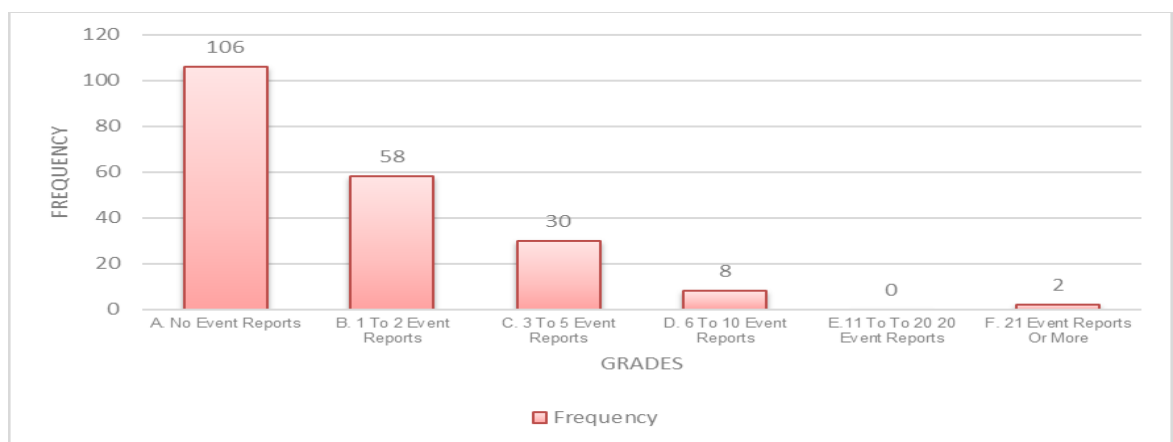
To determine the patient safety culture at the teaching hospital, nurses were requested to mark their responses according to patient safety grades. The frequency distribution analysis (Figure 5.6) shows the range of responses. The majority stated that patient safety is either very good or excellent. Only a small number perceived it to be poor. Overall, staff viewed the patient safety level as acceptable, or better than acceptable.



**Figure 5.6** Responses to the Patient Safety Grades Dimension

### 5.3.8 Number of Events Reported

According to the data, 124 nurses (61%) have reported errors themselves, whilst a considerably lower number of nurses, 34 (17%), responded that, when an error had occurred they had not reported it. Forty-six (23%) participants gave a neutral response to this question. Figure 5.7 reveals the reporting of adverse events by nurses in medical and surgical wards is at a high level. Taking the maximum figure possible, 98 events were reported between B and F (Figure 5.7). Given that not all errors are reported, these 98 events can be considered a conservative measure of error occurrences.



**Figure 5.7** Number of Events Reported by Nurses in the Past 12 Months

## 5.4 Conclusion

This chapter described the survey results collected using HSOPSC as a web based questionnaire. Different statistical methods were employed to analyse and interpret the data. The key results from Phase I showed the dimensions that carries the highest number of positive responses is 'Supportive teamwork within units', introduced to carry out healthcare duties (84%). This is followed by 'Receiving good feedback and communication about error' (81%) and 'Continuous Improvement for organisational learning' (79%). The average positive response rate for nurses' perceptions of the patient safety culture in a teaching hospital is analysed in this chapter to inform Phase II. Findings from Phase II of the thesis are presented in the following chapter.



## **6. Chapter Six: Phase II Findings**

### **6.1 Introduction**

This chapter presents the findings from the qualitative Phase II of this mixed methods study. The objectives of this chapter are:

1. To identify and explore nurses' perceptions of patient safety culture in Oman.
2. To explore nurses' understanding of patient safety.
3. To identify factors that influence nurses' perceptions of patient safety.
4. To identify and explore nurses' attitudes and behaviours towards patient safety.
5. To identify and explore nurses' understanding of patient safety within the hospital context and at ward level.

Throughout this chapter, the findings are illustrated through quotes taken from the participants of the focus groups and explored within the naturalism paradigm where, as a multiple, constructed, interdependent whole, reality is not easily reduced to numbers. This paradigm aims to establish the qualitative nature of social objects, behaviours and relationships where narratives from the focus groups are associated with the interpretivist paradigm. The thematic analysis steps described by Braun and Clarke (2006) are applied to the data, as detailed in Sections 3.11.2 and 4.9.2 and Chapters 3 and 4. The analytical framework is presented in Appendix 22. This section also provides detailed analytical interpretations of the focus groups (Appendix 22). A full discussion of the interpretations of the results obtained through both Phase I and Phase II is presented in Chapter 7.

### **6.2 Characteristics of the participants**

A total of 40 participants were invited to participate in this phase of the study (Sections 4.1 and 4.2). The researcher conducted a pilot focus group and four focus groups as detailed in (Section 4.7.2). The majority of the focus groups comprised expatriate nurses, since only three Omanis attended the interviews. As can be seen in (Table 6.1) below, the participants in Phase II had more experience than those in Phase I. Proportionally, more staff members from the medical wards

took part in Phase I, but that was as expected given that there are actually more members of staff in the medical wards (Table 6.1). Phase II involved as many staff members from the medical wards as the surgical wards.

**Table 6.1** Overall Focus Groups Demographics

		Male	Female
<b>Total</b>		4	22
<b>Age</b>	> 35 years	2	9
	< 35 Years	2	13
<b>Experience</b>	6 - < 6 months	0	0
	1 - 5 years	2	4
	6 - 10 years	2	9
	11- 15 years		7
	16 - 20 years		2
	> 21 years		1
<b>Location</b>	Medical Wards	4	10
	Surgical Wards	0	12
<b>Attended PS Trainings</b>	Yes	4	18
	No	0	4
<b>Qualification</b>	Diploma	1	10
	Bachelor's	3	12
	Others	0	0
<b>Grades</b>			
Ward Manages and Team Leaders	Grades 2 - 5	1	9
Staff Nurses	Grades 6 - 8	3	11
Newly Qualified Nurses	Grades 9 -10	0	2

### 6.2.1 Group Dynamics: Similarities and Differences

Out of the four focus groups conducted, Groups 1 and 3 comprised the junior grades (Grades 6 - 10) and Groups 2 and 4 comprised the more senior grades (Grades 2 - 5). The group dynamics and behaviours of the two types of groups differed noticeably. Focus groups with the more senior grades flowed more easily. The participants were able to answer the questions with confidence, were less hesitant about speaking out openly and the participants respected one another's

opinion. The researcher did not have to rephrase the questions as often as with the other groups and was able to control the discussion, which led to the generation of a great deal of feedback and material for later analysis. There was more transparency than in the other groups and one reply led to another as group dynamics flowed. In addition, there was a great deal of non-verbal communication, including facial expressions, head nodding, smiling, body orientation and eye contact that indicated agreement with what was being said.

During the junior focus groups (Groups 1 and 3) it was necessary to follow-up with additional questions as, in some cases, participants did not immediately respond to the questions put to them. The participants within these groups were more hesitant and at times appeared to be afraid to express themselves. The junior groups expressed more negative opinions than the senior groups.

In addition, within the two junior groups there were one or two dominant participants. In some instances, these dominant participants interrupted one another and disagreed openly with the other's opinions. As a result, the interviewer had to intervene to refocus the group and ask others what they thought. There was a great deal of non-verbal communication with lots of agreement being signalled. There was disagreement regarding practices of unfair treatment among grades and favouritism among certain groups of nurses. Some defensive body language was observed including not smiling, shaking of the head, making an angry face and refusing to comment.

### **6.3 Presentation of Findings**

Four main themes were identified from the findings of the focus groups. The themes were generated using the steps of thematic analysis described by Braun and Clarke (2006) as detailed in Sections 3.11.2 and 4.9. Further quotes added on how data were analysed, and themes identified (Section 4.9). Figure 6.1 illustrates the main themes and subthemes that arose in the interviews, depicted in terms of frequency, with communication issued being the most mentioned and organisational factors the least.



**Figure 6.1** Focus Groups Main Themes and Sub-Themes

To demonstrate that the research aims and objectives have been clearly met, and to simplify the presentation of the findings, we discuss four themes to represent the findings from all four focus groups. The findings detail the nurses' perceptions of patients' safety culture in the medical and surgical wards in the hospital. How the main and secondary themes relate to one another will also be discussed below. Each main theme is illustrated with quotes taken from the focus groups and numbered according to the focus group (FG) and participant (P).

## 6.4 Communication

Good communication is a key element in the provision of high-quality care. Effective communication among healthcare team members influences the quality of working relationships and job satisfaction and profoundly impacts patient safety. Communication was the most frequently mentioned factor in terms of promoting patient safety. This section presents this theme and its sub-themes:

inter-professional communication; information and documentation and reporting errors and feedback.

Communication – or the lack of it – among different teams or disciplines was the main theme that emerged from the four focus group discussions. Notably, current research indicates that ineffective communication among healthcare professionals is one of the leading causes of healthcare errors and patient harm (Care Quality Commission, 2014). This finding was reflected in all focus group discussions and is demonstrated in the following statement:

**FG1-P5:** *"...one patient is shifted to the ward and he required isolation but there were no isolation preparations at the ward because no one had informed the ward that he required isolation. So therefore, it was a communication problem..."*

The above quote highlights the general perception that a failure to communicate appropriately has the potential to compromise patients' safety. This issue was thought to be of particular significance in the medical and surgical wards and was noted by all participants in relation to multi-speciality professionals. Reference was also made to the gap in communication and documentation during handovers and the negative impact this has on patient safety, as in the following quote:

**FG1-P4:** *"We have many patients. We have ten or twenty observations to make about each patient. The time is limited. [As we are] in a hurry sometimes we miss very important points during the handover. Because of time constrictions."*

Some participants commented on the importance of communication and had positive things to say too. Good communication, both verbal and non-verbal, was considered vital, as encapsulated by the following quote:

**FG1-P3:** (speaking authoritatively) *"... first of all, patient communication is very important". P5 added: (Speaking authoritatively) "...First of all, patient communication is very important, eye to eye contact, behaviour, our talking to them to prevent errors". P2: (adding to what was said earlier) "Of course we discuss and we are asked how to prevent miscommunication from happening again".*

Another participant added:

**FG2-P2:** *"Communication within our department is very good".*

The quotes above resonate with what was said by other participants in the same group and other groups who mentioned similar scenarios, giving various examples. It was also said that good communication encouraged collaboration, helped prevent errors, increased the safety of patients and built a good safety culture and practices. It was noted that communication among healthcare team members influences the quality of working relationships, has an impact on job satisfaction and also has a profound impact on patients and the quality of care delivered.

#### 6.4.1 Inter-professional Communication

Inter-professional communication is a key component of patient safety. Hence, collaboration and respect and understanding of the roles of each person within the team is required for a safe patient outcome. The disconnect in the perception of communication between physicians and their nursing colleagues is significant and is well documented in the literature (Childress, 2015). As Weaver et al. (2014) note, strong team collaboration supports patients' safety on many levels. Several participants brought up the fact that good communication was a factor of members of teams or departments who were familiar with one another and trusted one another without regard to hierarchy. This observation was made in all the groups and as one participant said:

**FG1-P5:** *"... the doctor who comes frequently to visit patients usually speaks to nurses every day and we have good communication."*

Although not all communication is positive:

**FG2-P5:** (speaking with sarcasm) *"Most of the time we tell the doctors not to be in a hurry and take things step by step process".*

However, this type of communication implies that there actually is a good relationship among staff members as the nurses feel free to speak with the doctors in such a way. The nurse spoke somewhat sarcastically because the medical staff appear to be authoritarian in the way they give orders.

**FG4-P8** stated: (Speaking with hesitation) *"sometimes there is hierarchies, we [nurses] feel it, doctors are giving orders without us [nurses] being able to digest or even question it".*

The use of good communication skills, both verbal and non-verbal, among teams and patients results in the development of good practices between physicians and nurses, which leads to safe practice. This point was mentioned by a number of participants in the different groups, which highlights the fact that effective teamwork and communication are skills required to ensure patient safety. It was agreed across all groups that team collaboration was essential for safe practice. When healthcare professionals do not communicate effectively, patient safety is perceived to be at risk for several reasons, including: lack of receipt of critical information; misinterpretation of information; unclear orders given over the telephone and overlooked changes in the status of a patient that could raise issues. It was observed that good inter-professional communication was associated with cohesive team working with no boundaries, which has a positive impact on a patient's outcomes.

#### **6.4.2 Information and Documentation**

Information and Documentation is crucial to patient safety, optimal patient outcomes and safe practice. A primary purpose of documentation and recordkeeping systems is to facilitate the information flow that supports the continuity, quality, and safety of care. The handling of information and documentation during handovers was regarded as being very important. The quote below highlights a view raised by several participants regarding how a gap in documentation and information may compromise the safety of patients. Participants referred to both the handover and transfer of patients as an issue, as in, for example:

*FG2-P4: "Pre-op papers are not completed or passed over. So there is no information passed over. So the condition of the patient is not known."*

Other participants highlighted a more critical situation during handover:

*FG2-P2: (speaking in frustration) "During endorsement (handover) time, for example, ED wants to shift a patient, she will endorse eight issues out of ten in*

*a hurry. So, the staff on the next shift will also miss some issues so there is a communication gap; patient safety gets compromised".*

Having accurate electronic documentation and the proper communication tools during handover periods and when moving patients between wards was highlighted by many participants in different focus groups as a way to enable safe practices.

**FG3-P1:** *" We are handing over patients through SBAR (electronically) and proper handover that is well documented in patients' EPRs (electronic patient records)."*

This helped to establish patient safety as a topic of conversation and encouraged contemplation of the enhancement of organisational safe practices. Having such procedures in place ensures that patient details are not missed and provides opportunities for safety practices briefings. Having the right information and documentation were viewed as critical elements of patient care, not only because such documentation validates the care that is being provided, but also because this helps share the key data with subsequent caregivers and optimise the care delivery processes.

### **6.4.3 Reporting Errors and Feedback**

Reporting errors is fundamental to error prevention and to learning from errors. A culture of blame and punishment leads to errors not being reported, primarily because of the fear of punishment. Under the theme of communication, there was a diversity of opinion about the effect of reporting errors and of providing feedback on patient safety. Differences in opinion concerning this issue were observed between the junior and senior groups. The lack of or limited feedback by hospital management was mentioned by participants of all four focus groups. Together with error reporting, this was highlighted as one of the major factors in promoting patient safety. Participants were encouraged to learn from their errors and to speak up more freely when feedback was offered. Even senior staff remarked on the lack of feedback from their managers.

**FG2-P2:** (speaking authoritatively) *" When we write an incident report, most of the incident reports gets closed, but we don't know if it is opened or closed."*



*(sigh) ... We are always informed that it is being forwarded but we do not get any feedback of who is involved in the incident ... feedback is needed to do more for patient safety culture."*

Participants talked about limited feedback from management and the poor response of the hospital management when errors were reported. It was only at ward level that feedback was given to enable preventative action in future. A junior staff member stated:

**FG1-P2:** *" Usually we get feedback through messages in ward meetings and emails and information on what to avoid" .*

Some participants stated that they were afraid of administrative nursing management's reaction to any incidents that had been reported, especially when staff members were called in to discuss it individually. Some added that incidents were ranked according to priority and severity and remarked on the lack of transparency by the leadership when an error was reported. This created an atmosphere of unease among participants and the fear of reporting errors and potential consequences was obvious to the researcher.

Conversely, some participants in the senior groups stated that feedback was positively received and used as a model for improvement with the aim of creating a safe practice that enhances the learning environment:

**FG4-P1:** *" Yes ... we take the incident reports as a model for improvement and not for punishment."*

Thus, it appears that although reporting errors is considered to be essential for error prevention, the senior nurses are caught between two groups of staff, their juniors' staff and their managers. They are unable to influence the outcome as more senior staff do not always relay the consequences of an error to them, yet they are trying to learn from any errors made. This indicates the importance of reporting errors and providing information and feedback that leads to improving safety practices. The statements above highlighted the importance of improving communication, feedback and transparency among the teams to enable safe practices and promote better care delivery.

FG1-P4 highlighted: “post any incidents; discussing incidences is a must in our ward so that the information reaches everybody, we discuss how to prevent any incident and we do this several times amongst ourselves”.

Moreover, establishing a culture of positive communication and good collaboration in order to create a safe culture within their wards was a key message that emerged from all the focus groups. It was clear that receiving feedback from incident reporting systems was thought to be essential for healthcare organisations to learn from failures in the delivery of care and to promote best practices. The provision of actionable feedback that visibly improved systems was highlighted as a key feature in future reporting. Good leadership, credibility of information, effective dissemination channels, rapid action and feedback at all levels of the organisation were considered to be essential features to maintain a patient safety culture. Above all, the safety-feedback cycle must be closed to ensure that reporting, analysis and investigation results in timely corrective actions that effectively address vulnerabilities in the existing systems.

## 6.5 Professionalism

Professionalism and collaboration promote patient safety. Open communication among healthcare professionals about care concerns is essential to patient safety. Healthcare is delivered by teams of professionals who need to communicate well, respect the principles of accountability and responsibility for their actions, treat one another with equity and fairness and work as a team.

Professionalism was portrayed by participants as a:

FG3-P3: “*complex subject, encompassing competence, ethics, integrity, probity, reliability, commitment to serving patients and consistency of practice*”.

According to participants, professionalism also related to observing the appropriate boundaries in relationships with patients and their relatives, colleagues and managers. They stated that patients wanted to feel comfortable with the people they were entrusting their wellbeing to. Some communication techniques have been proven to make people feel better.

FG4-P1: *"nurses should be friendly and open. A patient should be acknowledged immediately".*

Many participants reflected the thought that:

FG2-P2: *"smiling, greetings and appropriate touch also lets patients know they matter."*

A participant referred to professionalism as:

FG1-P1: (in low tone) *"[professionals] reflecting on their own practice and ensuring that they maintain the knowledge and skills to provide high standards of care, which itself requires nurses to keep up to date".*

Nurses' bedside manner encompasses their nursing knowledge, personality, and ability to understand the patient and communicate their concern for them. It was evident from the findings that the attitude of staff towards their professional roles in general and their responsibilities regarding patient safety specifically, had a direct impact on the safety of the patient and the safety culture of the hospital. Participants portrayed their concerns and responsibilities in this regard by diverting their professionalism towards patient's rights, as demonstrated in the following quote:

FG1-P4: *"Treat the patient like a human. He is a human being the same as our parents, daughter or whoever. Respecting the patient..."*

A more appropriate strategy would be to advance towards a 'culture of professionalism'; a definition that embodies the culture of safety, as indicated mainly by the senior groups (Groups 2 and 4).

FG4-P3: (looking positive) *"Professionalism is how to show respect to own profession and the place we [nurses] work in".*

It was evident from all the group discussions that the healthcare service needs to be scrutinised despite the continuous audits that are carried out. It was critical for participants to focus on providing positive experiences for patients as soon as they enter the hospital door to convey a sense of courtesy, care and helpfulness by being professional.

It was important to pursue a code of professionalism that recognises that there are rights and responsibilities for nurses as well as for others in healthcare teams who interact with one another and patients on a daily basis. It was suggested that unprofessional behaviour was more common with regard to completing professional standards documents, respecting workplace policies, and engaging in critical self-reflection. This was captured in the following statement:

**FG1-P4:** *"Respecting the patient. It is all about the right technique ... about compliance and doing no harm; it is all our responsibility, where we respect our workplace, and have our own practice reflection".*

**FG3-F5** had also stated: *"It is also about respecting patients decision but also convincing them professionally and politely which is very important".*

### **6.5.1 Accountability and Responsibility**

A range of responses focused on the issues of accountability and the responsibilities of nurses in relation to patient safety. Nurses carry big responsibilities and are accountable for ensuring the safety of patients during their stay in hospital. Some commented:

**FG2-P7:** (speaking authoritatively) *"For patient safety we have to really voice what is going on. Because a patient's life is very important".* Others agreed to this by shouting *"yes" that should be the case"*.

The additional burden on nurses was mentioned in relation to how often they took over full responsibility for the patient. This is demonstrated in the following quotes taken from different focus group interviews:

**FG2-P2:** *"We usually do not compromise with patient safety over any issue. We take full accountability for our patient care ...".*

This statement was echoed by all the participants in the group, who nodded their heads in agreement. Improving the quality of the patient's experience has become an imperative for healthcare organisations as has creating and sustaining a culture of accountability to create a safety culture that ensures that the patient is free from harm. Participants in other groups referred to this sentiment by using different terms, such as *'no harm to patient'; 'respect for patient and families';*

*'treat them individually and as a human'; and 'consider the patient as a family member'.* This sense of accountability and responsibility which is inherent in the nurses' professional conduct contributes to the safety of patients by protecting them from harm and safeguarding their interests.

FG1-P2: (Thinking) *"Patients are our first priority"*.

Others in the same group nodded their heads and smiled in agreement with this statement. Leadership at all managerial levels, along with the support of key personnel from other health professional groups, can help to overcome pervasive barriers to enhancing accountability within healthcare.

FG4-P8: *"It is all about leadership, how leaders treat us and how leaders understand our responsibilities and accountability from their perspective as we take that to our patient in our behaviour"*.

It was noted that the participants' perception of a culture of accountability was based on a common belief in continuous learning and improvement at the individual, ward, and organisational levels. This culture could be created by encouraging the reporting of errors, not punishing members of staff for making errors and by promoting collaboration and coordination among and between all levels of the organisation and across all specialties. It also relates to the fact that any significant initiatives promoting long-lasting organisational change, including accountability and responsibility, require a transformation of organisational culture.

### **6.5.2 Equity and Fairness**

Transparency and frequent communication are vital to promote equity and fairness among staff and reduce staff concerns thus allowing individuals to focus on more rewarding and productive activities. Participants expressed their concern about equity and fairness and their effect on staff performance. Many participants commented that they were frustrated because they perceived unfair or unequal treatment by hospital management and health managers of staff members who

made an error. This feeling was expressed by several participants, as in the following quote:

FG4-P1: *"Based on their situation because, other staff especially those expatriates, they think that once their negligence is discovered, they will be sent home, if the incident report is against them."*

All the groups but mainly junior staff groups spoke about managerial favouritism and issues of equal recognition being the most common issues and challenges to any leadership, mainly after an adverse incident is reported. Focusing on more transparency and good communication as participants suggested should create more equity and fairness among all nurses: both expatriate and Omani.

FG2-P5: (looking frustrated) *"there is no transparency in communication, sometimes top management hide things from us, and so the same with our ward manager. Sometimes this feeling creates inequity treatment between us as nurses"*.

Nurses were constantly looking for ways to improve the quality of service they provide to meet the demands of the public and close the quality gaps in healthcare systems. A participant added that duties and responsibilities, along with rewards and punitive measures, were not dispensed equally. This situation had a negative impact on patient safety, as stated by participants, as care was not distributed equally among patients. It also led to increased staff absences and lack of motivation and/or care among staff and staff members not fulfilling their duties:

FG1-P2: (speaking in frustration) *"Sometimes if patients soil themselves, the whole bed has to be changed so nearly half an hour is spent on that. So, the important works like blood investigation or any other dressing, we miss. Therefore, we need more helpers"*.

Other participants supported the view that the additional workload of non-clinical duties were ward-dependent:

FG2-P2: (speaking and thinking) *"I think it goes ward wise. There are a lot of non-nursing activities that we do but it is always within the limit and we never compromise with patient safety because of work load."*

However, some participants recounted positive experiences when equity and fairness were part of the organisational culture and when hospital management within the health organisation took all personnel into consideration:

**FG4-P1:** *"...management is taking this into consideration by taking the side of the staff and, at the same time, taking the side of the patients, before taking action."*

The statement above reflects the fact that the organisation applies the principles of equity and fairness to the staff and patients to create a culture free from fear and unfair treatment. Participants from both senior groups (Groups 2 and 4) agreed with the quotes above, adding that there were also professional committees within the hospital that took any necessary action and looked into individual situations.

### **6.5.3 Teamwork**

Patient safety, in the context of a complex medical system, recognises that effective teamwork is essential to minimise adverse events caused by miscommunication with the staff members caring for the patient and misunderstandings of roles and responsibilities. The need for teamwork among healthcare professionals, within the department and across hospital departments, and its positive impact was a particular issue that emerged from the findings.

**FG1-P2:** *"Team work is always there ... for patient safety."*

This sentiment was expressed by other groups. Teamwork was seen by participants as a positive factor that contributes to patient safety within their unit and a valuable asset that helps them support one another.

**FG3-P1:** (with enthusiasm) *"Everyone on the team, all to support one another as a team."*

Moreover, upon examining team cohesiveness, it was widely recognised that team performance was a crucial aspect in providing safe patient care. All the groups agreed that there was strong teamwork within the wards.

Conversely, participants highlighted the issue of poor coordination among nurses or other disciplines at various levels of the organisation, which appeared to affect the quality and safety of patient care by, for example, leading to delays in treatment and conflicting information. Therefore, teamwork among nurses and other staff members from other disciplines became a central focus in patient safety. Furthermore, with the increase in complex treatments and disease processes within medical and surgical wards, stronger efforts were required to promote teamwork and collaboration first among nurses and then with staff from other disciplines, so as to achieve a system-wide culture of safety.

**FG2-P1:** *"we collaborate well as nurses, there is always someone to help, but some technical areas like radiology and labs needs to work more with us to have a better teamworking and collaboration for patients' sake".*

It was evident that the responsibilities of professionals working as a team include not only activities they deliver because of their specialised skills or knowledge, but also those resulting from their commitment to monitor the activities performed by their teammates, including managing any conflicts that may result.

**FG1-P3:** *"As a team we can overcome problems."*

It appeared that there were a range of benefits when teamwork was enhanced by inter-professional collaboration. These included a reduction of errors, improving quality of patient care, addressing workload issues, building cohesion and reducing burnout of healthcare professionals.

## **6.6 Cultural Diversity**

Communication between nurses and patients, and understanding cultural diversity is vital to patient safety. More information is required regarding specific problems caused by cultural diversity which can affect patient safety. This section presents the theme of cultural diversity and its subthemes: punitive working culture; multi-cultural language workforce and family responsibility towards patient safety. Professional nursing practice must adapt to the changing values and beliefs of the population it serves (Society for Human Resource Management, 2008) and, as part



of that commitment, nurses are required to ensure that all patients are safe, regardless of their cultural background. Language variations and other unknown barriers can put some patients at risk of having a negative healthcare experience. FG2-P2: "despite the differences in our backgrounds, we all speak in English language as per policy, and sometimes with little Arabic for our patients".

The participants believed that social and cultural factors have an impact on patient safety. They raised a number of patient safety issues which they thought could be attributed to the culture at the hospital. The majority of participants talked about how patient safety had been affected by a blame culture, whereby nurses would be blamed for something, even when it was not part of their duties. This was described by several participants from different focus groups, for example:

FG1-P1: (in a shy voice) *"Sometimes I feel the reports blame us but at times we are not at fault but since we are nurses they (Nursing Administration) blame us."*

Others reflected on doing others' jobs such as the relatives' job or non-clinical duties, which resulted in an additional load to their duties:

FG3-P6: *"During visiting times, the ward becomes like a market place. Lots of relatives come in with a lot of personal belongings. ... they bring chocolates for diabetic patients ... Even if we explain they do not listen to us. There is a difference in culture. Ummm we spend time explaining to visitors rather than looking after our patients"*.

Several participants referred to cultural barriers to policy enhancement. Policies should be adhered to promote a safe culture and overcome some of the culture barriers. Several nurses referred to the fact that policies were not adhered to by the families of the patients and administration personnel within the hospital. This is discussed in more depth in Section (6.6.3). One participant said:

FG1-P4: *"Sometimes a patient's family asks us too many questions we cannot answer. Explaining over and over to families is time consuming"*.

Participants voiced concerns about blame as non-clinical activities, such as phlebotomy, were added to workloads and there were higher expectations of safe practice and increased demands by the families of the patients. This sentiment was expressed a number of times:

*FG2-P4: "... many a time they report that it is us who are to be blamed for bed sores."*

It was mentioned that, because many health beliefs and behaviours were culturally-based, it followed that when two different cultures come together in a healthcare setting, a collision of expectations was bound to occur. Thus, when working with diverse populations in the Omani health organisation, health practitioners often view their patients' cultures as a barrier to care. This was reflected in the following statements:

*FG3-P3: "(adds on whilst others were talking) ... Privacy specially for the female, according to the Oman culture".*

Additionally, social and cultural norms put additional pressure on nurses, for example, where the privacy of a female patient had to be respected and when any male physician had to be escorted by a female nurse. A shortage of staff did not help in such situations and this had an impact on patient safety and nursing practice.

There was general agreement with this sentiment with some participants adding that the fact that a male doctor is unable to see a female patient alone is a positive factor in enhancing the culture of safety for the patient within the cultural practice of the country.

### **6.6.1 Punitive Working Culture**

Critical to establishing a safety culture is a non-punitive reporting culture. The aim of a safety culture is not to create a "blame free" culture, but one that balances learning with accountability, assesses errors and patterns in a uniform manner, and eliminates unprofessional behaviours. A safety culture fully supports high reliability and is focused on three qualities: trust, report and improvement.

A punitive culture had a negative impact on staff and patient safety, which could compromise the quality of care delivered.

*FG1-P4: "sometimes, we [nurses] feel that we are so scared of all the blame thrown on us despite all the care we do, but we are doing our best for our patients".*

Participants described how the punitive culture became most apparent when errors were reported. Some respondents voiced their fear that by reporting errors they may lose their jobs. This was explained in the following statement:

*FG3-P2: (speaking in a loud tone) "Nurses are not scared of the documentation, but they are scared of the action ... we are scared of losing our job... job security..."*.

An additional barrier to creating and sustaining a culture of safety, voiced by all the participants, was the fear-driven culture and blame-orientated traditions in nursing practices that use a punitive approach. In this situation, errors were blamed on the inadequacies of an individual nurse not to problems in the system. In the healthcare organisation where the study took place, any nurse who made an error, such as giving the incorrect dose of medication, was subject to dismissal.

*FG2-P2: "...the nurses are the ones who get affected ... It happened in some wards where staff was terminated".*

It was a clear message that this punitive culture needed to be addressed and looked at from different perspectives. Nurses are not able to play a leading role in safety culture if they do not support one another and do not encourage one another to admit and learn from errors. This creates a negative culture which does not nourish the staff.

### **6.6.2 Multi-Cultural Language Workforce**

Working in a multicultural environment is challenging. Each culture has its own unique characteristics and dimensions that shape the language, lifestyle, beliefs, values, customs, traditions, and patterns of behaviour, which expatriate nurses

must come to terms with. However, cultural diversity in the healthcare environment can potentially affect the quality of care and patient safety. Effective communication was highlighted as critical to the safety and quality of patient care within any healthcare setting. Barriers to communication included differences in language and cultural differences, which need to be overcome to ensure patient safety. Many participants voiced these concerns, as the employees were mainly expatriate nurses, of whom almost 75% did not speak Arabic, and the majority of patients were Omani who generally spoke little or no English. This situation was captured in all focus groups as follows:

**FG1-P1:** *"There is a language problem and we do not know a proper way to educate patients because of the language barrier. What we try to convey but they do not understand."*

All the participants agreed with this statement by nodding their heads in agreement. The fact that some patients might speak English was regarded as a positive factor that contributes to breaking the language barrier.

**FG3-P1:** *"... there is a barrier of language with us. We know a little bit of Arabic but they sometimes speak very different languages. So I think language is the main barrier".*

All the participants agreed that the training in Arabic offered by the hospital to expatriate nurses is a long-term solution; at present most nurses appear to have learned only general terms and a few words. In addition, participants stated that cultural customs and different backgrounds were explained to them as part of their orientation programme when they joined the organisation, so that they were aware of the cultural backgrounds and boundaries of their patients.

Throughout the discussion it was clear that in all healthcare settings, cultural awareness, sensitivity to different cultures, and competency requirements were necessary because the concepts of health, illness, suffering, and care mean different things to different people. Knowledge of cultural customs enables healthcare staff to provide better care and help avoid misunderstandings among staff, patients and their families. Despite the fact that the organisation provides programmes for expatriate healthcare professionals, there was a need to further improve educational and orientation programmes regarding the culture and

language in Oman. This is because there was a link between the care provided and the quality of the communication between those involved. Differences in ethnicity, linguistic backgrounds and culture could pose challenges to developing collegial or therapeutic relationships and to being able to offer congruent care. Therefore, understanding how social and cultural factors are interconnected with language is important to promote successful communication.

### **6.6.3 Family Responsibility towards Patient Safety**

The safety of healthcare delivery is enhanced by involving the families in the healthcare process to ensure the safety of the patients. Families' lack of responsibility for patient safety and the lack of implementation of hospital regulations and policies was one of the major challenges faced by nurses. Participants spoke about how it was normal for visitors to come to the ward outside visiting hours and how too many family members demanded information about the patient's condition at different times. This added an extra burden on the nurses' workload, as they spent too much time explaining the situation to patients and their families. This was repeatedly raised in the four focus group discussions, as the following statements demonstrate:

**FG1-P5:** *"... Around 10-15 people come to visit the patient at the same time, no room, no space". (In a loud voice) "They don't comply with hospital rules and regulations".*

Other participants commented on the lack of awareness and knowledge by patients and their families:

**FG3-P6:** *"During visiting times, the ward becomes like a market place. ... Even if we explain they do not listen to us. There is a difference in culture."*

All the participants of the different groups agreed that they were unable to control visitors; some were concerned about children being brought to the wards to visit infectious patients, which could compromise the safety of the children and others. Family awareness is required to maximise the culture of safety as the relatives' lack knowledge and awareness.

FG2-P5: *"family education is now needed to overcome this barrier, and sometimes we are doing it if we [nurses] have the time"*.

Notably, cultures differ in how much they encourage individuality and uniqueness versus conformity and interdependence. Cultures like the Omani culture does not stress self-reliance, decision-making based on individual needs, and the right to a private life. Nevertheless, the cultures demand absolute loyalty to one's immediate and extended family/tribe. Individuals rely heavily on an extended network of reciprocal relationships with parents, siblings, grandparents, aunts and uncles, cousins, and many others. Many people are involved in important healthcare decisions, including ones who are unrelated to the patient through blood or marriage. Hence, there is a large impact on care when members of the extended family all require information on a patient as opposed to only one person receiving the information and passing it on to others in the family.

## **6.7 Organisational Factors**

Three additional issues that might affect the safety of the patient were identified from the findings. These related to organisational systems within the hospital and its environment. Many participants spoke about how the organisation of the hospital and its environment affected patient safety. Human and organisational factors are some of the most important contributors to both safe and effective care and unsafe care and safety incidents. These factors were mainly clustered under three subthemes: structural environment; processes, education and training.

### **6.7.1 Structural environment**

The structural environment of the hospital was reflected on in a range of responses related to the effect of organisational structure. Particular reference was made to the structure of isolation for infectious cases, where no isolation rooms were available, compromising the safety of staff and other patients. This was identified by all four focus groups and by participants in the following ways:

FG4-P3: "... isolation ... no isolation room". Others had reflected on that differently due to the number of isolated beds available in the wards; stating:

FG4-P5: "... *E.coli* patients should be kept in the room. Doctors say that for infection control they can be kept on the corner bed (open bay), but it is the surgical ward so other patients will get infected."

Some participants also referred to the safety issues related to the medication room or cupboard located behind the nursing station where staff are continually being disrupted by patients or visitors while preparing medications.

FG2-P2: "there is no space to prepare medication, nursing station facing patients bay, and so we are disrupted all the time".

Others reflected on how they would do their utmost to ensure the safety of patients, stating:

FG1-P4: "I feel that a patient's life is placed in our hands so whatever problem there is, there like lack of equipment, we will try to do best for the patient as much as possible for patient safety."

It was clear that there was a connection between the structural environment and the quality of care delivered. The use of open communication and openness with right patients' information had its positive impact on nurses' perceptions of safety and care delivery.

### 6.7.2 Processes

The processes of healthcare delivery were reflected on by the respondents in various ways. Some processes were highlighted in different focus group discussions (senior and juniors' groups 1, 3, and 4) particularly where procedures overlap with other activities related to patients; such as the following:

FG3-P6: "Sometimes there are radiology appointments. You take your patients and you realise that there are other ICU patients inside and you have to wait. Therefore, some of the procedures get delayed."

Issues with processes were also reflected upon by participants from other focus groups (senior and juniors' groups 2, 3 and 4) in relation to other procedures such as medication administration, where prescription updates are not done through

the system by physicians. This has an impact on the system as no reminders to update the medications are issued within the system or are not taken into consideration by physicians, despite continuous reminders by the nurses.

**FG1-P1:** *"most of the time patients miss medication because prescriptions are not updates, despite reminding the doctors"*.

Another stated from **FG2-P4:** *"Updates of medications is a continuous issue despite having an alert in the Patients Record to remind the doctors"*.

On the other hand, the processes of entering patient notes and transferring patients from one unit to another with all their profiles in place were regarded in a positive if the documentation is completed properly. Open communication and having accurate information about patients has a positive impact on nurses' perceptions of safety and care delivery. Also, some of the participants, mainly from the senior groups (Groups 2 and 4) regarded the process of ordering apparatus as effective. It was also mentioned that job specifications and responsibilities were not standardised or always clearly followed. The nurses participating in the focus groups identified ways to improve the current care and meet the challenges.

### **6.7.3 Education and Training**

Improving safety through education and training intervention is a key focus that can actively improve the safety of a patient. All the participants in the focus groups highlighted improving patient safety through education and training as a positive aspect. The organisation had created a culture of shared learning and continuous learning to promote safety, which was appraised by all the participating groups. All the groups referred to this aspect:

**FG4-P8:** *"They train us in patient safety"*.

The participants mentioned that workshops, audits, conferences, and other training methods are used as tools to promote a learning organisation for safe practice.

**FG1-P1:** *"Continuous learning and education"*



All the focus groups (Groups 1, 2, 3 and 4) confirmed that a culture of learning existed within the hospital, but all agreed that the organisational culture needed to learn from errors and integrate more performance processes into the care delivery system. It was suggested that this learning should begin with the leaders exhibiting a willingness to learn to ensure a successful safety culture within their unit and organisation.

**FG3-P5:** *"training is always there and available, and ward managers encourage us [nurses] to do and give us the space when possible".*

The participants with experience in medical and surgical wards described their perceptions of patient safety in their wards and hospital as an organisation. They highlighted the fact that patient safety was compromised, due to some factors related to organisational structure and some shortfalls in interpersonal skills and communication. Alternatively, the participants from all the focus groups (Groups 1, 2, 3 and 4) agreed that the hospital promotes a culture of safety and the learning culture had become more proactive in identifying and improving potentially unsafe processes to prevent errors by having more audits and workshops and sharing some of the errors as lessons learned. However, further evaluation of learning processes was needed in order to share the lessons learned and the education processes needed to be evolved to encompass more safe practices and a safe culture.

## **6.8 Conclusion**

This chapter presented the findings from focus groups, undertaken as Phase II of this mixed methods study. The key findings were:

Communication is considered to be an important factor in patient safety as the lack of or gap in verbal communication or in documentation could compromise the safety of a patient within the hospital (Section 6.4). Improved communication and feedback on reported safety issues was vital to enable safe practices to be discussed and shared in order to encourage a learning culture within the organisation (Section 6.4.3).

Within the professionalism themes, equity and fairness among nurses from different specialities within an organisation was deemed to have an impact on creating safe practice and a non-punitive culture needs to be established within the organisational culture (Sections 6.5.2).

Under the cultural diversity theme was established that the culture of blame places responsibility for patient safety upon nurses and nursing leaders (Section 6.6). Working within a punitive culture, the reporting of errors is hindered due to fears of compromising job security by speaking out. A blame culture was identified which made nurses responsible for everything, even when the activities under scrutiny are unrelated to their duties (Section 6.6.1). Under the theme of organisational factors, the participants described the impact of the hospital structure and the lack of isolation beds, which presents a huge risk to patient and staff health, due to infection control issues (Sections 6.7.1 and 6.7.2).

The following chapter presents the discussion of the key findings leading to the recommendations reached in this thesis.

## 7. Chapter Seven: Discussion

### 7.1 Introduction

This chapter presents and discusses the findings of this study in the context of a critical realism theoretical framework. From a critical realist perspective, an understanding of the world that are constructed on the basis of a combination of one's own experiences, perceptions and perspective, thus leading to a deeper reality underpinning that which can be observed and experienced. The MaPSaF (Kirk et al., 2007) spans five progressive stages across the continuum of the safety culture, as outlined in Appendices 8, 22, and 23 and detailed in (Section 2.6.1). These five stages are pathological, reactive, bureaucratic, proactive and generative. They are deemed essential to the creation of a patient safety culture where tables 7.2 and 7.3 indicates their linkage with HSoPSC survey tool dimensions and the focus groups themes.

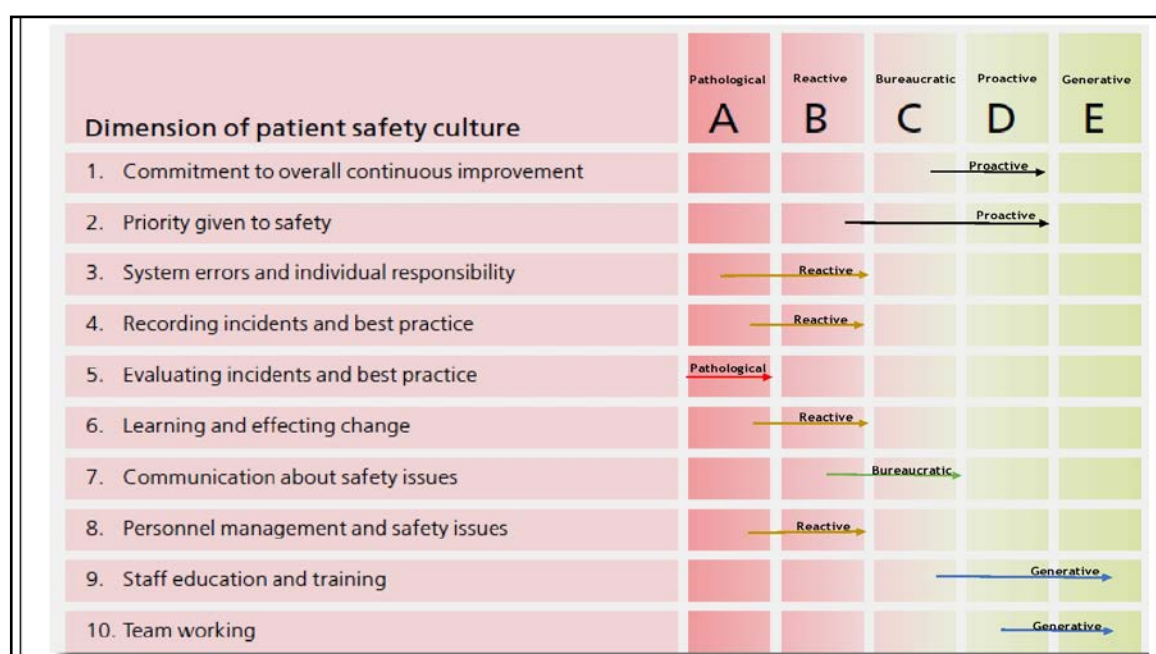
The findings are presented in ascending order, from the lowest stage, Pathological, to the highest stage, Generative. In this research study, the ten dimensions under each level are distributed unevenly (Table 7.1 and Figure 7.1): There is one dimension that falls under pathological stage; four that fall under the reactive stage, which has the largest number of dimensions that are related to improving patient safety culture; one dimension that falls under the bureaucratic stage; two that fall under the proactive stage and two that fall under the generative stage. All these dimensions are in the transition phase except for the dimension under the pathological level that remains static (Appendix 23 and 24). This demonstrates an evolving, progressive culture of patient safety as described in (Table 7.1 and Figure 7.1). In addition, culture is embedded in each aspect. As the MaPSaF is being used in a country other than the one it originated from, it is not surprising that the cultural context is important in its application.

**Table 7.1** The results of the current stages of the hospital as cited in Phases I and II and captured in MaPSaF

Stages	Pathological	Reactive	Bureaucratic	Proactive	Generative
<b>Dimensions</b>					
Evaluating incidents and best practice (no.5)	x				
System errors and individual responsibility (no.3)		x			
Recording incidents and best practice (no.4)		x			
Learning and effecting change (no.6)		x			
Personnel management and safety issues (no.8)		x			
Communication about safety issues (no.7)			x		
Commitment to overall continuous improvement (no.1)				x	
Priority given to safety (no.2)				x	
Staff education and training (no.9)					x
Team Working (no.10)					x

Adapted from MaPSaF (Kirk et al., 2007)

Figure 7.1 indicates the current stages as per MaPSaF of the teaching hospital within this study linking the five stages with the dimensions and its progression.

**Figure 7.1** Evaluative Level of Patient Safety Culture in the Teaching Hospital, Oman in Medical and Surgical Wards

Adapted from MaPSaF (Kirk et al., 2007)

However, Table 7.2 indicated how the MaPSaF dimensions and stages links with the dimension of HSoPSC which were used in Phase I of the study; colour coded as per MaPSaF stages where red indicates the weakest, orange progressing towards improvement and green is well established and excellent.

**Table 7.2** Linking MaPSaF dimensions and stages with HSoPSC dimensions

<div>Weak</div> <div>Progressing towards Improvement</div> <div>Well established</div>		
MaPSaF Dimensions	HSoPSC Dimensions	Stages as Per MaPSaF
Staff Education and Training	Organisational Learning / Continuous Improvement	Generative
Team working	Team Work within Units	
Evaluating incidents and best practices  And  Learning and Effecting Changes	Non-Punitive Response to Error	Pathological
Personnel management and safety issues  and  Priority given to patient safety	Staffing	
Commitment to overall continuous improvement  and  Priority given to patient safety	Overall Perception of Safety Supervisor / Manager Expectations and Promoting Patients Safety	
Communication about safety issues	Communications & Communication Openness	Bureaucratic
Recording incidents and best practice	Frequency of Events Reported	Reactive
Commitment to overall continuous improvement  and  Priority given to patient safety	Hospital Management Support for Patient Safety	
Team working	Teamwork across Hospital Units	Generative
Communication about safety issues	Hospital Handover (Handoffs) and Transitions	Pathological

In addition, Table 7.3, Indicates the linkage of MaPSaF dimensions and stages with the themes arose from the focus groups interviews; colour coded as per MaPSaF stages where red indicates the weakest, orange progressing towards improvement and green is well established and excellent.

**Table 7.3** Linking MaPSaF dimensions and stages with focus groups themes

<div>Weak</div> <div>Progressing towards Improvement</div> <div>Well established</div>		
MaPSaF Dimensions	Focus Groups Themes	Stages as Per MaPSaF
Communication about safety issues	<b>Communication</b>	Reactive
	➤ Inter-Professional Communication	
	➤ Information and Documentation	Proactive
Recording incidents and best practice	➤ Reporting Errors & Feedback	Reactive
System errors and individual responsibility	<b>Professionalism</b>	Proactive
	➤ Accountability and Responsibility	
Personnel management and safety issues	➤ Equity and Fairness	Pathological
Team working	➤ Teamwork	Generative
Personnel management and safety issues	<b>Cultural Diversity</b>	Proactive
Evaluating incidents and best practices  And  Learning and Effecting Changes	➤ Punitive Working Culture	Pathological
Personnel management and safety issues	➤ Multi-Cultural Language Work Force	Proactive
Learning and Effecting Changes	➤ Family Responsibility Towards Patient Safety	
Commitment to overall continuous improvement  and  Priority given to patient safety	<b>Organisational Factors</b>	Bureaucratic
	➤ Structural	
	➤ Processes	Reactive

## 7.2 Pathological Stage

The pathological stage (Section 2.6.1) sees safety as a problem caused by workers with an attitude of ‘who cares as long as we are not caught’ (Kirk et al., 2007). The organisation is static at this dimension of MaPSaF at ‘evaluating incidents and best practice’.

In the Phase I findings, 46% indicated that there is a punitive response to error and 43% of the participants were neutral. Hence, this means that there were few respondents who indicated that there was not a punitive response to error (Table 5.4 and Table 5.7).

Numerous internal and external pressures exist in the practice environment, requiring healthcare leaders to focus on creating a culture of safety. It is suggested that a safety culture has an influence on the worldview of both individual workers and groups of workers within healthcare organisations (Weaver et al., 2013). The difference in nurses' perceptions of patient safety is based on factors related to culture, workload, communication and the nurses' own experiences and understanding of the patient safety culture.

A lack of appropriate resources was identified, for example insufficient staffing, and the lack of isolation rooms. In the wards, there is a lack of privacy for medication preparation (Section 6.7.1). The problematic state of patient safety culture in the hospitals can be considered as being 'pathological' (Table 7.1).

A pathological organisational culture is one that is at a stage of immaturity, in which both information and failures are concealed, as suggested by the MaPSaF (Kirk et al., 2007). This study revealed that there is little evidence that any risk management strategy has been implemented. Safety is only discussed by the administration in relation to specific incidents. Any measures taken are aimed at self-protection and not at the protection of patients or members of staff.

In the Phase I findings this was reflected as a negative overall perception of safety and the identification of the lack of openness in communication (Tables 5.4 and 5.7). Singer et al. (2003) found that the perceptions of the culture of patient safety varied significantly among individuals with different clinical status. The nurses' negative perceptions generally resulted from the lack of a robust patient safety system, which is connected with the positive safety culture within the hospital's working environment. This view was supported by Reason (1995; 1997), who suggested that one of the main elements required by an organisation to maintain an effective safety culture is a safety information system for the

collection, analysis and dissemination of information related to incidents. Reason (1995; 1997) also advocated the regular gathering of information and proactive checks of the system. The results of both Phase I and Phase II revealed that the approach taken towards patient safety issues would be considered 'immature' from the perspective of Westrum (1993); Parker (2009) and Hudson (2001) as discussed in Section 2.6.1.

The findings of this study are in line with Al-Ahmadi (2010) and El-Jardali et al.'s (2010) finding that shortage of nursing members of staff and lack of healthcare assistants leads to an increased workload and increased pressure, which is a major cause of errors. However, recent evidence using cross-sectional studies in European countries to determine the association of hospital nursing skill mix with patient mortality, indicates that a bedside care workforce with a greater proportion of professional nurses is associated with better outcomes for patients and nurses. Reducing the nursing skill mix by adding other categories of assistive nursing personnel without professional nurse qualifications may contribute to preventable deaths, erode the quality and safety of hospital care and the additional pressure may contribute to hospital nurse shortages (Aiken et al., 2017). Similarly, a cross-sectional study by Ball et al. (2017) indicates that nurse staffing and missed nursing care were significantly associated with mortality rate. On the other hand, Najjar et al. (2013) suggested that the nursing environment, which includes the arrangement of nursing wards, the technological equipment used, the modes of communication, knowledge transfer among members of staff, inadequate policies, fatigue, stress and workload can threaten or benefit patient safety and the quality of care.

The nurses' negative perceptions mainly resulted from the punitive culture reported in both data collection phases (Phase I, Tables 5.4 and 5.7). This negative perception focused on evaluating incidents and thinking about how such incidents could be converted into examples of what not to do (Sections 6.4.3 and 6.6.1).

Patient safety culture is a key aspect in determining the ability of healthcare organisations to address, and reduce, patient risk (Khater et al., 2015). It was noted that nurses played a major role in patient safety, due to their being in direct and continuous care of patients. This perception was directed towards positive



teamwork in both phases of the data analysis (in Phase I, 84%; Tables 5.4 and 5.7 and in Phase II all the four focus groups supported that statement positively). All the focus groups noted the importance and the influential role of effective leadership within their wards (Sections 6.4.3 and 6.5.3). As they were in a supportive and collaborative environment, the nurses complied with safety requirements (Khater et al., 2015).

Various studies concerning patient safety emphasised the role of leadership in both the creation of a positive safety culture (Abdou and Saber, 2011) and high quality care (Abualrub and Alghamdi, 2012). These studies suggested that leadership is the most influential factor in shaping organisational culture. McFadden et al. (2009) found that leadership style is linked with patient safety outcomes. Van Bogaert et al. (2014) examined the effects of nursing environments and burnout on job outcomes and quality of care. Nursing management was positively related to perceived quality of care and staff satisfaction in this study while other studies found relationships with medication errors (Van Bogaert et al., 2014) and staff levels of wellbeing, burnout and turnover intention (Weber, 2010; Abualrub and Alghamdi, 2012).

Another study by Wong et al. (2013) also noted a relationship between nurses' relational leadership styles and lower levels of mortality rates and medication errors. The empowerment of nurses emerges from the literature as a key factor to bring about quality improvement. Wong and Laschinger (2013) describe how leadership can influence job satisfaction and outcomes through empowerment. Leaders who understand and openly express their core values and who model ethical standards appear to communicate integrity and transparency to their followers. However, all the factors presented in these studies need to be better reflected in the leadership of the hospital as highlighted by the results of the two phases presented in Chapters 5 and 6. This is to achieve a leadership with flexible, collaborative, power sharing using personal values to promote high quality performance for safe practices.

### **7.2.1 Evaluating Incidents and Best Practices**

The data indicated that participants were afraid to report errors, pointing to a punitive working environment where individuals are subject to victimisation and disciplinary action (Sections 6.4.3 and 6.5.2). According to the MaPSaF (Kirk et al., 2007), no learning could be achieved or promoted in such an environment. Grant et al. (2006) noted that some members of staff reported that they were punished for reporting important accidents rather than rewarded. The main factor in this study, which led to under-reporting and the fear of reporting, was the lack of an efficient system for reporting errors. This indicated a need for improvement in the areas of confidentiality and protection of the workers and a feedback mechanism following the reporting of an incident (Section 6.4.3).

However, this contradicts the findings in Phase I, where 81% indicated that they are receiving feedback about errors and that there is good communication in place (Tables 5.4 and 5.7). This contradiction may be due to particular factors and is a surprise finding.

At the organisation where the study was carried out, senior managers are directly involved in investigations. This has the effect of narrowing the investigation to the individuals and systems involved in the incident, as explained by the MaPSaF (Kirk et al., 2007), rather than examining the root causes of the problem and supporting those involved.

### **7.2.2 Summary of Pathological Stage**

In both data collection phases, the overall perceptions of nurses emerged as being negative (pathological) in terms of evaluating incidence and best practice. The differences in the nurses' perceptions of patient safety culture are mainly based on factors related to culture, workload, communication and the nurses' own experiences with reporting incidences. However, there appears to be a need for improved patient safety practices within the Omani health context in general. The dimension that is currently evaluated at a pathological level within a punitive culture needs to be converted to a generative level. This is to promote best

practice and encourage learning from errors that is integrated with nursing empowerment and a flexible leadership style.

### **7.3 Reactive Stage**

The reactive stage is defined as the progressive stage where organisations start to take patient safety more seriously but action is only taken after incidents have occurred (Kirk et al., 2007) (Section 2.6.1). The organisation is progressive in the dimensions 'system errors and individual responsibility'; 'recording incidents and best practice'; 'learning and effecting change' and 'personnel management and safety issues' (Section 6.7.3).

Patient safety continues to be a driving force in healthcare. The results of both Phase I (Tables 5.4 and 5.7) and Phase II (Section 6.5) demonstrated an understanding of patient safety and patient safety culture by the nurses. Eliminating patient-harm incidents, improving the patient's journey and maximising efficiencies are key drivers for any healthcare industry. The nurses' understanding centralised on a shared commitment to safety being the highest priority, resulting in an effective safety culture, including the encouragement and reinforcement of behaviours, which promote safety by leaders and peers.

In addition, it was established that errors and near misses were valued as opportunities for learning and improvement, to promote a culture of safety (Weaver et al., 2013). Factors resulting in a positive impact included: effective teamwork, a positive learning environment and effective communication, both within teams and with other professionals.

The results of both Phases I and II established that there is a dynamic and complex relationship between patient safety and the establishment of a safety culture. Healthcare includes several risks, with the possibility of errors being made and incidents taking place. Low levels of staff increase the possibility of error that can result in a punitive working culture. It was noted that, in practice, management needed to work towards minimising such risks, by ensuring that systems were robust and that lessons were learned from adverse events without apportioning

blame, while undertaking appropriate action (Weaver et al., 2013). There is a need to convert this aspect into the development of a team approach to patient safety, which will, in turn, develop the safety culture of nursing practice and improve the quality of care. There is also a need to move away from individual blaming to creating learning and sharing opportunities and enable continuous improvement.

### **7.3.1 System Errors and Individual Responsibility**

The MaPSaF states (Kirk et al., 2007) that when errors that occur within an organisation are out of the organisation's control they can be put down to 'bad luck'. However, individuals are still held responsible for such errors. In this study the participants recounted incidents where individuals were held responsible by management for errors over which they had no control (Kirk et al., 2007). The MaPSaF (Kirk et al., 2007) explains how such victimisation can adversely affect the reporting of errors (Kirk et al., 2007). In this study incidents are taken to be errors caused by members of staff or patient behaviour, as suggested by the MaPSaF (Kirk et al., 2007). Such incidents were raised repeatedly during the focus group discussions (Section 6.4.3; Tables 5.4 and 5.7).

There is a strong blame culture at the hospital where the study was conducted; individuals reported being subject to victimisation and disciplinary action, similar to that set out in the MaPSaF (Kirk et al., 2007). Similarities were identified with the findings of three studies conducted in Lebanon (El-Jardali et al., 2010), Saudi Arabia (Al-Ahmadi, 2010) and Egypt (Aboul-Fotouh et al., 2012). In practice, the data indicates that management needs to work towards minimising such risks, by ensuring that systems are robust and that lessons are learned from adverse events without apportioning blame, while ensuring that appropriate action is undertaken. However, negative perceptions by healthcare professionals regarding the non-punitive response to errors also adversely impacts on the working environment at the hospital. Members of staff tried to avoid reporting any errors they may have made out of fear of losing their jobs or being subjected to some form of disciplinary action, as also found by other researchers (Mrayyan et al., 2007b; Al-Ahmadi, 2010). These results were also supported by Jha et al. (2008), who

suggested several common factors leading to poor safety practices in the healthcare sphere. Managers and healthcare professionals frequently demonstrated a greater interest in individual accountability rather than in the development of a systems-based approach to patient safety that is capable of addressing latent factors to prevent the occurrence of errors (Reason, 1997). Participants observed that when errors occurred, the organisation perceived itself as a victim of circumstances outside of its control. Individuals were held responsible for poor safety practices and the solution to safety issues was punitive action, as explained in MaPSaF (Kirk et al., 2007).

### **7.3.2 Recording Incidents and Best Practice**

This study found that there is a good centralised incident reporting system. Although the members of staff are encouraged to report incidents, there is fear of management response to error reporting and the potential of discrimination following the reporting of an error. Haw et al. (2014) stated that nurses were not yet fully convinced of the necessity of reporting all errors and near misses. The same is stated by the MaPSaF (Kirk et al., 2007). Almost all the participants in Phase II who had reported errors stated that they had been indecisive about reporting the error to management and, in some instances, to the relatives of a patient (Tables 5.4 and 5.7). Bodur et al. (2012) stated that participants in their study did not report errors in cases where such errors had been rapidly corrected or had done no potential harm to the patient.

In this study, despite the centralised, anonymous reporting system that was established, which put an emphasis on form completion, the lack of feedback to the clinical area potentially had an impact on the staff's willingness to draw up patient safety reports in the future. This resulted in frustration arising from the lack of a constructive response to their previous reports on healthcare errors. Lundstrom et al. (2002) and Benn et al. (2009) acknowledge the importance of active feedback on hospital safety reports by management. They agree that this is a crucial factor in reassuring members of staff that their reports and recommendations are being considered in the light of patient safety. Several

authors have found that ineffective communication and a lack of feedback on healthcare errors could threaten the health and safety of patients in hospitals (Baker et al., 2004; World Health Organisation, 2014).

The findings of this study correspond with the findings of other studies revealing that hospital managers tend to be reactive instead of demonstrating concern when it comes to issues relating to patient safety, until an accident takes place (Clark et al., 2013; Clements et al., 2007). The lack of feedback and communication on errors in the hospital where this study was carried out result in lower levels of interaction with healthcare members of staff, as indicated in Phase II (Section 6.4).

A study conducted by Thomas et al. (2005) using a randomised survey to examine the role of Executive Walk Rounds and their effect on patient safety culture in hospitals concluded that the presence of effective leaders among hospital members of staff was significant in terms of enhancing patient safety practices through communication. However, although the organisation in Thomas et al.'s (2005) study considered other sources of safety information alongside incident reports such as complaints and audits, the information gathered was not used effectively to improve practice or prevent future incidents.

In addition, the lack of reporting of errors could lead to additional safety risks for the patients and prevent nurses from learning from experience and developing their practices. This explanation is supported by Clark et al. (2013), who examined the effect of adverse incidents on learning systems to improve patient safety. Their study revealed that the adoption of a learning approach in healthcare organisations had contributed to a decline in patient related errors Clark et al. (2013). The organisation must conduct both internal and external independent incident investigations that include the members of staff and the patients involved. Incident investigations are learning opportunities and should focus on improvement and take into consideration patient recommendations. The incident analysis process must be reviewed systematically and regularly following consultation with all members of staff, to establish a best practice guide to be distributed across the organisation and nationally. A teaching organisation should be a learning organisation characterised by a commitment to learn from incidents

at all levels (Kirk et al., 2007, Sections 6.4.3 and 6.7.3). In this study, the teaching hospital needs to learn from the recorded incidents to further enhance the teaching and learning culture. Hence, such education could be delivered in a simulated environment or using less didactic methods to promote deeper learning (Ker, 2011 and Stirling et al., 2012).

Incident reporting should be promoted in the interest of establishing best practice and not as an investigative procedure, as suggested by MaPSaF (Kirk et al., 2007). This is to encourage a just culture and promote a blame-free culture. This will provide a consistent guide to determine when a person is truly at fault for a specific act and the reasonable consequences that will best serve the individual's and the organisation's interests in the long run (Haw et al., 2014) as desired in the hospital organisation.

### **7.3.3 Learning and Effecting Change**

The nurses perceived that active feedback from hospital management following the reporting of a healthcare error would encourage other members of staff to report errors more regularly and reassure them about the importance of effective and responsive action following the reporting of an incident involving patient safety (Tables 5.4 and 5.7 and Section 6.4.3). Some systems were in place which facilitated organisational learning such as considering the patients' perspective, which came out as a strength in Phase I, as well as communication about errors (Tables 5.4 and 5.7). However, the lessons learned were not communicated throughout the organisation. The MaPSaF (Kirk et al., 2007) indicated that where organisations do not communicate their learning, there are ongoing problems. The MaPSaF (Kirk et al., 2007) suggests that whenever an incident happened an associated policy was developed. The hospital where this study was undertaken needs to further learning from errors and develop policies to prevent future incidents.

Good quality feedback would lead to improved staff performance, thereby reducing the number of patient safety incidents. This view is supported by

Lundstrom et al. (2002); WHO (2014) and Benn et al. (2009), all of whom identified the importance of an effective feedback mechanism following the reporting of an error to improve patient safety. This thesis suggests that all members of staff must be involved in deciding on the changes to be introduced, not just committees and managers (Sections 6.6.2 and 6.6.3). This would encourage learning related to the proposed changes and enable such changes to be better integrated into working patterns (Kirk et al., 2007, Tables 5.4 and 5.7 and Section 6.4.3).

Carroll and Edmondson (2004) suggested that an effective way to view culture change is to examine the current culture and suggest changes. Their perspective of culture is that it cannot be mandated but that it develops over time as a successful adaptation to conditions. This, in turn, brings about the desired results that define the desired norms and values. Their proposed method suggests that leaders can work to make connections between the existing cultural elements and gradually tilt these elements to the new desired actions, values and underlying assumptions (Carroll and Edmondson, 2004). Ginsburg et al. (2010) state that it may be more effective to gradually build on the existing cultural strengths rather than to oppose the existing cultural attributes.

### **7.3.4 Personnel Management and Safety Issues**

Responses to staffing level in Phase I were either neutral or negative with a small percentage (18%) stating that staffing level is satisfactory. In Phase II, the results indicated that nurses were fulfilling their nursing duties and that may impact their perceptions of patient safety. It must be noted that in this study there were no healthcare assistants in the wards other than cleaners and so the nurses fulfil administrative roles. This may explain the uncertainty about whether or not there is sufficient staff (Table 5.4 and 5.7). However, a retrospective observational study undertaken by Aiken et al (2014) indicates that nurse staffing cuts to save money might adversely affect patient outcomes. This is also supported by evidence gathered for this study as discussed earlier in (Section 7.2).



The problem is compounded by the fact that the implementation of safety standards is not specified as being part of anyone's job responsibilities. This observation emerged in both Phase I and Phase II in discussions regarding staffing levels (Tables 5.4 and 5.7 and Section 6.7.2). This finding corresponds with the findings of other research carried out by Al-Kandari and Thomas (2009) and Al-Ahmadi (2009) who employed surveys to assess the perceptions of healthcare professionals concerning the safety cultures of hospitals in Kuwait and Saudi Arabia (Chapter 2). These studies established a link between shortages in the staffing levels of hospitals and the number of incidents relating to patient safety caused by the lack of specification of safety as a responsibility in job descriptions.

Phase II of the study indicated that staff absenteeism results in heavy workloads and the addition of non-clinical duties (Sections 6.5.2 and 6.6). It was reported that poor organisation could cause disruption and delay in the provision of healthcare services to patients, leading to carelessness and failure to report for duty. This led to confusion among members of staff, resulting in patients failing to receive adequate healthcare, or treatment not being given. This was also captured in Phase I under the aspect of shortage of staff (Tables 5.4 and 5.7). This aspect was referred to in the focus group discussions (Section 6.6).

The findings also revealed an important factor regarding inequality among different members of staff, such as inequality among local and expatriate staff that impacts workflow, which is influenced by the social and cultural context where the study took place. This will be discussed in more detail under Section 7.6.1. These findings correspond with Zurn et al. (2004) who highlighted the fact that inequality among members of staff is a common concern in both developing, and developed, countries, impacting upon the quality of healthcare services in hospitals. There was some commitment to matching individuals to posts, but minimal attempts were made to understand why poor performance occurred and to implement visible, flexible support systems tailored to the needs of the individual. This was also noted by Kirk et al (2007). Alvesson and Sveningsson (2008) outline a number of approaches to cultural change. These include a focus on hiring and the selection of individuals who fit the desired cultural direction. It also includes a new form of socialisation and training to signal the desired values

and beliefs, as well as the introduction of performance appraisal systems as a way to correct and reinforce the ways of being and behaving in the organisation.

### **7.3.5 Summary of Reactive Stage**

The study demonstrated an understanding of patient safety and patient safety culture from the nurses' perspective focussing on the reactive stage and moving towards the bureaucratic stage in some areas. Reactive organisations tend to blame individuals when errors occur and do not encourage the recording of incidents. Hence, learning from errors is not encouraged. These findings relate to this thesis, which recommends that new strategies be implemented to change the cultural approach to recruitment, training, promotion, leadership and communication within the organisation.

## **7.4 Bureaucratic Stage**

As detailed in Section 2.6.1, this stage is referred to as a top-down approach with the management systems being put in place to manage hazards and focus on collecting data (Kirk et al., 2007). The teaching hospital in which this study was conducted is progressive in the seventh dimension of '*communication about safety issues*'.

Nurses have a considerable influence on the quality and safety of patient care. These factors were found to be mostly concerned with communication about safety issues at both the hospital and the ward level (Section 6.4). Measures are taken and communicated across the organisation and community, through policies, the media, the organisation of open days and any other sources of information dissemination.

### 7.4.1 Communication about Safety Issues

Phase II of this thesis reported lack of communication between senior and junior members of staff and other healthcare professionals as a negative aspect affecting the treatment of patients and safety issues (Section 6.4). These findings are in line with Reader et al.'s (2007) findings in a study which included a cross-sectional study of four hospitals in the UK, to investigate the perceptions of nurses and doctors in Intensive Care Units on interdisciplinary communication. Reader et al. (2007) revealed that nurses in the UK also reported experiencing a low level of interdisciplinary communication and openness with doctors. In the medical context of both a developing and a developed country, the quality of communication between professional groups affected the culture of patient safety. This can be interpreted as a lack of homogeneity in the style of interaction of the various healthcare disciplines as well as personal style which is affected by issues such as a person's level of confidence in dealing with issues of power and communicating within professional groups. Thus, although a risk communication system may be in place (Kirk et al., 2007), no one checks whether the system is working effectively. The MaPSaF recommends that checks be carried out to ensure communication system effectiveness (Kirk et al., 2007).

Barriers to communication could lead to members of staff failing to exchange important information concerning the treatment of patients. This thesis's findings suggest that issues with patient safety in a hospital could arise from ineffective communication and a lack of feedback on healthcare errors (Section 6.4.3). However, the findings on the lack of feedback was contradicted in Phase I (Tables 5.4 and 5.7) where there was positive agreement that there was good feedback and communication about errors. Both Braaf et al. (2013) and WHO (2014) concluded that patient safety in hospitals could be affected by poor organisational communication when transferring information from managers to members of staff.

Alongside the issue of poor communication between individuals, Phase II (Section 6.4) also revealed a threat to patient safety as a result of poor communication and coordination measures between hospital departments. This could also be caused by an inadequate inter-departmental notification system. This challenge was highlighted in a report by the WHO (2014) which suggested that poor

communication systems for the transmission of patient information in hospitals had implications for patient safety. Ineffective communication among nurses or between professionals of different disciplines could be due to the absence of formal communication policies, along with a failure to use simple and effective communication tools. Implementation of such policies and measures has also been proposed by Pronovost et al. (2005), WHO (2009) and Clark et al. (2009), who suggested that hospitals should adopt both a standardised policy and an effective communication tool. This absence of effective lines of communication within a hospital environment has the potential to place patients at risk and may contribute to safety issues. This lack of communication and openness between members of staff could also have a negative influence on further cultural practices related to patient safety, for example handovers and transitions within wards and hospital wards.

In addition, Alvesson and Sveningsson (2008) state that communication approaches change through ongoing interactions, supporting and reinforcing the desired cultural aspects, which are accomplished through the subtle renegotiation of the meaning in everyday activities. Within the hospital, Middle Managers, also known as the head nurses of the wards, are an integral part of this process as they are the ones reframing these everyday activities and providing the local reward structures. Such managers require creativity, stamina, insight and great communication skills to do this at the local level. Depending on the activities and actions that are rewarded and paid attention to by the managers, this will in turn refocus and reinforce the values and assumptions of the staff (Alvesson and Sveningsson, 2008).

These findings are relevant to this study where communication approaches should be changed and should not remain at a bureaucratic level. This is to encourage managers and staff to develop and use negotiation skills to enhance feedback mechanisms in order to create a learning culture that promotes safety practices.

## 7.4.2 Summary of Bureaucratic Stage

Communication about safety issues is regarded as the main factor in influencing the perceptions of patient safety. Any gaps in communication have an impact and affect the patient safety culture, which can compromise the safety of patients at this bureaucratic level. Communication approaches are still top down within the management system and are moving towards a proactive stage.

## 7.5 Proactive Stage

This stage is defined as where there is more workforce involvement around identifying and working on problems (Kirk et al., 2007; Section 2.6.1). The organisation is progressive in the dimensions of '*commitment to overall continuous improvement*' and '*priority given to safety*'. Pronovost et al. (2005) and WHO (2014) reported differences in the responses given by physicians and nurses on reporting channels and viewing safety as a priority.

### 7.5.1 Priority Given to Patient Safety

Findings revealed that safety only becomes a priority once an incident occurs (Table 5.4 and Table 5.7 and Section 6.7.3). Factors resulting in a positive impact include effective teamwork, a positive learning environment and effective communication, both within teams, and with other professionals (Sorra and Dyer, 2010). Within the hospital organisation and as highlighted by the MaPSaF (Kirk et al., 2007), safety had a high priority and there were numerous systems, including those that integrate the patient's perspective, to protect it.

The findings of this study indicated that management tends to lack the flexibility to respond effectively to unforeseen events (Tables 5.4 and 5.7 and Section 6.6.1) and, therefore, fails to understand the complexity of the issues involved. Furthermore, Kirk et al. (2007) recommend that the responsibility for patient safety be invested in a single individual within the organisation. If this individual does not fulfil this role, then patient safety is compromised.

Considering the hospital where the study took place and as per the MaPSaF (Kirk et al., 2007), safety is promoted throughout the organisation and in many instances staff are actively involved in all safety issues and processes as well as in continuous education. Also, being proactive means prioritising patient safety before proceeding with any procedures.

### **7.5.2 Commitment to Overall Continuous Improvement**

Both data collection phases established a dynamic and complex relationship between patient safety and the establishment of a safety culture through commitment to overall continuous improvement (Tables 5.4 and 5.7 and Section 6.7.3).

The lack of an overall strategy within the organisation for policy dissemination and implementation resulted in non-compliance and non-adherence to safety practices. Within the hospital, policies were introduced for the purposes of international accreditation and this could be one of the reasons that the staff does not follow these policies on top of time constraints and workload. Staff are overloaded with protocols and policies, which are regularly reviewed and updated post-incident but are not communicated in a timely manner. It is clearly stated that the concept of policies and protocols can serve as a strategy to enhance patient safety culture within any health organisation (WHO, 2014).

The study established the importance of utilising an information protocol to avoid adverse events during all procedures related to handover or other procedures that are related to patient safety (Tables 5.4 and 5.7 and Section 6.4). This finding is similar to the research findings of Williams and Irvine (2009), who conducted focus group discussions with clinical supervisors within the NHS in the UK, concluding that there was a lack of guidelines for a nurse operating as a clinical supervisor to help them fulfil their duties. The gaps in the structure of the clinical supervisor's role hinder their success in the clinical supervision.

Williams and Irvine's (2009) results reveal the necessity for hospitals to adopt clinical guidelines and introduce an evidence-based practice approach for

departmental members of staff to provide patients with an equal standard of quality of healthcare and avoid errors resulting from malpractice. McSherry et al. (2013) critically reviewed and synthesised the literature associated with evidence-based nursing and concluded that there was a need for nurses to be better informed of evidence-based processes and engagement in everyday clinical practice. A culture of continuous improvement should be embedded within an organisation that is integral to decision-making in all areas where members of staff should be alert to potential risks (Kirk et al., 2007).

### **7.5.3 Summary of Proactive Stage**

The study explored the nurses' attitudes and behaviours towards patient safety. The nurses prioritise patient safety and show continuous commitment to improving patient safety at the organisational level by being more proactive and involving nurses at every step of the processes that is being introduced or is to be implemented.

## **7.6 Generative Stage**

This stage indicates that measures should be taken at all levels to promote learning, team cohesiveness and participation in every process. Participation of members of staff at all task levels and procedures should be encouraged to promote safety throughout the organisation. All participations are based on trust and 'informedness' (Kirk et al., 2007). The organisation is strongest in the dimensions of 'staff education and training' and 'team working' (Tables 5.4 and 5.7). This was captured in Phase I (Tables 5.4 and 5.7 and Section 6.7.3) as a top outcome measures.

### 7.6.1 Staff Education and Training

Hospital staff training to address patient safety issues was reported as being one of the main measures which could be taken to promote a positive culture. Although there was generally a positive view of existing training, some participants, specifically, the expatriate nurses, conveyed a negative view resulting from a perceived lack of availability of training programmes and a recognition by hospital managers that such training was necessary. These results were limited to Omani nurses.

Although hospital management recognised the importance of training programmes in their priorities and resource allocations, the opportunities to follow the training programmes were not provided with equity and fairness to their employees. The MaPSaF (Kirk et al., 2007) states that training and education are integral to the career development of individuals and is directly linked to the uptake of other organisational systems such as incident reporting. The WHO (2012) provides guidelines for developing training programmes and points to this being a challenge in developing countries because of the lack of attention being paid to training programmes and the enhancement of clinical knowledge. A further potential cause of the lack of training programmes in the hospital is a shortage of staff and the nature of hospital systems that prevents members of staff from following training programmes (Tables 5.4 and 5.7 and Section 6.7.3). It is pertinent to note that 75% of the workforce is made up of expatriate nurses with only 25% comprising Omani nurses, which may have led to some unfairness in the allocation of training opportunities with more appearing to be made available to expatriate nurses as they make up most of the workforce. However, the expatriate nurses are only sent on in-service training courses, whereas the Omani nurses are supported in attaining higher degrees. This results in a sense of frustration by groups of nurses.

An organisation is in a generative state when individuals are inspired and motivated to carry out their own training needs analysis and negotiate their own training programmes (Kirk et al., 2007). Learning is observed to be a daily occurrence that does not happen solely in a classroom environment (Kirk et al., 2007 and Kerr, 2011). Education is integral to the organisational culture (Najjar



et al., 2013). This was emphasised throughout this study in both phases as an important factor that influences patient safety (Tables 5.4 and 5.7).

In this study, the approach to training and education in any healthcare organisation is seen as being a way of supporting members of staff in fulfilling their potential (Tables 5.4 and 5.7 and Section 6.7.3). Performance appraisals and training are initiated and managed by immediate supervisors in the hospital, despite the unfair distribution among members of staff in terms of training (Najjar et al., 2013). Within the hospital, performance appraisal systems were designed to objectively evaluate the nurses' performance and then outline measures to be taken for improvement. These were considered as essential for the hospital to move ahead with any training programmes required for any individuals and for expatriate contract renewals (Section 1.4).

Training programmes are established to help facilities achieve the three Rs of retention: relationships, respect, and recognition (Pezzolesi et al., 2013). Solutions to the practical training challenges of the hospital environment could be addressed by an innovative and comprehensive online curriculum, which enables individual, self-paced education through interactive documentaries (Singer et al., 2009). The importance of simulation teaching that links theory to practice and builds models is vital in a learning environment (Kerr, 2011 and Stirling et al., 2012). Online resources should be available in all health organisations to establish a means of building and maintaining a high-quality workforce (Najjar et al., 2013).

### **7.6.2 Team Working**

In both data collection phases, teamwork within units was positively appraised as improving the safety perceptions of nurses, as teams were perceived as being collaborative and compliant (Tables 5.4 and 5.7 and Section 6.5.3). However, teamwork across units was more neutrally perceived (Tables 5.4 and 5.7). Hence, research into patient safety posits that there are several important benefits to be gained in the adoption of a teamwork approach in healthcare organisations, including improvements to the quality of patient care and a reduction in errors (Barrett et al., 2001). Teams are developed in several areas; some emerge from

existing teams or committees within the wards and the hospitals. Link nurses may be put in place and act as representatives, implementing safety initiatives, safety training or enhancement, as well as reporting on on-going issues and helping administration leaders with problem solving (Kirk et al., 2007).

The issues concerning teamwork have been well documented by other researchers, including McSherry et al. (2013), who argued that effective leadership is required to establish good teamwork for the provision of good quality healthcare for patients. They observed that the team structure of nurses was fluid, with individuals taking up the leadership role which is most appropriate at the time. In order to maintain effective practice, and to evaluate resource management training when needed, teams should be evaluated and rotational changes should be made on the basis of a shared understanding, (Kirk et al., 2007). This is because team membership is flexible and different people make an equally valuable contribution when appropriate.

### **7.6.3 Summary of Generative Stage**

Nurses' understanding of patient safety within the hospital context and at ward level is viewed at a generative level. Members of staff's learning and education and teamwork are viewed as being positive, leading to organisational excellence in patient safety culture. Overall, throughout the progressive development of patient safety, improvements are demonstrated as required to add to the existing body of literature in relation to nurses' perceptions of the patient safety culture.

## **7.7 Originality**

The results and findings of this thesis contribute new information and perspectives to the existing international knowledge base concerning: patient safety and nurses' perceptions of the patient safety culture in Oman that is novel findings in this study. The rationale for this statement is as follows:

### **7.7.1 Research Methodology**

- This is the first Omani study to employ mixed methodology to establish nurses' perception of the patient safety culture in a medical and surgical environment. The qualitative aspect of this study is completely novel.
- This work has validated the use of the Hospital Survey of Patient Safety Culture in an Omani setting, primarily in the Medical and Surgical wards of one teaching hospital.

### **7.7.2 Omani Context**

- This study is one of the first to determine the current adverse culture on the reporting of errors because of fear. It has established that, due to the blame culture, which attributes responsibility to nurses, even when errors are unrelated to their duties, participants felt they would compromise their job security by speaking out.
- This study also has established, for the first time in relation to Oman, that equity and fairness are not distributed evenly among nurses, mainly with regard to expatriate nurses.
- This study has established the need for staff, both Omani and expatriate, to be treated equally at organisational management level, including being offered the same level of support in terms of education and training opportunities.
- This study has also established the importance of nurses' engagement in patient safety to maximise the safety culture within an organisation.

### **7.7.3 Contribution to Body of Knowledge**

This work adds to the existing body of literature, demonstrating resonance with those aspects cited in the literature in relation to the following:

- Communication was considered an important factor in patient safety as a lack of, or gap in, verbal communication or documentation has the potential to compromise the safety of a patient in the hospital.
- Equity and fairness among nurses and different grades within an organisation had an impact on creating a safe practice free from fear. A non-punitive culture needs to be established within the organisational culture.
- Professionalism contributes to patient safety, through accountability and responsibility.
- Effective leadership is vital, along with a strong organisational commitment to improve patient safety culture through mechanisms that promote continuous learning and change.

## **7.8 Study Limitations**

Although this study deployed mixed methods to enhance the reliability and validity of the findings and obtain rigorous results, there were some limitations in the research process and data collection procedure. These limitations need to be acknowledged when considering the results and findings.

- One of the limitations was that the researcher was recognised by participants and may have hindered some participants from talking openly. However, because of the nature of this PhD thesis and the need to understand the topic thoroughly and maintain confidentiality, it was difficult to ask someone else to conduct the focus groups. However, those who volunteered to participate did so knowing the researcher's position (Section 7.8.1).
- Nursing participants were recruited from only one healthcare organisation, and only from the medical and surgical wards within that organisation. This limits the generalisability and transferability of the findings to other organisations or disciplines. Future research would aim to expand the scope of participants to overcome this limitation.

- Exclusion criteria of nurses participating in study may have limited the findings and any further research would address this.
- This was the first use of the AHRQ survey in the hospital, which may thus have had an impact on the responses. The reliability scores for some dimensions indicate the need for further survey development. However, Shalowitz and Miller (2008) state that Cronbach alpha values are dependent upon the number of items on the scale.
- There was some dissonance among the Phase I and Phase II findings. It would appear that some of the responses in Phase I were not a true reflection of the participant's views as subsequently elaborated upon in Phase II. It could be that, as the nursing staff are not familiar with completing questionnaires, they did not appreciate that some of the questionnaire responses had changed in the rating scale and so gave inappropriate responses. It could also be that the respondents replied in a way that they thought would please the researcher who is a senior member of staff. However, participants in Phase II appeared to be honest in their responses.

### **7.8.1 Relationship between the Participants and the Researcher**

Phase II of the thesis was undertaken over a period of three months. Participants shared personal experiences arising from the organisational management system and the environment in which the thesis was undertaken. As a result, the role of the PhD student and the management and supervisory teams were blurred, as the researcher is a member of the management team. This circumstance was also described within the ethics application. Objectivity and internal validity was assured through the debriefing sessions with supervisors and through checking of the findings with the participants.

Furthermore, the process of debriefing and member checking ensured that all interpretations were based on the evidence gathered, rather than on the PhD student's personal standpoint and views. This process gave an insight into the

challenges of undertaking qualitative research within a professional discipline population from the perspective of the researcher.

The majority of the participants attending the focus groups were aware that the researcher was a member of the administrative nursing and hospital management. This may have affected the discussions. However, an explanation of the handling of the data, accompanied by a thorough explanation of the purpose of the interviews, was given at the start of each focus group to reduce this bias. The researcher also encouraged the participants to describe all events according to their personal perception, interpretations and understanding. This was designed to reduce the assumptions made by the researcher during the interpretation of results.

### **7.8.2 Summary**

This thesis provides a valuable insight into nurses' perceptions of the patient safety culture in medical and surgical wards in a teaching hospital in Oman and was carried out among one of the largest nursing population groups. This type of research has not previously been undertaken and the outcome therefore serves as a valuable data set for this group of nurses.

## **7.9 Conclusion**

Patient safety is dependent upon initiatives to promote and shape a safe culture. The management's response to errors is an important determinant of the safety culture in healthcare organisations. For healthcare organisations to create a culture of safety and improvement, they need to eliminate fear of blame and create a climate of open communication and continuous learning. This transitions the organisation from the pathological level, where a culture of blame and punishment exist, to the generative level of lessons learned through errors in a culture of trust and information sharing. To achieve this, strong leadership at all levels of the organisation is required. The discussion is presented in the context of the framework of a healthcare organisation at each of the five stages of a safety

culture taking into consideration ten different dimensions of patient safety that have been deemed as being essential to a safety culture (Kirk et al., 2007).

This chapter discussed the results and findings of this thesis, including the limitations and strategies to ensure the rigour of this PhD. In addition, it outlined a number of possible future directions for research in this area. The following chapter concludes this work.

## 8. Chapter Eight: Conclusions and Recommendations

In this final chapter, the main results and findings collected are summarised. Recommendations for practice, policy makers and future research are also presented.

This mixed methods study stated five objectives:

1. To identify and explore nurses' perceptions of patient safety culture in Oman.
2. To explore nurses' understandings of patient safety.
3. To identify factors that influence nurses' perceptions of patient safety.
4. To identify and explore nurses' attitudes and behaviours towards patient safety.
5. To identify and explore nurses' understandings of patient safety within the hospital context and at ward level.

Patient safety has become one of the most urgent epidemiological issues around the world. Patient safety and quality have been widely considered as a crucial aspect in the scope of prevalent health. Hence, the literature of this study was thematically synthesised around 5 themes which are:

- Safety culture
- Concept of patient safety culture
- Establishing a safety culture
- Factors affecting patient safety culture
- Assessment of patient safety culture

Those themes reflect the relationship to research questions of which nurses' perceptions of patient safety culture in Oman is addressed. Hence, in Oman, patient safety is considered as a significant aspect in ensuring that quality health care can be delivered to the community. One of the key policy issues is to improve the performance of healthcare system; hence, it is important to set the benchmark against which future aspects will be measured (Sherwood & Zomorodi, 2014). However, healthcare professionals find it difficult to construct quality



measures for better patient safety in Oman due to insufficient facilities, frameworks, and instruction in delivering a competent care.

## 8.1 Contributions of this thesis

The results and findings of this thesis are mapped against the MaPSaF (Kirk et al., 2007). The MaPSaF provides a useful method for engaging healthcare professionals in assessing and improving the safety culture in their organisation, as part of a programmed risk management strategy. However, the use of MaPSaF in this study and in Oman is a rather novel concept applied in addition to the mixed method which also a novelty to Oman patient safety studies. The use of MaPSaF and mixed method in this study have resulted in generating future research that will further enhance the patient safety culture initiatives in Oman. Doing so reveals the main findings of this study is the evidence presented regarding the significance of teamwork and educational and training activities. There was evidence of strong teamwork within the ward environment when staff supported each other (Sections 6.4; 6.5.3; 7.4.1 and 7.6.2). Ongoing face-to-face education and training programs are also regularly provided for nursing staff. However, there are weaknesses involved when evaluating incidences and best practices. The evaluation and investigation of reported incidences is only addressed at management level, and there is a potential to develop this further to include ward level staff.

Within both strengths and the weaknesses there are progressive cross cutting themes between: Omani and expatriate nurses, and the role of the nurse and communication (Table 8.1 and Table 7.1 and Figure 7.1).

**Table 8.1** Summary of Current Study Key Stages as Per MaPSaF

Key Themes	Stages	Underlying Cultural Themes		What Needs Improvement		What Works Well
		Pathological	Reactive	Bureaucratic	Proactive	Generative
Dimensions						
Team Working (no.10)						√
Staff education and training (no.9)						√
System errors and individual responsibility (no.3)			√			
Recording incidents and best practice (no.4)			√			
Learning and effecting change (no.6)			√			
Personnel management and safety issues (no.8)			√			
Communication about safety issues (no.7)				√		
Commitment to overall continuous improvement (no.1)					√	
Priority given to safety (no.2)					√	
Evaluating incidents and best practice (no.5)		√				

### 8.1.1 Omani and Expatriate Nurses

The issue of evaluating incidents is the weakest area and can be considered differently between Omani and expatriate nurses.

⇒ Omani nurses are supported when they report errors (Sections 6.5.2 and 7.6.1):

- They are moved to different clinical practice areas and given mentorship and further teaching; and
- They have more clinical supervision in their new clinical area.

⇒ Expatriate nurses are treated differently in the work place from Omani nurses:

- Fear to report errors because of the nature of their employment contracts (Tables 5.4 and 5.7 and Section 6.6.1 and 7.3);
- Opportunities for education are restricted to internal educational programmes within the organisation (Tables 5.4 and 5.7 and Section 6.7.3 and 7.6.1);
- Shift duties/work patterns should be distributed evenly to provide a 24 hours experiences of care (Sections 6.5.2; 6.7.2 and 7.3.4); and
- Workload is greater among expatriates, as Omani nurses can more readily dictate when and where they will work (Tables 5.4 and 5.7 and Sections 6.7.2 and 7.3.4).

### 8.1.2 Role of the Nurse

The role of the nurse within the current study varies between reactive and proactive stages within the MaPSaF (Kirk et al., 2007), which indicates areas for improvement at both ward and administrative levels (Table 8.1).

⇒ The role of the nurse in the handover process requires further development and consideration in relation to paperwork, and the time allocated to complete it (Tables 5.4 and 5.7 and Sections 6.4 and 7.5.2).

- ⇒ There is a need for role clarity and a clear definition of responsibilities for all nurses (Figure 5.7, Sections 6.5 and 7.3).
- ⇒ Clarification of duties/roles and introduction of a skill mix at ward level.

### **8.1.3 Communication**

Communication about safety issues is an area frequently highlighted as weak at all organisational levels, and is mentioned in both phases of data collection. Key areas of communication include: confidentiality issues at all levels within the organisation; lack of feedback about errors and documentation to promote a learning environment.

- ⇒ There is a gap in communication between senior management and ward level about safety issues (Sections 6.4 and 7.4.1).
- ⇒ Lack of confidentiality about error reporting and incidences is an issue at all levels of the organisation (Section 7.2).
- ⇒ Although feedback on errors exists, there are no continuous processes available for closing the feedback loop (Tables 5.4 and 5.7 and Sections 2.5.6; 6.4.3 and 7.3.3).

## **8.2 Recommendations for the Future**

The practice of patient safety can be improved by implementing a number of paramount changes to the work setting of the nurses. Moreover, a positive setting of safety practice is vital in ensuring that a secure patient care environment can be achieved, which can avoid patients from being negatively affected. The implications and recommendations for the current study revolve around the level of practice, policy making, management, and research.

### **8.2.1 For Practice**

- ⇒ To establish a robust process for the reporting, evaluating and feedback of errors to support learning from errors, while also ensuring confidentiality. Therefore, error reporting systems should be considered as one of the health care requirements which are necessary in improving both patient safety and medical practice at hospitals. On top of that, it should also be integrated and produced as a national data base.
- ⇒ The new processes must ensure that all nurses are treated equally, regardless of country of origin.
- ⇒ To establish a continuous monitoring system of the safety culture within organisation.

### **8.2.2 For Policy Makers**

- ⇒ To consider establishing a support role for nurses to free nurses to offer their unique contributions to healthcare.
- ⇒ To review all nurses' contribution to 24 hours care regardless of country of origin and establish equity of practice.
- ⇒ When recruiting expatriate nurses render explicit what learning opportunities will be available to them.
- ⇒ To establish a robust system of communicating throughout the organisation. it is important to prioritize the development of structural communication and feedback policies between managers and staff through evidence-based practices for the purpose of improving the culture of patient safety.

### 8.2.3 For Management

- ⇒ The implementation of new strategies such as Just Culture should be further studied and audited for a longer period in order to develop a learning culture that is free of blame, which would also be very helpful to expand the national data base.
- ⇒ However, it is important to incorporate training programmes concerning patient safety into nursing education because it will allow for a steady learning improvement strategy within the working environment.
- ⇒ Furthermore, it is necessary for policy makers and administrators to form a practice that is free from blame and punishment by allowing nurses to learn from the errors and shared experiences.

### 8.2.4 For Research

- ⇒ To examine, the perceptions of nurses towards patient safety culture dimensions in other clinical settings, such as hospitals at the same level in Oman.
- ⇒ To evaluate the impact of education and training on the recruitment and retention of Omani and expatriate staff.

## 8.3 Thesis Conclusion

In conclusion, this work has effectively demonstrated nurses' perceptions of the existing patient safety culture on medical and surgical wards at a teaching hospital in Oman, using the MaPSaF (Kirk et al., 2007).

This thesis concludes with an overarching recommendation and reflection on the research.

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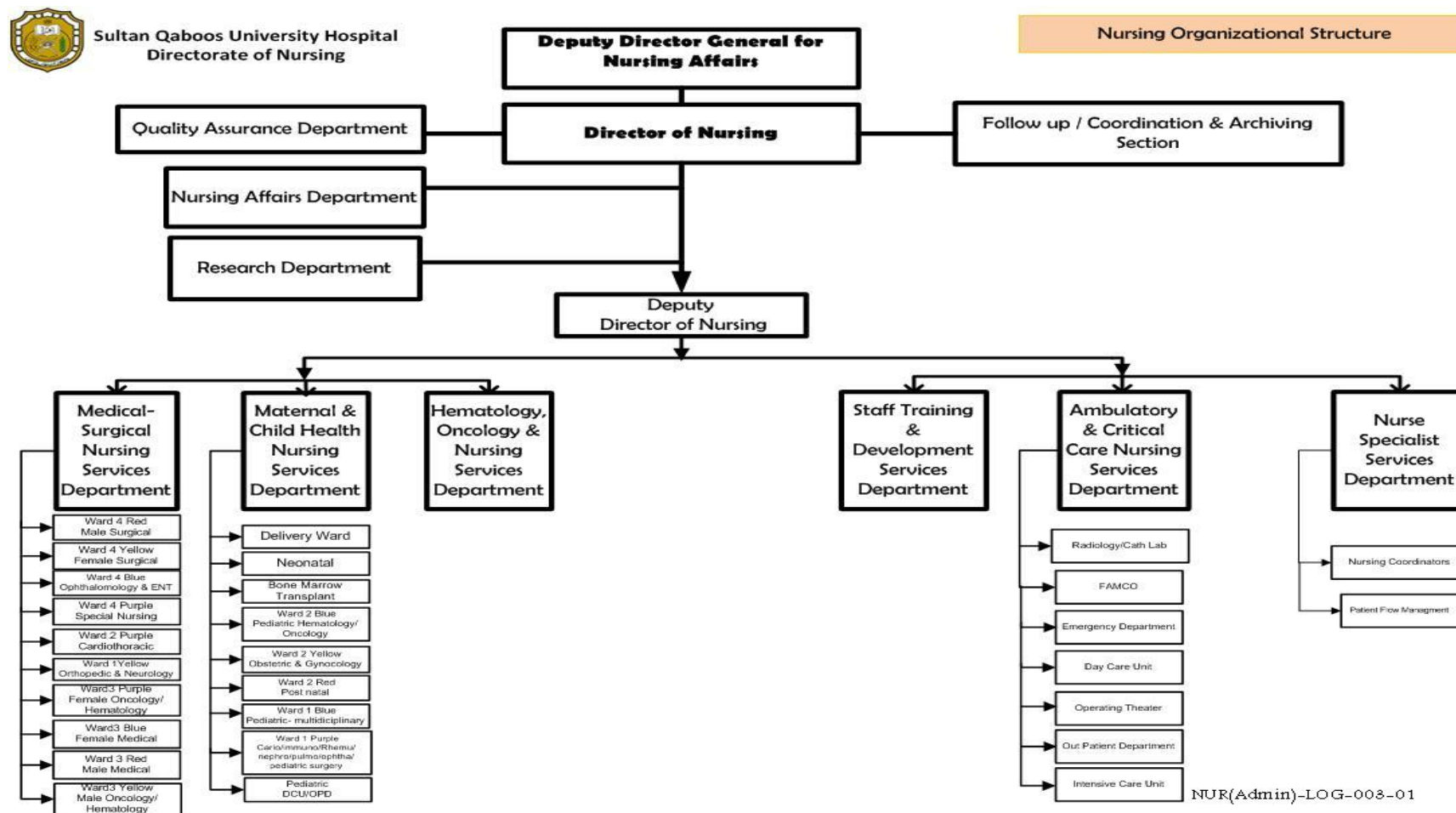
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## Appendices

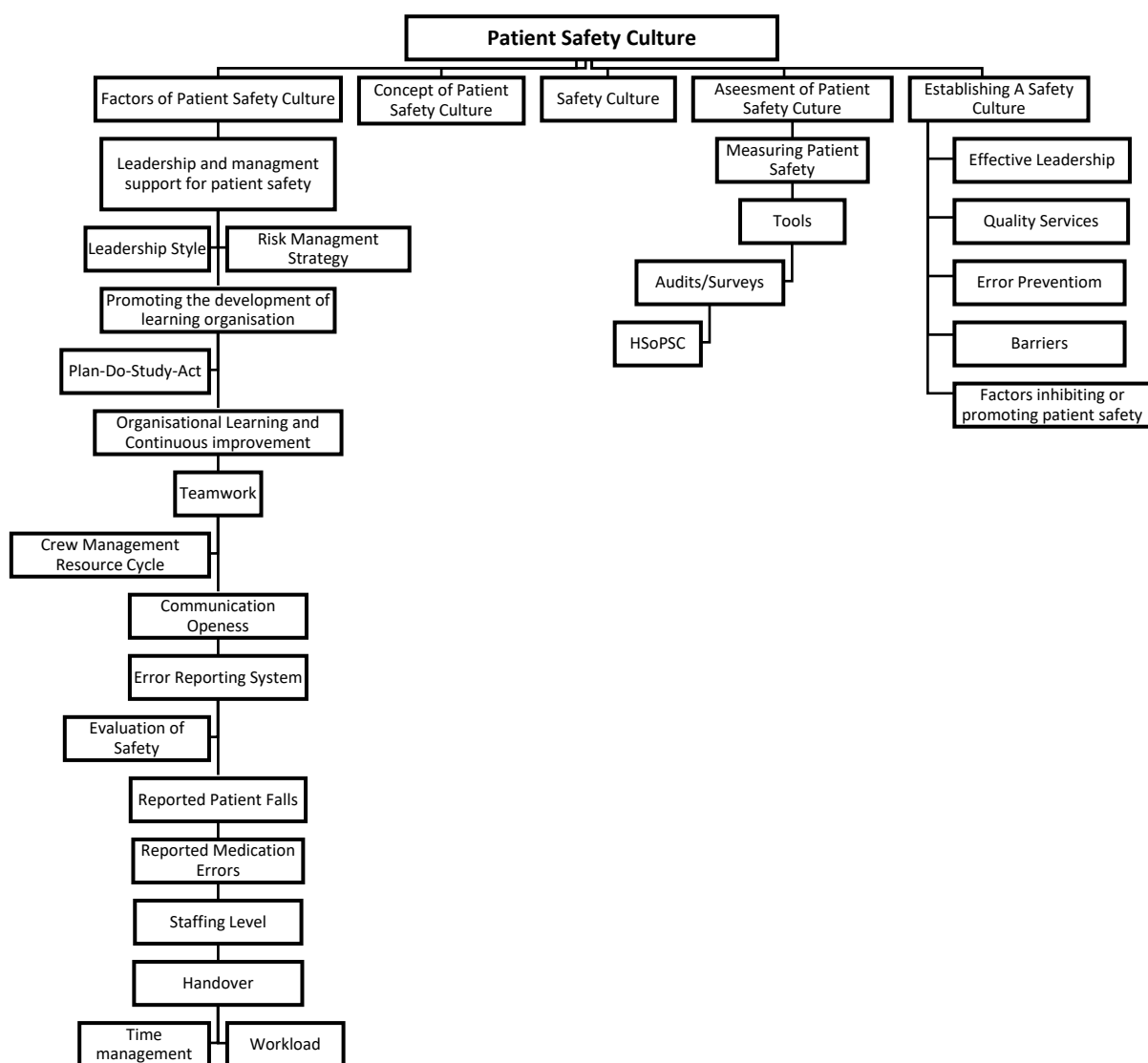
### Appendix 1 Sultan Qaboos University Hospital Nursing Directorate Structure



**Appendix 2** Database Search Strategy

No	Database	Terms Searched	Total	Selections Based on Title	Selection based on Abstract	Selection based on Full text and Inclusion criteria
1.	CINAHL	Nurse+ Perceptions+ Patient Safety Culture	507	7	7	9
		Nurse + Perceptions + Patient Safety	590	29	11	12
2.	Medline	Nurse+ Perceptions+ Patient Safety Culture	201	15	3	3
		Nurse + Perceptions + Patient Safety	134	22	2	2
3.	EMBASE (Ovid)	Nurse+ Perceptions+ Patient Safety Culture	332	23	5	3
		Nurse + Perceptions + Patient Safety	119	38	7	4
4.	Scopus	Nurse+ Perceptions+ Patient Safety Culture	404	17	6	5
		Nurse + Perceptions + Patient Safety	122	18	3	2
5.	Web of Knowledge	Nurse+ Perceptions+ Patient Safety Culture	100	20	8	6
		Nurse + Perceptions + Patient Safety	145	19	9	4
6.	Web of Science	Nurse+ Perceptions+ Patient Safety Culture	400	33	11	7
		Nurse + Perceptions + Patient Safety	387	45	6	3
7.	Others	Nurse + Perceptions + Patient Safety	10	10	10	10

### Appendix 3 Concept Mapping of the Themes included in the Literature Review



# Appendix 4 Overview of Patient Safety Culture Assessment Tools

	Strategies for Leadership (Pronovost et al., 2003)	Self-Attitude Questionnaire (SAQ) (Sexton and Helmreich, et al., 2006)	Hospital Survey on Patient Safety Culture (HSOPSC) (Sorra & Nieva, 2004)	Modified Stanford Questionnaire (PSCI) (Singer et al., 2003)	Manchester Patient Safety Framework (MaPSaF) (Kirk et al., 2007)	Manchester Patient Safety Culture Assessment Tool (MaPSCAT) (Kirk et al., 2007)
Methodology	Self-Assessment Audit	Questionnaire	Questionnaire	Questionnaire	Focus Group	Questionnaire
NO. of Dimensions	9	6	11	3	8	10
Management Supervisions *	✓	✓	✓		✓	✓
Safety Systems *	✓			✓	✓	✓
Risk Perceptions*					✓	✓
Job Demands*		✓				
Reporting*	✓			✓	✓	✓
Attitudes and Behaviour*		✓	✓	✓		
Communications*	✓		✓		✓	✓
Teamwork*	✓	✓	✓			✓
Personal Resources*		✓				
Organisational Factors*		✓			✓	✓
Staff Education and Training						✓
Evaluating Incidents						✓
Learning Effecting Change						✓
Psychometrics	No Published Reliability or validity data	Reasonable Reliability (Alpha ranges from 0.65 to 0.83) and validity	Reasonable Reliability (Alpha ranges from 0.63 to 0.84); lack outcome validation	Reasonable Reliability (Alpha ranges from 0.68 to 0.86); lack outcome validation	No Published Reliability or validity data	Reasonable Validity based on rank order correlation of the dimensions
Strengths	Focused on solutions highlights systems that are currently not fully implemented; good way to engage senior leadership and therefore a potentially a good initial step;	Questions freely available; has been tested on a large sample; detailed report available describing the instrument; adequate psychometrics linked to risk adjusted outcomes	Questionnaire freely available; good psychometrics properties; good coverage of safety culture elements; benchmarking data available	Questionnaire freely available; good psychometric properties; relatively short questionnaire	Solutions focused approach that engages clinical staff in safety culture; produces rich picture of culture; simple process that can be used at the unit level	Based on theoretically derived framework: multi-dimensional focus solution focus with guidance for improvement
Weaknesses	Lack of reliability and validity data; based on perceptions of very limited group; equates degree of system implementation with culture	Questionnaire relatively long (60 items) not specifically designed to measure safety culture and does not include important dimensions (e.g. reporting on incidents)	Questionnaire relatively long (79 items)	Measures only a limited number of safety culture dimensions	Resource intensive for facilitators and time for staff away from their work approximately 3 hours	Time intensive for staff due to the complexity of the question

**Reference:** Fleming and Hartnell (2007)

## Appendix 5 Manchester Patient Safety Framework (MaPSaF) –Acute (Matrix)

## Manchester Patient Safety Framework (MaPSaF) – Acute

## Increasing Maturity

	A ( p a t h o l o g i c a l )	B ( r e a c t i v e )	C ( b u r e a u c r a t i c )	D ( p r o a c t i v e )	E ( g e n e r a t i v e )
1) <b>Commitment to overall continuous improvement</b>	No resources are invested in the identification of problems or areas of good practice. If any auditing occurs it lacks structure and there is no response to what is discovered. Whatever protocols or policies exist are there to meet the organisation's statutory requirements and are not used, reviewed or updated. Poor quality care is tolerated or ignored. This attitude is evident at Board level and throughout the organisation in the healthcare teams.	A continuous improvement framework is developed in response to specific directives or an imminent inspection visit. Auditing only occurs in response to specific incidents and national directives and does not reflect local needs. Little attempt is made to respond to any audit findings. The bare minimum of protocols and policies exist, and these tend to be out-of-date and unused unless an incident occurs that triggers their review. Development of new protocols and policies occurs in response to incidents and complaints.	Frontline staff are not engaged in the improvement process and they see it as a management activity that is externally driven. Lots of auditing occurs but lacks an overall strategy linking with organisational or local needs. Staff are overloaded with protocols and policies (which are regularly reviewed and updated) that are rarely implemented. Patients and the public may be involved in quality issues, but this is lip service rather than real engagement	There is a genuine desire and enthusiasm throughout the organisation for continuous improvement. It is recognised that continuous improvement is everyone's responsibility and that the whole organisation, including patients and the public, need to be involved. Such organisations aim to be centres of excellence and compare their performance against that of others. Clinicians are involved in, and have ownership of, the auditing process which leads to continuous improvement. Protocols and policies are developed and reviewed by staff and are used as the basis for care and service provision. Patients and the public are formally involved in internal decisions – making it a patient centred service.	A culture of continuous improvement is embedded within the organisation and is integral to decision making at all levels. The organisation is a centre of excellence, continually assessing and comparing its performance against others both within and outside the health service. Teams design and conduct their own outcome focused audit programme, in collaboration with patients and the public. Staff are alert to potential safety risks. This means that over time the need for protocols and policies is reduced as evidence-based practice is second nature and patient safety is constantly on everyone's mind. Patients and the public are involved in a routine, meaningful way with ongoing contribution and feedback.
2) <b>Priority given to safety</b>	A low priority is given to safety. There are some risk management systems in place, such as strategies and committees, but nothing is actually delivered. This is an organisation unaware of their risks, believing that if a patient safety incident occurs,	Safety becomes a priority once an incident occurs, but the rest of the time only lip service is paid to the issue apart from meeting legal requirements. There is little evidence of any implementation of a risk management strategy. Safety is only discussed by the Board in relation to specific incidents. Any measures that are taken are aimed	Safety has a fairly high priority and there are numerous systems (including those integrating the patient perspective) in place to protect it. However, these systems are not widely disseminated to staff or reviewed. They also tend to lack the flexibility to respond to unforeseen events and fail to capture the complexity of the issues involved.	Safety is promoted throughout the organisation and staff are actively involved in all safety issues and processes. Patients, the public and other organisations are also involved in risk management systems and their review. Measures taken are aimed at patient protection and not self-protection. Risks are proactively identified, using prospective risk	Safety is the top priority in the organisation, and responsibility for safety is seen as being part of everyone's role including patients and the public. Staff constantly assess risks and look for potential improvements. Patient safety is a high-profile issue throughout the organisation and is embedded in the activities of all staff, from the Board/senior managers



	<b>A</b> <b>( p a t h o l o g i c a l )</b>	<b>B</b> <b>( r e a c t i v e )</b>	<b>C</b> <b>( b u r e a u c r a t i c )</b>	<b>D</b> <b>( p r o a c t i v e )</b>	<b>E</b> <b>( g e n e r a t i v e )</b>
	insurance schemes can be used to bail them out.	at self-protection and not patient protection. In order to meet financial constraints or government set targets, risks are taken.	Responsibility for risk management is invested in a single individual who does not integrate it within the wider organisation. It is an imposed culture	assessments, and action is taken to manage them. There are clear accountability lines and while one individual takes the lead for patient safety in the organisation, it is a key part of all managers' roles.	through to healthcare teams who have day-to-day contact with patients, including support staff. Patient involvement in, and review of, patient safety issues is well established.
<b>3) System errors and individual responsibility</b>	Incidents are seen as 'bad luck' and outside the organisation's control, occurring as a result of staff errors or patient behaviour. There is a strong blame culture with individuals subjected to victimisation and disciplinary action.	The organisation sees itself as a victim of circumstances. Individuals are seen as the cause and the solution is retraining and punitive action. When incidents occur, there is no attempt to support those involved, including the patients and their relatives.	There is a recognition that systems contribute to incidents and not just individuals. The organisation says that it has an open and fair culture, but it is not perceived in that way by staff. Being open/open disclosure protocols have been written to ensure that staff and patients/carers receive support following an incident do exist, but they are not widely known about or used	It is accepted that incidents are a combination of individual and system faults. The organisation has an open, fair and collaborative culture. Following a patient safety incident, a systems analysis is carried out and used to make decisions about the relative contribution of systems factors and the individual, e.g. the Incident Decision Tree. This process informs decisions about staff suspensions and so there is a consistent and fair approach to dealing with staff issues following incidents. The organisation is also open and honest with patients and/or their carers when a patient safety incident occurs that led to severe harm or death, but does not discuss all types of incidents	Organisational and system failures are noted, and staff are also fully aware of their own personal accountability in relation to errors and of their empowerment to report them. Integrated systems enable patient safety incidents, complaints and litigation cases to be analysed together. Staff, patients and relatives are actively involved and supported from the time of the incident. The organisation has a high level of openness and trust. The organisation is also open and honest with patients and/or their carers about all types of patient safety incidents, irrespective of the level of harm caused.
<b>4) Recording incidents and best practice</b>	Ad hoc incident reporting systems are in place, but the organisation is largely in 'blissful ignorance' unless serious incidents occur or solicitors' letters are received. There is a high blame culture, with individuals subjected to victimisation and disciplinary action. No learning can occur.	There is an embryonic incident reporting system, although staff are not encouraged to report incidents. Minimal data on the incidents is collected but not analysed. There is a blame culture, so staff are reluctant to report incidents. When incidents occur, there is no attempt to support any of those involved.	A centralised anonymous reporting system is in place with a lot of emphasis on form completion. Attempts are made to encourage staff and patients to report incidents (including those that were prevented or led to no harm) though staff do not feel safe and patients do not feel comfortable reporting them. The organisation considers other sources of safety information alongside incident reports (e.g. complaints and audits).	Reporting of patient safety incidents at both a local and national level (e.g. the National Reporting and Learning System) is encouraged and they are seen as learning opportunities. Accessible, 'staff and patient friendly' reporting methods are used, allowing trends to be readily examined. Staff feel safe reporting all types of patient safety incidents, including those that were prevented. Staff, patients and/or their carers are supported from the moment of reporting.	It is second nature for staff to report patient safety incidents (including those that led to no harm or were prevented) as they have confidence in the investigation process and understand the value of reporting to both local systems and nationally (e.g. the National Reporting and Learning System). Patients are actively encouraged to report incidents. It is a learning organisation and robust systems exist in order to record best practice and compliments.

	A ( p a t h o l o g i c a l )	B ( r e a c t i v e )	C ( b u r e a u c r a t i c )	D ( p r o a c t i v e )	E ( g e n e r a t i v e )
<b>5) Evaluating incidents and best practice</b>	Incidents and complaints are 'swept under the carpet' if possible. Incidents are superficially investigated by a junior manager with the aim of 'closing the book' and 'hiding any skeletons in the cupboard'. Information gathered from the investigation is stored but little action is taken apart from disciplinary action ('public executions') and attempts to manage the media. In this organisation there is little recognition of good safe practice.	Investigations are instigated with the aim of damage limitation for the organisation and apportioning individual blame. Investigations are cursory and focus on a specific event and the actions of an individual. Quick-fix solutions are proposed that deal with the specific incident, but may not be instigated once the 'heat is off'. Some investigations are not completed.	Senior managers are involved in the investigation, which is narrow and focuses on the individuals and systems surrounding the incident. There is a detailed procedure for the investigation process, which involves the completion of multiple forms – the investigation is conducted for its own sake and to placate patients/carers rather than examine root causes and support those involved. Staff are motivated to review procedures or how the procedures are implemented, but learning is variable.	The organisation is open to inquiry and welcomes external involvement in investigations in order to gain an independent perspective. The staff involved in incidents are involved in their investigation to identify root causes and interface issues. The aim of investigations is to learn from incidents and disseminate the findings widely. Data from incident reports are used to analyse trends, identify 'hot spots' and examine training implications. It is a forward-looking, open organisation. Patients are involved in the investigation process and their perceptions, experience and recommendations sought.	The organisation conducts both internal and external independent incident investigations that include the staff and patients involved. Incident investigations are seen as learning opportunities and focus upon improvement and include patient recommendations. The incident analysis process is systematically and regularly reviewed following consultation with all staff. Learning from best practice is shared across the organisation and nationally. It is a learning organisation as evidenced by a commitment to learn from incidents throughout all levels – from the Board/senior managers through to healthcare teams and support staff.
<b>6) Learning and effecting change</b>	No attempts are made to learn from incidents unless imposed by external bodies such as public enquiries. The aim after an incident is to 'paper over the cracks' and protect itself – the organisation considers that is has been successful when the media do not become aware of incidents. No changes are instigated after an incident apart from those directed at the individuals concerned.	Little, if any, organisational learning occurs and what does take place relates to the amount of disruption that senior staff have experienced. All learning is specific to the particular incident. Any changes instigated in the aftermath of an incident are not sustainable as they are knee-jerk reactions to perceived individual errors and are devised and imposed by senior managers. Consequently, similar incidents tend to recur.	Some systems are in place to facilitate organisational learning and this may include consideration of the patient perspective. The lessons learned are not disseminated throughout the organisation. Some enforced local changes relating directly to the specific incident are made. Committees and managers decide on any changes to be introduced, but lack of staff involvement leads to them not being integrated into working patterns. Patients are only involved so the organisation can prove to regulators that they have some commitment to patient and public involvement.	The organisation has a learning culture and processes exist to share learning, such as reflection and sharing patient perceptions. There is Board/senior management support for in-depth incident investigations and changes instigated address underlying causes (e.g. systems factors). Staff are actively involved in the process and there is a real commitment to sustainable change throughout the organisation. The organisation 'scans the horizon' for learning opportunities and is keen to learn from others' experiences. Organisational learning following incidents is used in forward planning. It is an open, self-confident organisation.	It is a learning organisation. The organisation learns from internal and external information and experience and is committed to sharing this learning both within and outside the organisation. Patient safety incidents (including those that led to no harm or were prevented) are discussed in open forums where all staff are empowered to contribute. Both individual and organisational learning is evaluated. Improvements in practice occur without the trigger of an incident as the culture is one of continuous improvement. Patients play a key role in learning and contribute to subsequent change processes.

	A ( p a t h o l o g i c a l )	B ( r e a c t i v e )	C ( b u r e a u c r a t i c )	D ( p r o a c t i v e )	E ( g e n e r a t i v e )
<b>7) Communication about safety issues</b>	Communication in general is poor; it comes from the top down and staff are not able to speak to their managers about risk. Events are kept in-house and not talked about. The organisation is essentially closed. What communication there is, is negative, with a focus on blame. Patients are only given information which must be legally provided and only after exerting a lot of pressure on the organisation to give them access.	Communication in general is directive with managers issuing instructions. Staff are only able to speak to their managers after something has gone wrong. Communication is ad hoc and restricted to those involved in a specific incident. The patient is given the information the organisation feels is appropriate in a one-way communication	There is a communication strategy. Policies and procedures are in place, and lots of records are kept. There is a lot of information collected from staff, patients and other organisations but it is not effectively utilised. This leads to an information overload meaning that little is done with the information received by staff. A risk communication system is in place, but no-one checks whether it is working.	The communications system and record keeping are fully audited. There is communication across organisations facilitating meaningful benchmarking. All levels of staff are involved, and there are robust mechanisms for them to feedback to the organisation. Information is shared, there are regular briefing sessions where staff are encouraged to set the agenda. Effective communication regarding safety issues is made with patient and public involvement groups.	Everybody communicates safety issues and learns from the experiences of others (good and bad). It is a transparent organisation and includes patient participation in risk management policy development. Innovative ideas are encouraged, and staff are empowered to implement them. This is an organisation that communicates good practice both externally and internally.
<b>8) Personnel management and safety issues</b>	Staff are seen just as bodies to fill posts. Recruitment and selection processes are rudimentary. The language used is negative and poor health and attendance records are seen as disciplinary matters. Staff feel unsupported and see Personnel as 'them' and not 'us'. There is a rudimentary staff policy, no structured HR development programme and no links with occupational health.	Job descriptions and staffing levels change only in response to problems, so there are good selection and retention policies in areas where the organisation has been vulnerable in the past. The atmosphere is of blame and punishment. Staff support is available, but is minimal and tokenistic. There is a very basic HR policy, but it is inflexible and developed in response to problems that have already been experienced.	Recruitment and retention procedures are in place and credentials are always checked. The language used to manage staff is generally formal and neutral and guided by policies and procedures. Mechanisms for staff support are governed by a lot of paperwork and policies. The procedures on appraisal, staff development and occupational health are there but are inflexibly applied, and so do not always achieve what they were designed for. These procedures are seen as a tool for management to control staff.	There is some commitment to matching individuals to posts. There are attempts to understand why poor performance occurs, and visible, flexible support systems exist tailored to the needs of the individual. Personnel management processes are reviewed, and changes are made when necessary. There is genuine concern about staff health, and good systems of appraisal, monitoring and review. Patient/carer input on safety and staffing issues is actively sought. There is demonstrable evidence of proactive measures taken in some areas (for example by using the NPSA's Incident Decision Tree following an incident).	Job specifications are designed to identify competencies using a Knowledge and Skills Framework. Reflection and review (both positive and negative) occur continuously and automatically. The organisation is committed to its staff, and everyone has confidence in the personnel management procedures that include mentorship and supervision. Patients and the public have meaningful involvement in the development and implementation of any policies related to safety and staffing issues. Personnel management is not a separate entity but an integral part of the organisation. Following a patient safety incident, a systems analysis is used (for example by using the NPSA's Incident Decision Tree) to make decisions about the relative contribution of systems factors and the individual healthcare professional. This process informs decisions about staff suspensions and as such there is a consistent and fair approach to dealing with staff issues following incidents.

	A ( p a t h o l o g i c a l )	B ( r e a c t i v e )	C ( b u r e a u c r a t i c )	D ( p r o a c t i v e )	E ( g e n e r a t i v e )
<b>9) Staff education and training</b>	Training has a low priority. The only training offered is that required by government. Staff education is seen by management as irritating, time consuming and costly. There are consequently no checks made on the quality or relevance of any education or training given with regards to career development of staff. Staff are seen as already trained to do their job, so why would they need more training?	Training occurs where there have been specific problems and relates almost entirely to high risk areas where obvious gaps are filled. It is the responsibility of the individual to read, act upon and fund their own educational needs. Education and training focus on maximising income and covering the organisation's back rather than the career development of the staff. There is no dedicated training budget and staff appraisals occur on an ad hoc basis.	The training programme reflects organisational needs, so training is supported only if it benefits the organisation. No thought is given to actively involving patients in training. Basic Personal Development Plans are in place, so everyone has their own file. However, these are not very effective as they are not properly resourced or given priority. There are a large number of courses on offer, however not all of these are relevant to the career development of the staff expected to make use of them. Training is seen as the way to prevent mistakes and appraisals are focused around this.	There is an attempt to identify the training needs of the organisation, and of individuals, and to match them up. Educational opportunities are well planned and resourced and are available from and for all relevant agencies. Training and education are seen as integral to the career development of individuals and are linked directly to other organisational systems, such as incident reporting. Appraisals are staff centred and are built around the needs of the individual. Preliminary attempts to involve patients and the public in staff training are underway and the organisation is starting to learn lessons from their experiences.	Individuals are empowered and motivated to undertake their own training needs analysis and negotiate their own training programme. Learning is a daily occurrence and does not happen solely in a classroom environment. Education is seen as being integral to the organisational culture. The approach to training and education is flexible and seen as a way of supporting staff in fulfilling their potential. Appraisals are initiated and managed by the staff themselves. Patients are involved in staff training to aid understanding of patient perceptions of risk and safety.
<b>10) Team working</b>	Individuals mainly work in isolation but where there are teams they are uni-disciplinary and dysfunctional. There are tensions between the team members and a rigid hierarchical structure. They are more like a collection of people brought together under the direction of a nominal leader. Information is not shared between team members. The team operates secretly.	People only work as a team following a negative event and to respond to external demands. Individuals are not actually committed to the team. There is a clear hierarchy in every team, corresponding to the hierarchy of the organisation as a whole. There are multidisciplinary teams, but they have been told to work together, and only pay lip service to the ideals of team working. Information is cascaded to team members following an incident. The team operates defensively, and newcomers are not welcomed.	Multidisciplinary teams are put together to respond to government policies, but there is no way of measuring how effective they are. Teamwork is seen by lower grades of staff as paying lip service to the idea of empowerment. Teams are given lots of written information about how they should function. There are official mechanisms for the sharing of ideas or information within and across teams, but these are not used effectively. Teams operate behind the scenes and generally within a single organisation.	Teams are multidisciplinary, and time and resources are devoted to team development processes. Team structure is fluid, with people taking up the role most appropriate for them at the time. There is evaluation of how effective the team is and changes are made when necessary. Teams are collaborative and adaptable. Teams are open and may involve members external to the organisation.	Regular and evaluated team resource management training is offered to fully integrated multidisciplinary teams. Team membership is flexible with a horizontal structure. Different people make equally valued contributions when appropriate. Teams are about shared understanding and vision rather than geographical proximity. Team working is the accepted way in the organisation. Teams are totally open, involving members from diverse organisations, locally, nationally and even internationally.

Reference: Kirk et al. (2007)

## Appendix 6 Hospital Survey on Patient Safety Culture (HSoPSC)

# Hospital Survey on Patient Safety Culture

## Instructions

This survey asks for your opinions about patient safety issues, healthcare errors, and event reporting in your hospital and will take about 10 to 15 minutes to complete.

If you do not wish to answer a question, or if a question does not apply to you, you may leave your answer blank.

I consent to take part in this study by returning this questionnaire ☐

- An **“event”** is defined as any type of error, mistake, incident, accident, or deviation, regardless of whether or not it results in patient harm.
- **“Patient safety”** is defined as the avoidance and prevention of patient injuries or adverse events resulting from the processes of health care delivery.

## SECTION A: Your Work Area/Unit

In this survey, consider your “unit” to be the work area, department, or clinical area of the hospital where you spend most of your work time or provide most of your clinical services.

What is your primary work area or unit in this hospital? Select ONE answer.

- ☐ a. Many different hospital units/No specific unit
- ☐ b. Medicine (non-surgical) ☐ h. Psychiatry/mental health ☐ n. Other, please specify:
- ☐ c. Surgery ☐ i. Rehabilitation
- ☐ d. Obstetrics ☐ j. Pharmacy
- ☐ e. Paediatrics ☐ k. Laboratory
- ☐ f. Emergency department ☐ l. Radiology
- ☐ g. Intensive care unit (any type) ☐ m. Anaesthesiology

Please indicate your agreement or disagreement with the following statements about your work area/unit.

Think about your hospital work area/unit...	Strongly Disagree ▼	Disagree ▼	Neither ▼	Agree ▼	Strongly Agree ▼
1. People support one another in this unit	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
2. We have enough staff to handle the workload.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
3. When a lot of work needs to be done quickly, we work together as a team to get the work done .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
4. In this unit, people treat each other with respect.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
5. Staff in this unit work longer hours than is best for patient care.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

**SECTION A: Your Work Area/Unit (continued)**

	<b>Strongly Disagree</b> ▼	<b>Disagree</b> ▼	<b>Neither</b> ▼	<b>Agree</b> ▼	<b>Strongly Agree</b> ▼
<b>Think about your hospital work area/unit...</b>					
6. We are actively doing things to improve patient safety.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
7. We use more agency/temporary staff than is best for patient care .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
8. Staff feel like their mistakes are held against them..	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
9. Mistakes have led to positive changes here..	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
10. It is just by chance that more serious mistakes don't happen around here .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
11. When one area in this unit gets really busy, others help out .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
12. When an event is reported, it feels like the person is being written up, not the problem...	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
13. After we make changes to improve patient safety, we evaluate their effectiveness .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
14. We work in "crisis mode" trying to do too much, too quickly .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
15. Patient safety is never sacrificed to get more work done.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
16. Staff worry that mistakes they make are kept in their personnel file.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
17. We have patient safety problems in this unit .	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
18. Our procedures and systems are good at preventing errors from happening.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

**SECTION B: Your Supervisor/Manager**

**Please indicate your agreement or disagreement with the following statements about your immediate supervisor/manager or person to whom you directly report.**

	<b>Strongly Disagree</b> ▼	<b>Disagree</b> ▼	<b>Neither</b> ▼	<b>Agree</b> ▼	<b>Strongly Agree</b> ▼
1. My supervisor/manager says a good word when he/she sees a job done according to established patient safety procedures .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
2. My supervisor/manager seriously considers staff suggestions for improving patient safety.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
3. Whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
4. My supervisor/manager overlooks patient safety problems that happen over and over ...	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

**SECTION C: Communications**

How often do the following things happen in your work area/unit?

Think about your hospital work area/unit...	Never ▼	Rarely ▼	Sometimes ▼	Most of the time ▼	Always ▼
1. We are given feedback about changes put into place based on event reports .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
2. Staff will freely speak up if they see something that may negatively affect patient care .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
3. We are informed about errors that happen in this unit .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
4. Staff feel free to question the decisions or actions of those with more authority.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
5. In this unit, we discuss ways to prevent errors from happening again .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
6. Staff are afraid to ask questions when something does not seem right .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

**SECTION D: Frequency of Event Reported**

In your hospital work area/unit, when the following mistakes happen, *how often are they reported?*

	Never ▼	Rarely ▼	Sometimes ▼	Most of the time ▼	Always ▼
1. When a mistake is made, but is <u>caught and corrected before affecting the patient</u> , how often is this reported? ...	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
2. When a mistake is made, but has <u>no potential to harm the patient</u> , how often is this reported? .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
3. When a mistake is made that <u>could harm the patient</u> , but does not, how often is this reported? .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

**SECTION E: Patient Safety Grade**

Please give your work area/unit in this hospital an overall grade on patient safety.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
Excellent	Very Good	Acceptable	Poor	Failing

**SECTION F: Your Hospital**

Please indicate your agreement or disagreement with the following statements about your hospital.

Think about your hospital...	Strongly Disagree ▼	Disagree ▼	Neither ▼	Agree ▼	Strongly Agree ▼
1. Hospital management provides a work climate that promotes patient safety .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
2. Hospital units do not coordinate well with each other .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

- |   |                            |                            |                            |                            |                            |
|---|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| 3. Things “fall between the cracks” when transferring patients from one unit to another ..... | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| 4. There is good cooperation among hospital units that need to work together .....            | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |

**SECTION F: Your Hospital (continued)**

- | Think about your hospital...  | Strongly<br>Disagree<br>▼  | Disagree<br>▼              | Neither<br>▼               | Agree<br>▼                 | Strongly<br>Agree<br>▼     |
|---|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| 5. Important patient care information is often lost during shift changes .....                      | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| 6. It is often unpleasant to work with staff from other hospital units.....                         | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| 7. Problems often occur in the exchange of information across hospital units.....                   | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| 8. The actions of hospital management show that patient safety is a top priority .....              | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| 9. Hospital management seems interested in patient safety only after an adverse event happens ..... | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| 10. Hospital units work well together to provide the best care for patients .....                   | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| 11. Shift changes are problematic for patients in this hospital .....                               | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |

**SECTION G: Number of Events Reported**

**In the past 12 months, how many event reports have you filled out and submitted?**

- |  |  |
|--|--|
| <input type="checkbox"/> a. No event reports     | <input type="checkbox"/> d. 6 to 10 event reports    |
| <input type="checkbox"/> b. 1 to 2 event reports | <input type="checkbox"/> e. 11 to 20 event reports   |
| <input type="checkbox"/> c. 3 to 5 event reports | <input type="checkbox"/> f. 21 event reports or more |

**SECTION H: Background Information**

**This information will help in the analysis of the survey results.**

**1. How long have you worked in this hospital?**

- |  |  |
|--|--|
| <input type="checkbox"/> a. Less than 1 year | <input type="checkbox"/> d. 11 to 15 years   |
| <input type="checkbox"/> b. 1 to 5 years     | <input type="checkbox"/> e. 16 to 20 years   |
| <input type="checkbox"/> c. 6 to 10 years    | <input type="checkbox"/> f. 21 years or more |

**2. How long have you worked in your current hospital work area/unit?**

- |  |  |
|--|--|
| <input type="checkbox"/> a. Less than 1 year | <input type="checkbox"/> d. 11 to 15 years   |
| <input type="checkbox"/> b. 1 to 5 years     | <input type="checkbox"/> e. 16 to 20 years   |
| <input type="checkbox"/> c. 6 to 10 years    | <input type="checkbox"/> f. 21 years or more |

**3. Typically, how many hours per week do you work in this hospital?**



- ☐ a. Less than 20 hours per week      ☐ d. 60 to 79 hours per week
- ☐ b. 20 to 39 hours per week      ☐ e. 80 to 99 hours per week
- ☐ c. 40 to 59 hours per week      ☐ f. 100 hours per week or more

**SECTION H: Background Information (continued)**

**4. What is your staff position in this hospital? Select ONE answer that best describes your staff position.**

- |  |  |
|--|--|
| <input type="checkbox"/> a. Registered Nurse                             | <input type="checkbox"/> j. Respiratory Therapist                        |
| <input type="checkbox"/> b. Physician Assistant/Nurse Practitioner       | <input type="checkbox"/> k. Physical, Occupational, or Speech Therapist  |
| <input type="checkbox"/> c. LVN/LPN                                      | <input type="checkbox"/> l. Technician (e.g. EKG, Lab, Radiology)        |
| <input type="checkbox"/> d. Patient Care Asst/Hospital Aide/Care Partner | <input type="checkbox"/> m. Administration/Management                    |
| <input type="checkbox"/> e. Attending/Staff Physician                    | <input type="checkbox"/> n. Other, please specify:                       |
| <input type="checkbox"/> f. Resident Physician/Physician in Training     | <div style="border: 1px solid black; height: 30px; width: 360px;"></div> |
| <input type="checkbox"/> g. Pharmacist                                   |  |
| <input type="checkbox"/> h. Dietician                                    |  |
| <input type="checkbox"/> i. Unit Assistant/Clerk/Secretary               |  |

**5. In your staff position, do you typically have direct interaction or contact with patients?**

- ☐ a. YES, I typically have direct interaction or contact with patients.
- ☐ b. NO, I typically do NOT have direct interaction or contact with patients.

**6. How long have you worked in your current specialty or profession?**

- |  |  |
|--|--|
| <input type="checkbox"/> a. Less than 1 year | <input type="checkbox"/> d. 11 to 15 years   |
| <input type="checkbox"/> b. 1 to 5 years     | <input type="checkbox"/> e. 16 to 20 years   |
| <input type="checkbox"/> c. 6 to 10 years    | <input type="checkbox"/> f. 21 years or more |

**7. What is your current nursing grade?**

- |                                     |                                      |
|-------------------------------------|--------------------------------------|
| <input type="checkbox"/> a. Grade 1 | <input type="checkbox"/> f. Grade 6  |
| <input type="checkbox"/> b. Grade 2 | <input type="checkbox"/> g. Grade 7  |
| <input type="checkbox"/> c. Grade 3 | <input type="checkbox"/> h. Grade 8  |
| <input type="checkbox"/> d. Grade 4 | <input type="checkbox"/> i. Grade 9  |
| <input type="checkbox"/> e. Grade 5 | <input type="checkbox"/> j. Grade 10 |

**SECTION I: Your Comments**

**Please feel free to write any comments about patient safety, error, or event reporting in your hospital.**

**THANK YOU FOR COMPLETING THIS SURVEY©.**

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**Appendix 7** Hospital Survey on Patient Safety Culture: Items and Dimensions**Hospital Survey on Patient Safety Culture: Items and Composites**

In this document, the items in the Hospital Survey on Patient Safety Culture are grouped according to the safety culture composites they are intended to measure. The item's survey location is shown to the left of each item. Negatively worded items are indicated.

**Note:** Negatively worded questions should be reverse coded when calculating percent "positive" response, means, and composites.

**1. Teamwork Within Units**

(Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

A1. People support one another in this unit.

A3. When a lot of work needs to be done quickly, we work together as a team to get the work done.

A4. In this unit, people treat each other with respect.

A11. When one area in this unit gets really busy, others help out.

**2. Supervisor/Manager Expectations and Actions Promoting Patient Safety<sup>1</sup>**

<sup>1</sup> Adapted from Zohar (2000). A group-level model of safety climate: Testing the effect of group climate on micro-accidents in manufacturing jobs.

Journal of Applied Psychology, (85) 4, 587-596.

(Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

B1. My supervisor/manager says a good word when he/she sees a job done according to established patient safety procedures.

B2. My supervisor/manager seriously considers staff suggestions for improving patient safety.

B3. Whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts. (negatively worded)

B4. My supervisor/manager overlooks patient safety problems that happen over and over. (negatively worded)

**3. Organizational Learning—Continuous Improvement**

(Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

A6. We are actively doing things to improve patient safety.

A9. Mistakes have led to positive changes here.

A13. After we make changes to improve patient safety, we evaluate their effectiveness.

**4. Management Support for Patient Safety**

(Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

F1. Hospital management provides a work climate that promotes patient safety.

F8. The actions of hospital management show that patient safety is a top priority.

F9. Hospital management seems interested in patient safety only after an adverse event happens. (negatively worded)

## 5. Overall Perceptions of Patient Safety

(Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

A15. Patient safety is never sacrificed to get more work done.

A18. Our procedures and systems are good at preventing errors from happening.

A10. It is just by chance that more serious mistakes don't happen around here. (negatively worded)

A17. We have patient safety problems in this unit. (negatively worded)

## 6. Feedback and Communication About Error

(Never, Rarely, Sometimes, Most of the time, Always)

C1. We are given feedback about changes put into place based on event reports.

C3. We are informed about errors that happen in this unit.

C5. In this unit, we discuss ways to prevent errors from happening again.

## 7. Communication Openness

(Never, Rarely, Sometimes, Most of the time, Always)

C2. Staff will freely speak up if they see something that may negatively affect patient care.

C4. Staff feel free to question the decisions or actions of those with more authority.

C6. Staff are afraid to ask questions when something does not seem right. (negatively worded)

## 8. Frequency of Events Reported

(Never, Rarely, Sometimes, Most of the time, Always)

D1. When a mistake is made, but is caught and corrected before affecting the patient, how often is this reported?

D2. When a mistake is made, but has no potential to harm the patient, how often is this reported?

D3. When a mistake is made that could harm the patient, but does not, how often is this reported?

## 9. Teamwork Across Units

(Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

F4. There is good cooperation among hospital units that need to work together.

F10. Hospital units work well together to provide the best care for patients.

F2. Hospital units do not coordinate well with each other. (negatively worded)

F6. It is often unpleasant to work with staff from other hospital units. (negatively worded)

## 10. Staffing

(Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

A2. We have enough staff to handle the workload.

A5. Staff in this unit work longer hours than is best for patient care. (negatively worded)

A7. We use more agency/temporary staff than is best for patient care. (negatively worded)

A14. We work in "crisis mode" trying to do too much, too quickly. (negatively worded)

**11. Handoffs and Transitions**

(Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

F3. Things "fall between the cracks" when transferring patients from one unit to another.

(negatively worded)

F5. Important patient care information is often lost during shift changes.

(negatively worded)

F7. Problems often occur in the exchange of information across hospital units. (negatively worded)

F11. Shift changes are problematic for patients in this hospital.

(negatively worded)

**12. Nonpunitive Response to Errors**

(Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

A8. Staff feel like their mistakes are held against them. (negatively worded)

A12. When an event is reported, it feels like the person is being written up, not the problem.

(negatively worded)

A16. Staff worry that mistakes they make are kept in their personnel file.

(negatively worded)

**Patient Safety Grade**

(Excellent, Very Good, Acceptable, Poor, Failing)

E1. Please give your work area/unit in this hospital an overall grade on patient safety.

**Number of Events Reported** (No event reports, 1 to 2 event reports, 3 to 5 event reports, 6 to 10 event reports, 11 to 20 event reports, 21 event reports or more)

G1. In the past 12 months, how many event reports have you filled out and submitted?

\*\*\*\**Handoffs are referred to as Handovers*

---

**Note:** Negatively worded questions should be reverse coded when calculating percent "positive" response, means, and composites.

**1Adapted from Zohar (2000). A group-level model of safety climate: Testing the effect of group climate on micro accidents in manufacturing jobs. Journal of Applied Psychology, (85) 4, 587-596.**

**Appendix 8** Phase II: Voluntary Response Profile Expression Form for Participation in the Focus Group



University  
of Glasgow

College of Medical,  
Veterinary & Life Sciences

Nursing and Healthcare Department

# Voluntary Response Profile Expression of Interest to Participate

Study title

“Nurses’ Perceptions of Patient Safety Culture in Oman”

I agree to take part in the Focus-Group-Interview ☐

Study ID Number \_\_\_\_\_ (to be completed by the  
researcher only)




Grade \_\_\_\_\_

Email \_\_\_\_\_

Mobile No \_\_\_\_\_

Years of Experience in SQUH \_\_\_\_\_

## Appendix 9 University Hospital Ethics Committee Approval, Oman

<p><b>Sultan Qaboos University</b></p> <p> <b>COLLEGE OF MEDICINE &amp; HEALTH SCIENCES</b></p>		<p><b>جامعة السلطان قابوس</b></p> <p><b>كلية الطب والعلوم الصحية</b></p>
<p>REF. NO. SQU-EC/098/15 MREC #1105</p>		
<p>TO: Mr. Daniel Birru Nursing Directorate Sultan Qaboos University Hospital</p>		
<p>FROM: Prof. Mansour Al-Moundhri Chairman, Ethics Committee</p>		
<p>SUBJECT: Research Proposal <i>"Nurses' Perceptions of Patient Safety Culture in Oman"</i></p>		
<p>DATE: 02 June 2015</p>		
<p>I would like to inform you that the abovementioned proposal submitted to the Ethics Committee, College of Medicine and Health Sciences, Sultan Qaboos University for review and approval has been <b>approved</b> during its meeting of 28<sup>th</sup> May 2015.</p> <p>I wish you a productive study with your research work.</p>		
<p>: Irc cc: Dr. Khalid Al Balushi, Asst. Dean, Postgraduate Studies &amp; Research, SQU Mrs. Fatma Al Dhabbari, Nursing Dept., College of Medicine, Nursing &amp; Health Care, University of Glasgow</p>		
<p>P.O. Box: 35 Al-Khodh - Sultanate of Oman Postal Code 123 Telephone: (+968) 24141172 Telefax: (+968) 24413419</p>	<p>صندوق البريد: ٣٥ الخوض - سلطنة عُمان الرمز البريدي: ١٢٣ هاتف: ٢٤١٤١١٧٢ (+٩٦٨) فاكس: ٢٤٤١٣٤١٩ (+٩٦٨)</p>	

## Appendix 10 University of Glasgow Research Ethics for non-clinical research Ethical Approval



3 July 2015

Dr Anna O'Neill  
Nursing & Health Care School  
Room 503 Level 5  
61 Oakfield Avenue  
Glasgow G12 8LP

Dear Dr O'Neill

**MVLS College Ethics Committee**

**Project Title: Nurses' Perceptions of Patient Safety Culture in Oman**  
**Project No: 200140166**

The College Ethics Committee has reviewed your application and has agreed that there is no objection on ethical grounds to the proposed study. It is happy therefore to approve the project, subject to the following conditions:

- Project end date: 31 December 2017.
- The data should be held securely for a period of ten years after the completion of the research project, or for longer if specified by the research funder or sponsor, in accordance with the University's Code of Good Practice in Research:  
([http://www.gla.ac.uk/media/media\\_227599\\_en.pdf](http://www.gla.ac.uk/media/media_227599_en.pdf))
- The research should be carried out only on the sites, and/or with the groups defined in the application.
- Any proposed changes in the protocol should be submitted for reassessment, except when it is necessary to change the protocol to eliminate hazard to the subjects or where the change involves only the administrative aspects of the project. The Ethics Committee should be informed of any such changes.
- You should submit a short end of study report to the Ethics Committee within 3 months of completion.

Yours sincerely

Professor William Martin  
College Ethics Officer

Approval200140166.docx

Professor William Martin  
Professor of Cardiovascular Pharmacology

R507B Level 5  
School of Life Sciences  
West Medical Building  
Glasgow G12 8QQ Tel: 0141 330 4489  
E-mail: [William.Martin@glasgow.ac.uk](mailto:William.Martin@glasgow.ac.uk)

## Appendix 11 Phase I: Letter of Invitation



## Letter of Invitation

Date:

Dear Colleagues,

I, Fatma Al-Dhabbari, a PhD Student, from the Department of Nursing and Healthcare, University of Glasgow, invite you to participate in a research project entitled "*Nurses' Perceptions of Patient Safety Culture in Oman*".

Should you choose to participate, you will be asked to complete a web-based- survey relating to patient safety culture that will take you a maximum of 15 minutes. Once the survey is completed, you will also be asked to consent to participate on a voluntary basis in a Focus Group Interview, with colleagues of a similar grade. All participants will receive an email with a link to complete a Consent form, recoding your willingness to participate. Depending on how many people volunteer for the focus group interviews, you may not be selected, but you will be kept informed of the outcome. The focus group will begin with a presentation of a scenario, which will be followed by guided topic questions related to patient safety culture (the focus group is anticipated to last for a maximum of 2 hours). Any volunteer who participates in the electronic survey or the focus group is only expected to participate once and may choose to participate either in the survey or the focus group, but can also volunteer for both.

This research should benefit the organisation by promoting patient safety culture, in order to develop and maintain the culture of safety among nurses in Sultan Qaboos University Hospital.

If you have any pertinent questions about your rights as a research participant, please

contact Fatma Al-Dhabbari, email:-----, mobile, -----.

This study has been reviewed and received ethical clearance through the College of Medical, Veterinary and Life Sciences, University of Glasgow Research Ethics for non-clinical research, and Sultan Qaboos University Hospital Ethical Committee.

I do hope that you will volunteer to contribute to this very important study for our patients' safety. Your views and perceptions are highly valuable.

Thank you,  
Fatma Al-Dhabbari,  
PhD Student, University of Glasgow



**Appendix 12** Phase I: Participants' Information Sheet

## Participants' Information Sheet – Phase I- Web-Based-Survey

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**1. Study title**

**“Nurses’ Perceptions of Patient Safety Culture in Oman”**

**2. Invitation paragraph**

Dear Participants,

You are being invited to take part in a research study. Before you decide whether to participate it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully and discuss it with others if you wish. Please ask if there is anything that is not clear, or if you would like more information. Take time to decide whether or not you wish to take part.

**3. What is the purpose of the study?**

- **Background:** Patient safety is considered to be crucial to healthcare quality and is one of the major parameters monitored by healthcare organisations around the world. Nurses play a vital role in maintaining and promoting patient safety, due to the nature of their work.
- **Aim:** The main study aim is to identify and explore nurses’ perceptions of patient safety culture in Oman.

**4. Why have I been chosen?**

The entire population of qualified nurses in the medical and surgical wards (only those with over 6 months experience) (n=330) will be approached. They will be invited to complete a web-based-survey questionnaire that should take a maximum of 15 minutes. The survey will be sent via email as a link. The survey will use convenience sampling and be conducted over an eight week period. Once the survey is completed and analysed, all participants will be requested to participate on a voluntary basis in the second phase - a Focus Group Interview (scheduled to take place between Spring/Summer 2016). No participants from other specialities will be involved. The reasons for selecting participants from the medical and surgical wards are their workload and the high number of different specialities covered. In addition, due to the high number of nurses working within this speciality, there are multiple safety issues faced daily during care delivery.

**5. Do I have to take part?**

It is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep and also by returning the questionnaire, you will be considered to have consented to participate in the study. If you decide to take part, you will be free to withdraw at any time without giving a reason.

**6. What will happen to me if I take part?**

- Participants will complete a single online survey that focuses on patient safety culture.

- Participants' may choose to volunteer to participate in a focus group following the survey phase.
- Participants do not need to have completed the survey to participate in the Focus Group Interview.
- No investigations or visits will be conducted, and the participants will not be held responsible for anything they say or do.

## **7. What do I have to do?**

There are no lifestyles restrictions for participating in this study, except that the study will be conducted using the English Language.

## **8. What are the possible disadvantages and risks of taking part?**

There are no disadvantages to taking part in this study and no risks involved. The outcome of this study will be to advance knowledge on patient safety and to understand nurses' perceptions of this according to their grades with the healthcare system.

## **9. What are the possible benefits of taking part?**

You will receive no direct benefit from taking part in this study. The information that is collected will give us a better understanding of nurses' perceptions of the current patient safety culture for further service improvement.

## **10. Will my taking part in this study be kept confidential?**

All the information which is collected about you, or based on the responses that you provide, during the course of the research will be kept strictly confidential. You will be identified by an ID number, and any information about you will have your name and address removed, so that you cannot be identified. Please note that assurances of confidentiality will be strictly adhered to, unless evidence of serious harm, or risk of serious harm, is uncovered. In such cases, the University and Sultan Qaboos University Hospital may be obliged to contact relevant statutory bodies/agencies.

## **11. What will happen to the results of the research study?**

Once the results have been analysed and published, you can obtain a copy of the published findings. There will be no individual feedback.

## **12. Who is organising and funding the research?**

This research is organised by Fatma Al-Dhabbari, PhD Student at the University of Glasgow, sponsored by Ministry of Higher Education, Oman; in Collaboration with Sultan Qaboos University Hospital, Nursing Directorate.

## **13. Who has reviewed the study?**

This research has been reviewed by Sultan Qaboos University Hospital Ethics Committee, Oman, and by the College of Medical, Veterinary and Life Sciences University of Glasgow Ethics Committee for non-clinical research.'

## **14. How/Where data will be stored?**

All study data, including the Surveys' electronic files, interview tapes, and transcripts, will be stored on a password protected computer with paper-based back-ups stored in locked metal filing cabinets in the researcher's office and destroyed after a period of 10 years. Only the researcher will have access to this device and cabinet, and data will be kept for a period of 10 years and then destroyed in accordance with the Data Protection Act. Participants will be told that anonymous summary data will be disseminated to the professional community, but in no way it will be possible to trace responses to individuals.

## 15. Publication Plans

National and international journals, scientific journals, conference presentations, workshops, PhD thesis etc.

## 16. Contact for Further Information

- For further information please contact Fatma Al-Dhabbari via
- mobile: ----- or
- email -----

“Thank you for reading this information sheet”



## Appendix 13 Phase II: Focus Group Confirmation Letter



## Focus Group Confirmation Letter

Study Title: Nurses' Perceptions of the Patient Safety Culture in Oman

Date:

Dear Colleagues/Participants,

Thank you for your willingness to participate in the Focus Group. As discussed on the telephone and by email, we would like to hear your ideas and opinions about 'nurses' perceptions of the patient safety culture in Oman'. You will be in a group of 5 to 10 colleagues of a similar grade to yourself. Your responses to the questions will be reported anonymously. The date, time, and place are listed below.

On arrival, please look for signs directing you to the room where the Focus Group will be held.

DATE:	
TIME:	
PLACE:	

If you need directions to the Focus Group, or are unable to attend for any reason, please call Fatma Al-Dhabbari at ----- or email at: -----  
-----  
-----  
Otherwise we look forward to seeing you.

Yours Sincerely,

Fatma Al-Dhabbari,  
PhD student  
University of Glasgow

**Appendix 14** Phase II: Focus Group Participants Written Consent

# **CONSENT FORM**

**Title of Project: Nurses' Perception of Patient Safety Culture in Oman**

**Name of Researcher(s):**

Please initial box

I confirm that I have read and understood the information sheet dated \_\_\_\_\_  
(Version \_\_\_\_\_) for the above study and have had the opportunity to ask questions.

☐

I understand that my participation is voluntary and that I am free to withdraw at  
any time, without giving any reason, without my legal rights being affected.

☐

I agree to participate in the above study.

☐

I agree to audio/tape record the interview

☐

\_\_\_\_\_  
**Name of subject**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Signature**

\_\_\_\_\_  
**Name of Person taking consent**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Signature**

(if different from researcher)

\_\_\_\_\_  
**Researcher**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Signature**

(1 copy for subject; 1 copy for researcher)

**Appendix 15** Phase II: Letter of Invitation to Participate in the Focus Group

## Letter of Invitation

Date:

Dear Colleagues,

I, Fatma Al-Dhabbari, PhD Student, from the Department of Nursing and Healthcare, University of Glasgow, invite you to participate in a research project entitled *"Nurses' Perceptions of Patient Safety Culture in Oman"*.

Should you choose to participate, you will be asked to attend a focus group discussion on patient safety culture that will last between 45 minutes and 1 hour. Prior to the focus group discussion, you will also be asked to consent to participate on a voluntary basis in a Focus-Group-Interview, with colleagues of a similar grade. All participants who received an email and completed a Voluntary Response Profile Expression of Interest to Participate, will receive a confirmation letter regarding their agreement to participate. The Focus Group Interview will start with a scenario and be followed by guided topic questions related to patient safety culture (the focus group is anticipated to last for a maximum of 2 hours). Any volunteer who participates in the electronic survey or the focus group is only expected to participate once and may choose to participate either in the survey or the focus group, but can also volunteer for both.

This research should benefit the organisation by promoting patient safety culture, in order to develop and maintain the culture of safety among nurses at Sultan Qaboos University Hospital.

If you have any questions about your rights as a research participant, please contact Fatma Al-Dhabbari, email :-----, mobile, -----  
---.

This study has been reviewed and received ethical clearance through the College of Medical, Veterinary and Life Sciences, University of Glasgow Research Ethics for non-clinical research, and Sultan Qaboos University Hospital Ethical Committee.

I do hope that you will volunteer to participate in this very important study to benefit our patients' safety. Your views and perceptions are highly valued.

Thank you,

Fatma Al-Dhabbari,  
PhD Student,  
University of Glasgow

**Appendix 16** Phase II: Participants Information Sheet to Participate in the Focus Group

University of Glasgow | College of Medical,  
Veterinary & Life Sciences

Nursing and Healthcare Department

## Participants' Information Sheet – Phase II- Focus- Group- Interview

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### 1. Study title

“Nurses’ Perceptions of Patient Safety Culture in Oman”

### 2. Invitation paragraph

Dear Participants,

You are being invited to participate in a research study. Before you decide whether to participate it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully and discuss it with others if you wish. Please ask if there is anything that is not clear to you, or if you would like more information. Take time to decide whether or not you wish to take part.

### 3. What is the purpose of the study?

- **Background:** Patient safety is considered to be crucial to delivering quality healthcare and it is one of the major parameters monitored by healthcare organisations around the world. Nurses play a vital role in maintaining and promoting patient safety, due to the nature of their work.
- **Aim:** The main aim of the study is to identify and explore nurses’ perceptions of patient safety culture in Oman.

### 4. Why have I been chosen?

The entire population of nurses qualified in medical and surgical wards, with a minimum of 6 months experience (n=330) will be approached. They will be invited to complete a web-based-survey questionnaire that should take a maximum of 15 minutes. The survey will be sent via email as a link through the hospital IT system. The Survey will use convenience sampling and its duration will be eight weeks. Those surveyed will be asked to participate on a voluntary basis in the second phase, a Focus Group Interview (scheduled to take place between Spring/Summer 2016). No other participants will be involved from other specialities. The reasons for selecting participants from the medical and surgical wards are their workload and the high number of different specialities covered by doing so. In addition, due to the high number of nurses working within this speciality, there are multiple safety issues faced daily during care delivery.

### 5. Do I have to take part?

It is up to you to decide whether or not to participate. If you do decide to take part, you will be given this information sheet to keep and also be asked to sign a consent form. Even if you agree to participate, you remain free to withdraw at any time and without giving a reason.

### 6. What will happen to me if I take part?

You will participate in a voluntary Focus Group Interview that is anticipated to run for two hours maximum, which will be tape recorded. It is for any participants who have volunteered to be in the focus group. Once the focus group concludes, member checking of the data will be carried out to establish credibility. Following member checking, no

other involvement will be needed from the participants. No investigations or visits will be conducted, and no additional responsibilities are implied.

#### **7. What do I have to do?**

There are no lifestyles restrictions for participating in this study, except that the study will be conducted using the English Language.

#### **8. What are the possible disadvantages and risks of taking part?**

There are no possible disadvantages to taking part in this study and there are no risks involved. The outcome of this study is intended to advance knowledge on patient safety and to create greater understanding of nurses' perceptions concerning this according to their grades within the healthcare system.

#### **9. What are the possible benefits of taking part?**

You will receive no direct benefit from taking part in this study. The information that is collected during this study will give us a better understanding of nurses' perceptions of the current patient safety culture to improve the services provided.

#### **10. Will my taking part in this study be kept confidential?**

All the information collected about you, and the responses that you provide during the course of the research will be kept strictly confidential. You will be identified by an ID number, and any information about you will have your name and address removed, so that you cannot be identified. Please note that assurances of confidentiality will be strictly adhered to, unless evidence of serious harm, or risk of serious harm, is uncovered. In such cases, the University and Sultan Qaboos University Hospital may be obliged to contact the relevant statutory bodies/agencies. Any participant who reveals sensitive information will be consulted individually, in a professional manner after the conclusion of the focus group interview.

#### **11. What will happen to the results of the research study?**

Member checking will be carried out as the data is being collected, and after analysis; as it is important for establishing the credibility of qualitative data. In a member check, the researcher invites some of the participants to be involved randomly, providing them with feedback to study participants regarding emerging interpretations and obtaining participants' reactions. However, once the results have been analysed and published, you can obtain a copy of the published result.

#### **12. Who is organising and funding the research?**

This research is organised by Fatma Al-Dhabbari, a PhD Student at the University of Glasgow, sponsored by Ministry of Higher Education, Oman; In Collaboration with Sultan Qaboos University Hospital, Nursing Directorate.

#### **13. Who has reviewed the study?**

This research has been reviewed by Sultan Qaboos University Hospital Ethics Committee, Oman, and by the College of Medical, Veterinary and Life Sciences University of Glasgow Ethics Committee for non-clinical research.

#### **14. Where the Focus Group Interview will be held?**

The focus groups interview will be held in the hospital in a quiet room, away from noise and disturbance.

#### **15. How/Where, data will be stored?**

All study data, including the Surveys' electronic files, interview tapes, and transcripts, will be stored on a password protected computer with paper-based back-ups stored in locked metal filing cabinets in the researcher's office and destroyed after a period of 10 years. Only the researcher will have access to this device and cabinet, and data will be kept for a period of 10 years and then destroyed in accordance with the Data Protection Act. Participants will be told that anonymous summary data will be disseminated to the



professional community, but in no way it will be possible to trace responses to individuals.

**16. Publication Plans**

National and international journals, scientific journals, conference presentations, workshops, PhD thesis etc.

**17. Contact for Further Information**

- For further information please contact Fatma Al-Dhabbari via
- Mobile ----- or
- email -----

“Thank you for reading this information sheet”



**Appendix 17** Phase II: Focus Group Topic Guide and Participants Scenarios

**University of Glasgow** | College of Medical,  
Veterinary & Life Sciences

Nursing and Healthcare Department

## Focus Group Topic Guide

Notes: Before the group starts Fatma will chat with each participant to ensure that they are all comfortable with having signed the consent form (5 minutes)

### Introduction - (5 minutes)

Moderator's introduction and setting ground rules.

Welcome and thank you so much for taking time out of your day to talk with us. I am the moderator for this discussion. My job is to move the conversation along and make sure that we cover several different subjects and that everyone here gets involved.

The purpose of this session is to explore what you as nurses think about patient safety and how you perceive it in order improve patient safety practices. There are no right or wrong answers to any of the questions. The purpose is to find out what your personal opinions are - everyone's opinion is important. I encourage you to speak freely and to be as open and honest as possible.

**Member Checking**, also known as informant feedback or respondent validation, is a technique used by researchers to help improve the accuracy, credibility, validity, and transferability (also known as applicability, [[internal validity]], or fittingness) of a study.

A few key point before we get going:

- a. **Respect for opinions.** You may find that you disagree with an opinion voiced here by another participant. That is OK, and I hope you will say you disagree in a respectful and polite way. You might also change your mind in the middle of our discussion as a result of something that someone else says, and again I hope you will say so if that happens.
- b. **Important rule: one person speaking at one time.** Because we want to respect everyone and make sure that everyone is heard, we have one basic rule in this session-we will allow only one person to speak at a time. We want to have an organised session, and in order to do this, I ask that you respect the person who is speaking, and wait for him/her to finish expressing his/her thoughts.
- c. **Confidential/anonymous research.** This discussion is completely anonymous and confidential. There will be no record of what you say kept with your name on it. We are not going to quote anyone specifically using her/his name.

We will instead say “participant 1”, etc., and no one will ever connect your real name to your statements. There is a tape recorder so that we can be sure that we capture your words accurately, but no one will know what any person says any specific statement. We are using a tape recorder because your opinions are very important to us and we need to know what you said.

- ⇒ **Participant introductions.** Let’s go around the room - tell us your primary role in the unit and how long you’ve worked here.
- ⇒ **Introduce a scenario to stimulate a discussion (5 mins)**

### Focus Group Themes;

The following points will be explored during the focus group interview as main areas to answer 4 key areas under the main research question.

- Nurses’ understanding of patient safety in general and within the hospital context.
  - Patient safety is never sacrificed to get more work done.
  - We are given feedback about changes put into place based on event reports.
- Nurses’ attitudes and behaviours regarding patient safety.
  - Staff are expected to speak up freely if they see something that may negatively affect patient care. Are you surprised to hear nurses are reluctant to speak up because they are worried about the consequences?
  - There is good cooperation among hospital units that need to work together.
- Nurses’ perceptions of patient safety culture in their work areas
  - When one area in this unit gets really busy, others help.
  - Staff in this unit work longer hours than is best for patient care.
  - Hospital units work well together to provide the best care for patients.
- Factors that shape patient safety culture at ward and hospital levels.
  - Hospital management provides a work climate that promotes patient safety.
  - It is common to hear that management shows more interest after an incident occurs? Can you give an example/explain more?

### Conclusion - (2 minutes)

We have reached the end of our focus group session. Is there anything else anyone wants to add?

Thank you for taking the time to participate.



University  
of Glasgow

College of Medical,  
Veterinary & Life Sciences

Nursing and Healthcare Department

**Study Title:** Nurses' Perceptions of the Patient Safety Culture in Oman

### **Focus Group Scenarios**

#### **Scenario 1**

Nurse Raya is assigned to work on a busy Medical Ward. She recently attended an educational session on infection control techniques and the importance of hand washing. She notices that the physician, Dr. Hani, is going from patient to patient without washing his hands. Later that morning, Nurse Raya encounters Dr. Hani in the corridor and addresses him, saying that she has attended an educational session on hand-washing and noticed he had not followed the correct steps. Dr. Hani appears surprised by the comment, feels guilty and agrees that hand washing is very important. He says that he will be more careful about following the correct steps for hand washing.

#### **Scenario 2**

Mr. Nasser is a patient who was admitted for an upper GI bleed and he is to receive a unit of blood in 4 hours as prescribed by the physician. Nurse Mariam, who is caring for Mr. Nasser, is anxious to commence delivery of the units of blood as soon as possible, since the blood was delivered to the unit 20 minutes earlier. Hospital protocol requires two nurses to verify that the correct patient is receiving the correct blood product and type before starting the transfusion. At this time, however, another patient in the unit is being resuscitated, and staff availability is limited. Nurse Mariam decides to start the blood transfusion without checking with the 2<sup>nd</sup> Nurse. Shortly, after the transfusion starts the patient spikes a temperature and experiences shaking and chills. Nurse Mariam has inadvertently started blood for another patient named Nasser wrongly.

#### **Scenario 3**

A 60-year-old female is admitted to the ward with a 2-day history of severe left lower abdominal pain and leucocytosis. Her white blood cell (WBC) count is 13,000/cmm, and she has WBCs in her urinalysis. Two hours after admission, she begins to experience acute exacerbation of her abdominal pain, and is believed to have suffered a diverticular perforation. At this point, her surgeon decides to send her to the Operation Room (OR). The ward clerk is aware of the plan, but the patient's nurse is not. The patient is transported to the OR. Moments later, the OR calls to report that the

patient has not had her consent signed, and none of the other pre-op papers have been completed.

#### Scenario 4

Two members of a surgical ward, a nurse and a surgeon, are assessing a patient who has just been transferred from the Intensive Care Unit (ICU). The monitor at the nursing station reads a Supraventricular Tachycardia (SVT) rate of 180/min, and a BP of 76/48mm. The nurse calls out the vital signs, while the surgeon at the patient's bed side continues to monitor the rhythm. A nurse passing by the room hears the nurse call-out and steps into the room, and asks "Do you want a code cart in here?"

All Scenarios adapted from: Team STEPPS Speciality Scenarios: Med-Surg. AHRQ.gov. Cited on 15<sup>th</sup> May 2015 at: <http://www.ahrq.gov/professionals/education/curriculum-tools/teamstepps/instructor/scenarios/medsurg.pdf>.

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#### Scenario 1

##### 1. Instructor Comments

- ✓ Point out that challenging a team member regardless of their position is an integral part of teamwork. All members of the team and support staff have a responsibility to advocate for patient safety even if it may lead to conflict or differing positions. In this case, situation awareness was used to identify the problem and advocate for patients.

##### 2. Skills Needed

- ✓ Situation awareness. Situation monitoring: Assess environment. Mutual support: Resolve conflict. Communicate: Offer information.

##### 3. Potential Tools

- ✓ Advocacy/assertion, Feedback.

#### Scenario 2

##### 1. Instructor Comments

- ✓ Point out that this is a breach of the standards for check-back with blood administration. The safety measures crucial to the standard are the call-out of the patient name and number, as well as blood product information with a check-back from a second licensed professional. With other staff are diverted to the resuscitation, the nurse could have chosen other options, such as asking for help from a different unit, rather than proceeding without the double check. This is a failure to advocate for the patient.

##### 2. Skills Needed

- ✓ Mutual support.

##### 3. Potential Tools

- ✓ Task assistance, Advocacy/assertion, Collaboration

#### Scenario 3

**1. Instructor Comments**

- ✓ In this scenario, a shared mental model is not developed because information regarding the patient's care plan is not communicated to the whole team. This lack of communication and the failure to provide an accurate Handover resulted in a delayed start to the surgery and the potential for error.

**2. Skills Needed**

- ✓ Communication. Situation monitoring.

**3. Potential Tools**

- ✓ Handover, Brief, Cross-monitoring

**Scenario 4****1. Instructor Comments**

- ✓ Reinforce the point that monitoring both the patient and the team members supports the maintenance of situation awareness. In this case, it involves observing others and using clear communication. Monitoring is a powerful agent when responding proactively to a situation.

**2. Skills Needed**

- ✓ Situation monitoring: Assess the status of the patients. Situation monitoring: Assess the environment. Mutual support: Advocate and assert a position. Communication: Offer and seek information.

**3. Potential Tools**

- ✓ Call-out, Task assistance, Collaboration, Cross-monitoring.

## Appendix 18 Publication 1 by the Researcher: Literature Review concerning Patient Safety Culture

### Patient Safety Culture In Oman

Fatma Al-Dhabbari, Anna O'Neill, Joan Mc Dowell  
University of Glasgow, Nursing & Health Care Department,  
Glasgow, G12 8LP, Scotland  
E-mail: f.alhabbari@gmail.com

#### Abstract

The aim of this study is to explore nurses' perceptions of patient safety culture in Oman in medical and surgical wards at the Sultan Qaboos University Hospital, as perceptions affect behaviour and patient safety is an area in which improvements are required. The study also aims to identify the factors that influence nurses' perceptions of patient safety; their attitudes and behaviours towards patient safety and their understanding of patient safety within the hospital. The study will be approached from the perspective that, as front-line carers, nurses are of critical importance in enacting quality improvements and patient safety in the healthcare industry. A critical analysis of the literature was undertaken and an exploratory sequential mixed methods design utilised to answer the research questions. Primary data will be collected using a quantitative research design with data analysed using a statistical package. An exploratory qualitative approach will be used through focus group interviews. A number of scenarios created through expert consensus will set the scene for the focus-group-interviews. The focus groups will be analysed thematically using NVIVO. Ethical approval has been acquired.

**Keywords:** patient safety; patient safety culture; nurses' perceptions of patient safety; patient safety in Oman.

#### Introduction

This study aims to analyse the importance of how nurses perceive the safety culture to ensure safety in the healthcare services provided. A parallel aim is to identify the factors that influence nurses' perceptions of patient safety culture in the healthcare services that result in a positive culture.

#### Patient Safety Culture

Patient safety is defined by Kohn et al. (2000) as 'the prevention of harm'; developing a patient safety culture is therefore a mandate recommended by the Institute of Medicine (IOM). Medical errors or adverse events are one of the leading causes of death in healthcare facilities. It is estimated that one in every 300 patients experiences harm while obtaining healthcare worldwide, with the number of people harmed in developed countries estimated at about 1 in 10 patients (World Health Organisation 2014). When any medical error takes place, this may lead to longer hospital stays, litigation and any additional health care expenses (WHO 2012).

#### Safety Promotion in Health Care Services

In Oman and other developing countries, literature on patient safety culture is limited, although many

hospitals have recognised the importance of patient safety and have embarked on seeking accreditation from different international bodies in order to ensure maximum promotion of patient safety culture in their organisational setting. This attainment of accreditation and improvement of patient safety culture has led to an increase in the recognition of the importance creating a non-blame culture to encourage error reporting without fear of a punitive response.

#### Nurses' Role in Patient Safety Culture

Nurses play a vital role in ensuring patient safety, which involves ongoing patient monitoring and the coordination of care delivery (Kirwan et al. 2013). Their roles provide opportunities to reduce and intercept healthcare errors before they occur (Institute of Medicine 2004). The many duties of nurses in their roles, such as providing effective and safe care, monitoring quality indicators and conducting risk assessment and management, can have a positive impact on patient safety outcomes (Kirwan et al. 2013).

#### Evaluation of Safety Culture in Omani Health Care

Evaluating patient safety culture within any healthcare organisation is necessary in order to improve safety, the quality of care and patient outcomes. In Oman, staffing is multi-cultural. Patient safety culture is therefore very important since almost 70% of nursing staff educated to degree level are recruited from other countries and are neither native speakers of Arabic nor familiar with the culture of the patients they care for. Furthermore, nursing roles are still very traditional, involving bedside nursing care and carrying out physicians' orders. The workforce in Oman is multicultural with diverse backgrounds and education, which can lead to different perceptions of patient safety.

#### Method

This study aims to identify and explore nurses' perceptions of patient safety culture in Oman. It uses an explanatory sequential mixed methods design (Tashakkori & Teddlie, 2010). The methods will include the collection, analysis and "mixing" of both quantitative and qualitative data during the research process in order to ensure the most comprehensive understanding of the research problem possible (Creswell, 2014).



Figure 1: Explanatory Sequential Mixed Method

## Results and Discussion

Mixed Methodology using the Explanatory Sequential Mixed Method will be employed, comprising a quantitative study using a web-based-survey in the first phase and an exploratory qualitative design that contributes to deeper understanding of nurses' experiences using a focus-group-interview in the second phase (Figure 1). Patient safety culture is yet to be established and developed in Omani health care organisations. Hence, hospitals in Oman are responding to the increased demand to reduce medical errors and to improve other aspects of safety by actively pursuing efforts to improve the quality of care and patient safety. In addition, initiatives are needed to improve safety culture and errors should be viewed as a strategy to learn from mistakes and as an initial step towards creating a patient safety culture. However, there is a paucity of knowledge about patient safety culture in Omani hospitals and no studies have examined patient safety culture in Omani hospitals. This study therefore aims to investigate nurses' perception of patient safety culture and to identify the factors that influence nurses' perceptions of patient safety; their attitudes and behaviours towards patient safety and their understanding of patient safety within the hospital context to develop and maintain safety culture in Omani hospitals.

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## Acknowledgements

This research is funded by Ministry Of Higher Education, Oman, His Majesty Sultan Qaboos's Grant.



## Appendix 19 Publication 2 by the Researcher: Phase I, Survey Results

## Hospital Survey on Patient Safety Culture in Oman-Phase I Study Result

### دراسة مسحية حول ثقافة سلامة المرضى في المستشفيات- نتيجة المرحلة الأولى من الدراسة

Fatma Al-Dhabbari <sup>1</sup>, Dr Anna O'Neill <sup>2</sup>, Dr Joan Mc Dowell <sup>3</sup> جوان مكدويل<sup>3</sup> د. آنا أونيل ود. جوان مكدويل<sup>3</sup>  
<sup>1</sup> A Research Student, University of Glasgow, Nursing & Health Care Department, 61 Oakfield Avenue, Glasgow, G12 8LP, Scotland, UK  
<sup>2</sup> Dr Anna is Senior Clinical University Teacher & Master Program Director, University of Glasgow, Nursing & Health Care Department, 61 Oakfield Avenue, Glasgow, G12 8LP, Scotland, UK  
<sup>3</sup> Dr Joan is a Senior Lecturer and Affiliate status to the Institute of Health & Wellbeing, University of Glasgow, Nursing & Health Care Department, 61 Oakfield Avenue, Glasgow, G12 8LP, Scotland, UK

E-mail: <sup>1</sup>f.alhabbari@gmail.com; <sup>2</sup>Anna.O'Neill@glasgow.ac.uk; <sup>3</sup>Joan.McDowell@glasgow.ac.uk

**Abstract-** This study aims to identify nurses' perceptions of patient safety culture in Oman. Patient safety is an area of ongoing concern for Oman. A mixed methods approach was utilised. Phase 1 was a quantitative survey and Phase 2 was qualitative focus group interviews. This extended abstract reports on Phase 1. The Hospital Survey on Patient Safety Culture (HSPSC) questionnaire comprises of 12 domains related to patient safety culture. This web based survey was sent to nurses working in Medical and Surgical areas in one hospital (n=330). The response rate for the HSPSC was 61.8%. The results show that some areas of patient safety is successful (team-work, feedback and communication about error and organisational learning) while other areas still require improvement (overall perceptions of patient safety, staffing levels and non-punitive response to errors).

**Keywords:** Hospital survey on patient safety culture; patient safety; patient safety culture; nurses perceptions of patient safety; patient safety in Oman.

**ملخص الدراسة-** تهدف هذه الدراسة إلى تحديد مدى إدراك الممرضين والممرضات للثقافة المتعلقة بسلامة المرضى في عُمان؛ حيث باتت قضية سلامة المرضى محل اهتمام كبير ومصدر قلق مستمر في السلطنة. استخدمت في هذه الدراسة مناهج بحثية متباينة؛ إذ تضمنت المرحلة الأولى مسحاً كمياً بينما اشتملت المرحلة الثانية على مقابلات جماعية ركزت على الجوانب النوعية وتركز في هذا المقال على المرحلة الأولى. تألف المسح الكمي (الاستبيان) الذي تم إعداده من ١٢ مجالاً مرتبطاً بثقافة سلامة المرضى في المستشفيات وأرسل الكترونياً إلى ٣٣٠ ممرض وممرضة من العاملين في مجالات الطب والجراحة في أحد المستشفيات، وقد بلغ معدل الاستجابة في الرد على الاستبيان ٦١.٨٪. أظهرت النتائج نجاح بعض الجوانب المتعلقة بثقافة المرضى، كالعمل بروح الفريق وإبداء الملاحظات والتواصل في حالات الأخطاء والتعليم التنظيمي، بينما أظهرت النتائج الحاجة لجوانب أخرى إلى التعزيز مثل المفاهيم العامة المرتبطة بسلامة المرضى ومستويات التوظيف والاستجابة غير العقابية للأخطاء.

## INTRODUCTION

This study aims to identify and assess how nurses perceive the safety culture within their own specialised area of care. Patient safety is considered to be a central pillar of the establishment of quality healthcare and is one of the major parameters monitored by healthcare organisations around the world (WHO, 2014). Alkorashy (2013) argues that the patient safety culture concerns interactions between attitudes, values, skills, behaviours, and underlines the commitment to workplace safety management. The culture of safety is evolving and is emphasised in relation to the avoidance of healthcare professional errors. There are many factors that affect patient safety (Alkorashy, 2013). Quality managers in health care aim to promote a systematic approach to preventing and reducing harm to patients (Al-Dhabbari et al., 2015 & WHO, 2014). Nurses play a vital role in maintaining and promoting patient safety due to the nature of their work (Kirwan et al., 2013). This study aimed to elicit the views of nurses on patient safety.

## METHOD

An explanatory sequential mixed methods design was undertaken (Tashakkori & Teddlie, 2010). This paper reports on Phase 1 only. Phase 1 took the form of a cross-sectional web-based survey; the Hospital Survey on Patient Safety Culture HSPSC questionnaire that constituted of a quantitative approach focusing on patient safety culture. A descriptive survey is often referred to as a cross-sectional study because the data is collected from the population of interest at one point in time (Moule & Goodman, 2014).

- In Phase 1, the entire population of qualified nurses in medical and surgical wards, with 6 months' experience (n=330) were approached in the Sultan Qaboos University Hospital (SQUH). A convenient sampling approach was used and participants were selected from more than one specialty (Law et al., 2008). The HSPSC for nurses' opinions about patient safety issues and events were reported with respect to nurses' area of practice. Electronic surveys have been found to have advantages over other types of survey methodologies (Robson, 2011), as they are cost effective and data can be easily analysed (McPeake et al., 2013).
- The HSPSC is recommended by the World Health Organisation (WHO) for surveying patient safety culture (Sorra et al., 2012). It has been validated and its reliability has been assessed for the use in Europe and some Middle Eastern health care organisations (Sorra and Dyer, 2010). The survey was developed based on rigorous literature review concerning: (1) safety management and accidents; (2) organisational safety climate and culture; (3) health care and professional errors and error reporting; and (4) patient safety from which 12 domains were identified.

## RESULTS AND DISCUSSION

Composite outcomes are shown in table 1. The three areas of strength with the highest average percent positive responses were: 'supportive teamwork within units' (84%) where staff support each other, treat each other with respect, and work together as a team; 'positive feedback and communication about error' (81%) where staff are informed about errors that happen, given feedback about changes implemented, and discuss ways to prevent errors; and 'high impact through continuous improvement organisational learning' (79%) where mistakes have led to positive changes and changes are evaluated for effectiveness. The disagreement to these composites is very low indicating little concern.

The three areas that showed the lowest average percent positive responses were: 'overall positive perceptions of patients' safety' (36%) as procedures and systems are not good at preventing errors and there is a patient safety problem; 'sufficient staffing number' (18%) that there are not enough staff to handle the workload and work hours to provide the best care for patients; and 'lack of non-punitive response to errors' (11%) which indicates staff feel that their mistakes and event reports are held against them and that mistakes are not kept in their personnel file. The same composite has also shown that there are 43% of staff reluctant to state that there is a punitive response to error and 46% had disagreed indicating that there is a punitive response to error.

Adding to the above significant result, there are areas showing potential interest where results showed equal responses rate with positive rate at 48% and neutral at 47%; 'manager expectations and actions to promote patient safety'. This indicates that managers consider their suggestions for improving patient safety, praise them for following patient safety procedures, and do not overlook patient safety problems. However, there is a mixed response to this domain.

Three areas show interesting results regarding neutral responses. These were: 'good handover and transitions between units' (55%) indicates that important patient care information is transferred across hospital units and during shift changes; 'overall positive perceptions of patient safety' (57%) which indicates that staff are not sure if procedures and systems are good at preventing errors and if there is a patient safety problem; 'sufficient staff number' (65%) where staff are not sure if there are enough staff to handle the workload and work hours to provide the best care for patients.

Table 51 Average Response Rate

Survey Dimensions	Agreement Responses No (%)	Neutral Responses No (%)	Disagreement Responses No (%)
There is supportive teamwork within units	172 (84)	28 (14)	4 (2)
There is positive feedback and communication about error	166 (81)	30 (15)	8 (4)
There is high impact through continuous improvement for organisational learning	162 (79)	32 (16)	10 (5)
There is a high frequency of events being reported	124 (61)	46 (23)	34 (17)
There is increased management support for patient safety	114 (56)	88 (43)	2 (1)
There is increased positive teamwork across units	108 (53)	84 (41)	12 (6)
There are high manager expectations and actions to promote patient safety	98 (48)	96 (47)	10 (5)
There is good communication openness	88 (43)	76 (37)	40 (20)
There is good handover and transitions between units	76 (37)	112 (55)	16 (8)
There is increased overall positive perceptions of patient safety	74 (36)	116 (57)	14 (7)
There are sufficient staff numbers	36 (18)	132 (65)	36 (18)
There is punitive response to errors	94 (46)	88 (43)	22 (11)

The safety culture domain that had the most significant and frequent results are all related to improving patient safety and focusing on developing the safety culture within the organisation and the services provided. The least endorsed dimensions are all related to staff satisfaction level of their work and organisation environment. The culture of blame, punitive response to error and lack of staffing levels resulted in creating negative perceptions of the safety culture. This implies that staff may be reluctant to report incidences as a result.

## CONCLUSION

The results from Phase 1 demonstrate that staff are aware of the importance of a patient safety culture within the working environment but there is more work required to be done on an individual level to support staff addressing health care professional errors and incident reporting.

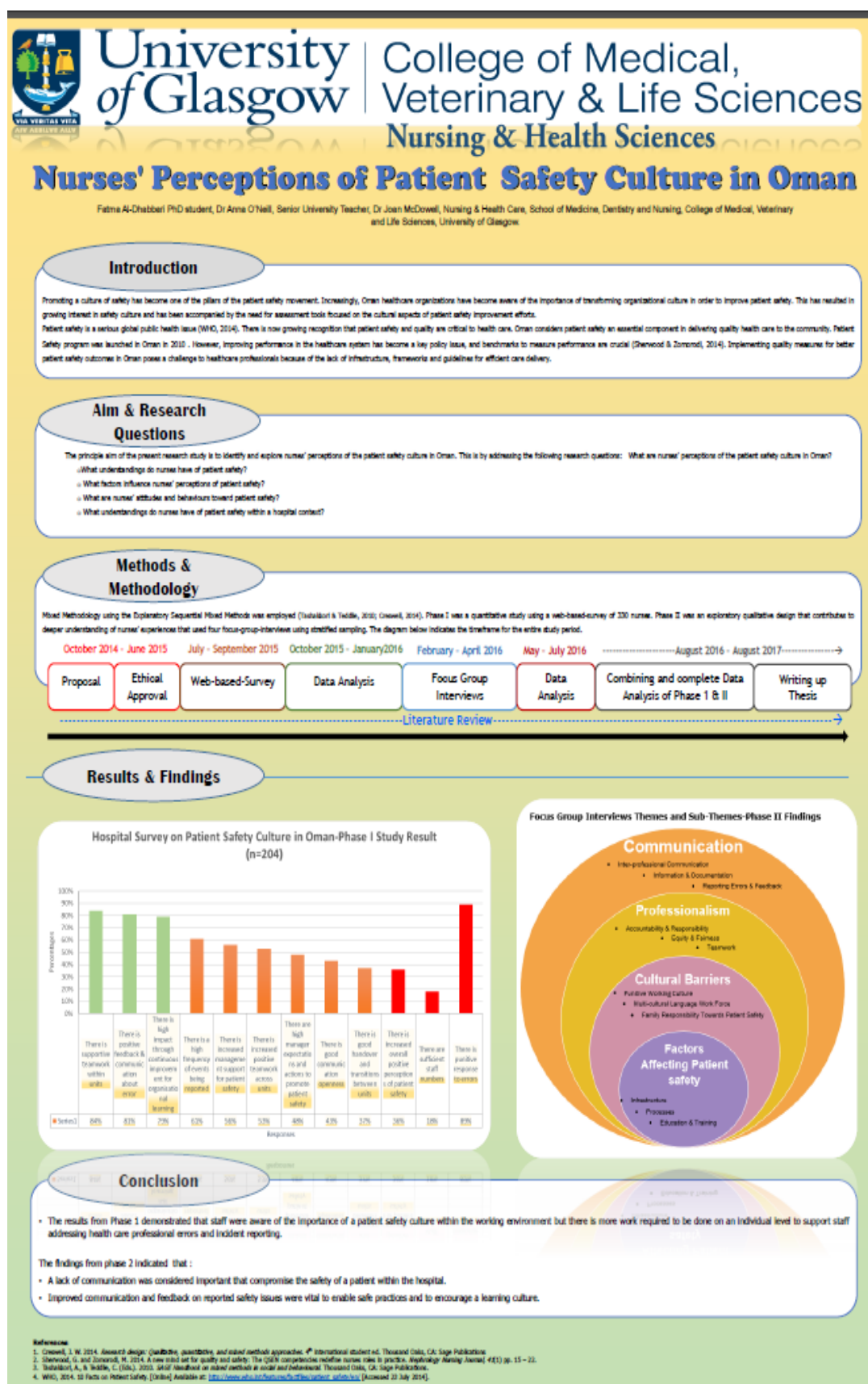
## ACKNOWLEDGEMENT

This research is funded by Ministry of Higher Education, Oman, His Majesty Grant.

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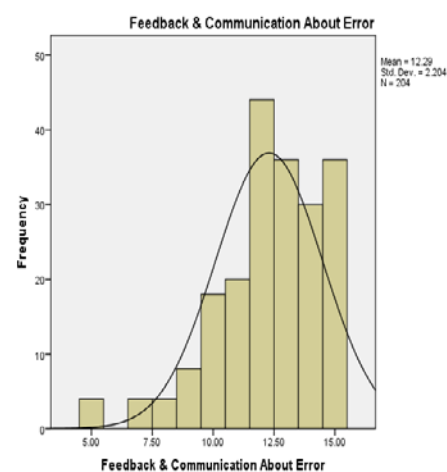
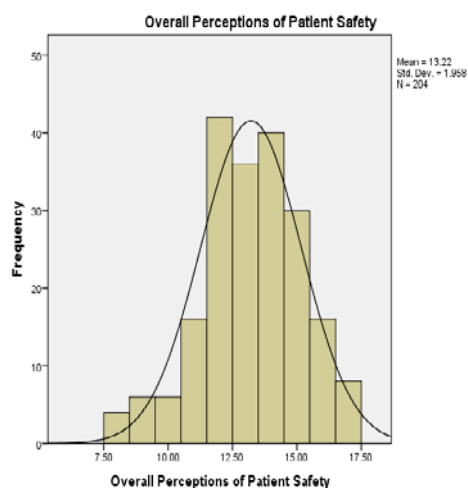
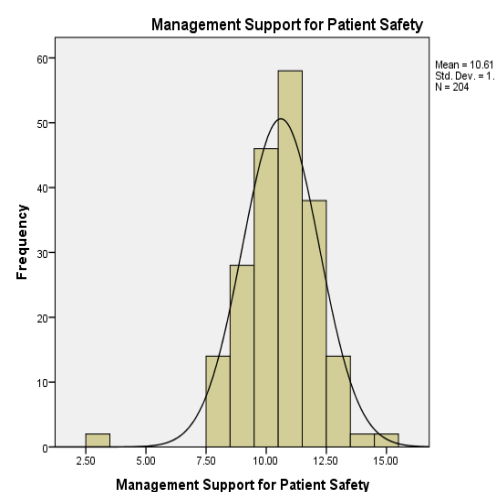
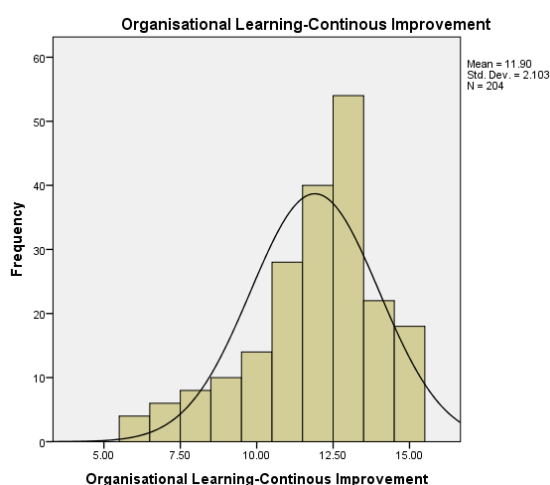
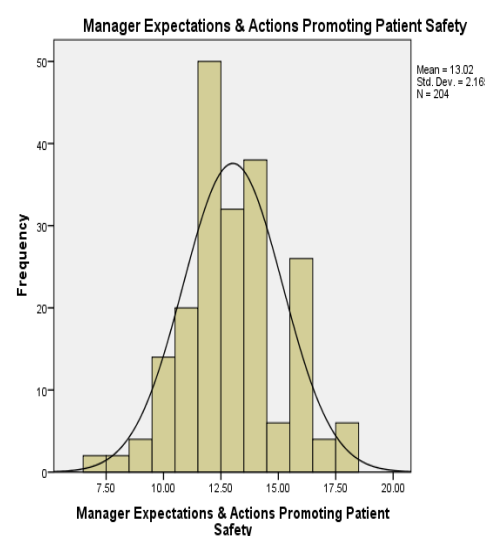
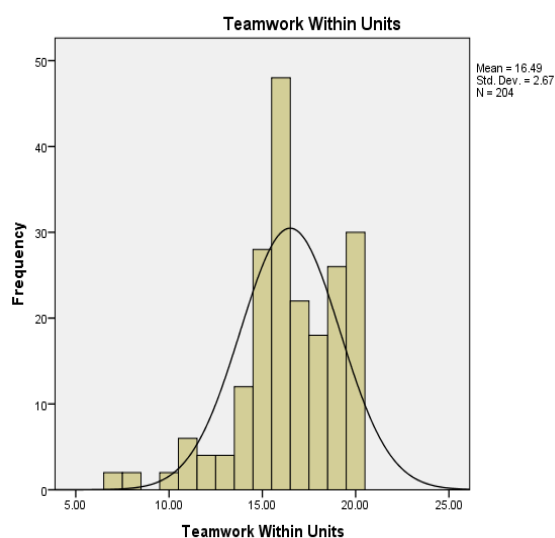
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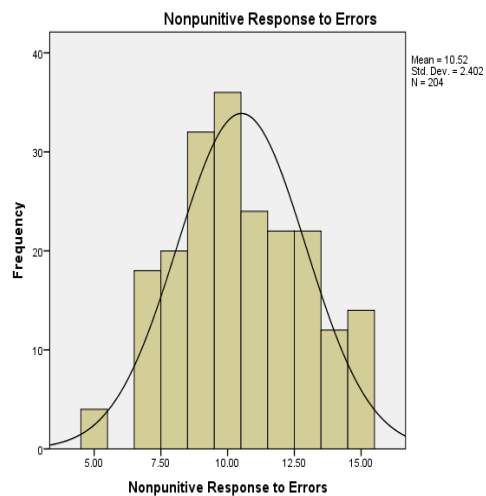
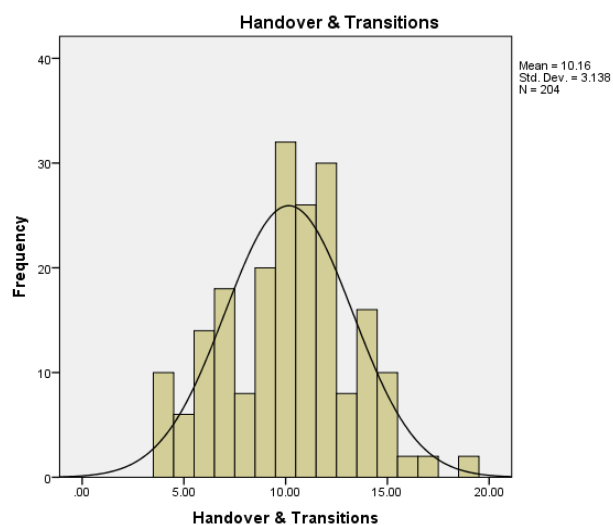
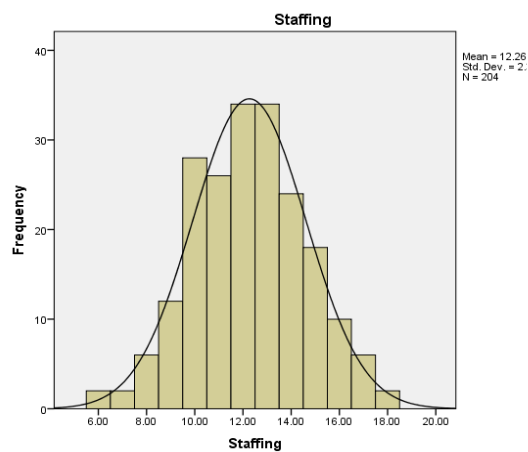
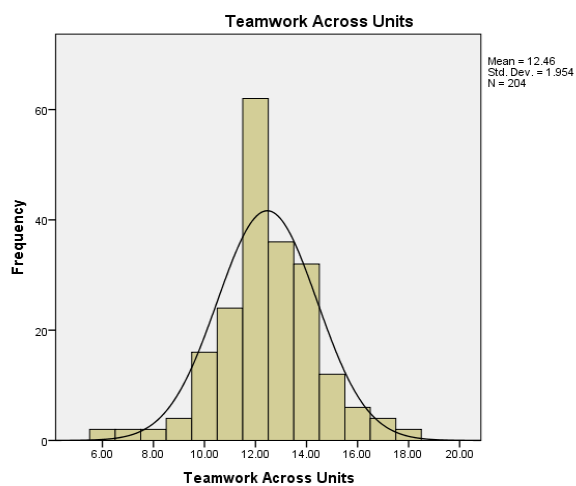
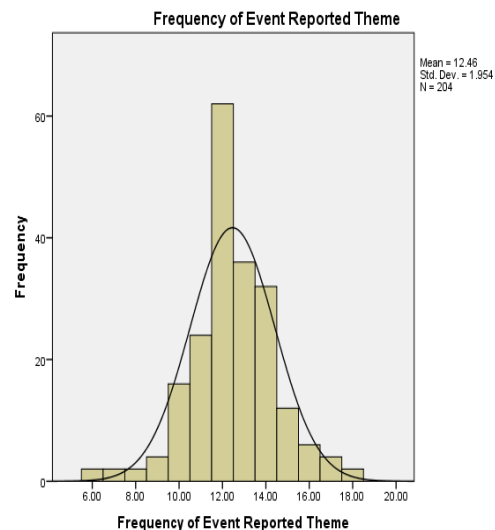
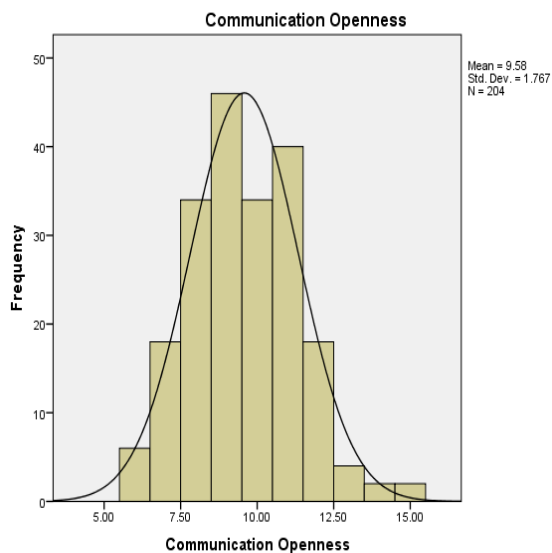
## Appendix 20 Publication 2 by the Researcher – Poster Presentation

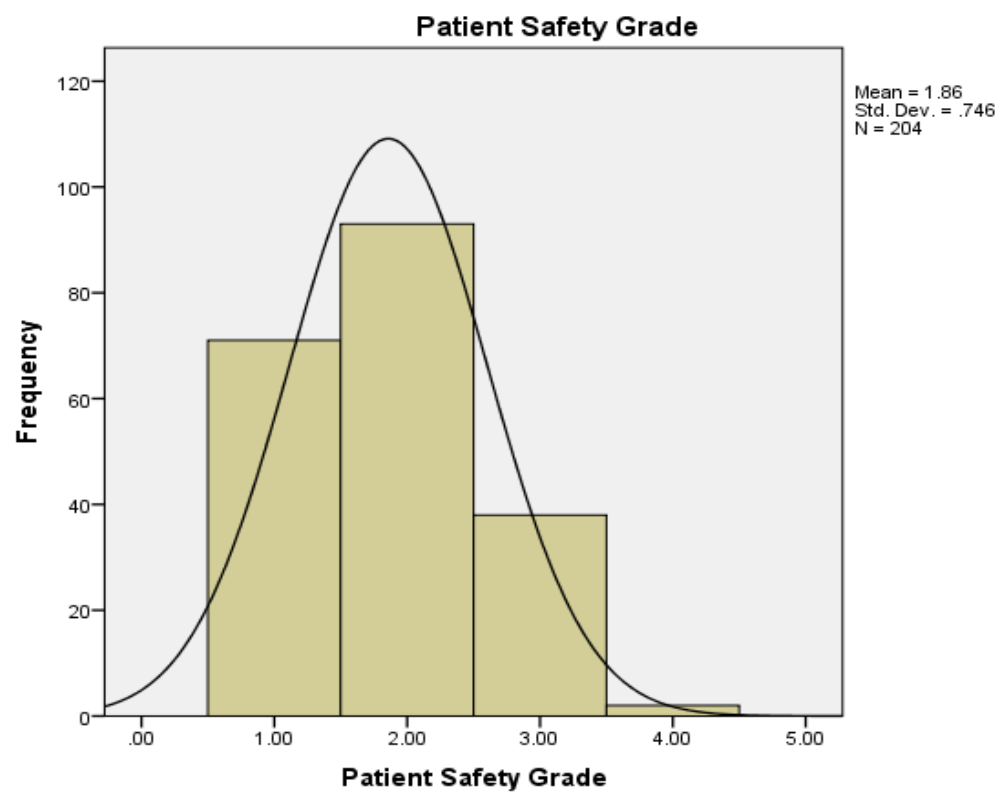




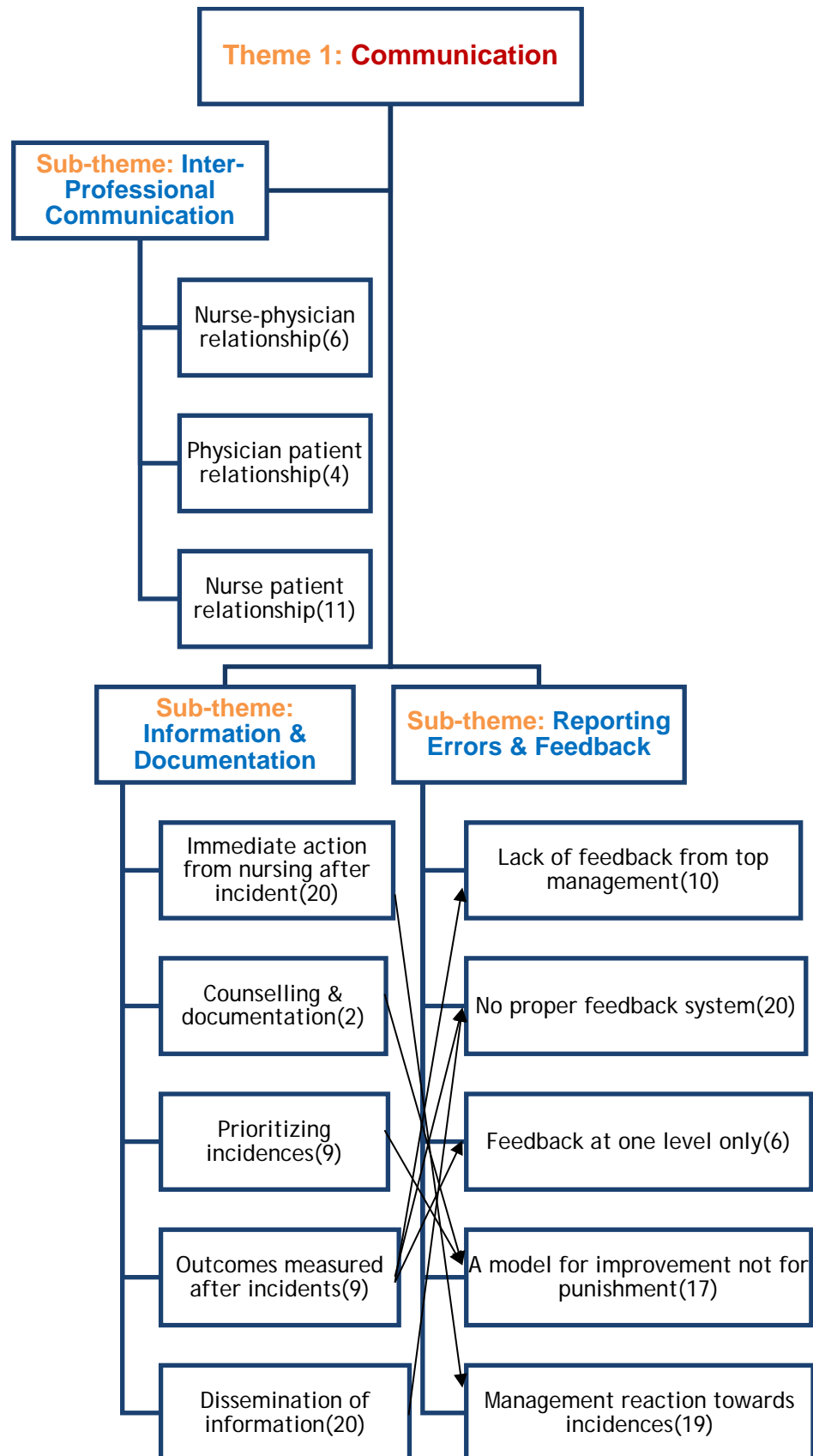
## Appendix 21 Frequency Distribution Histograms

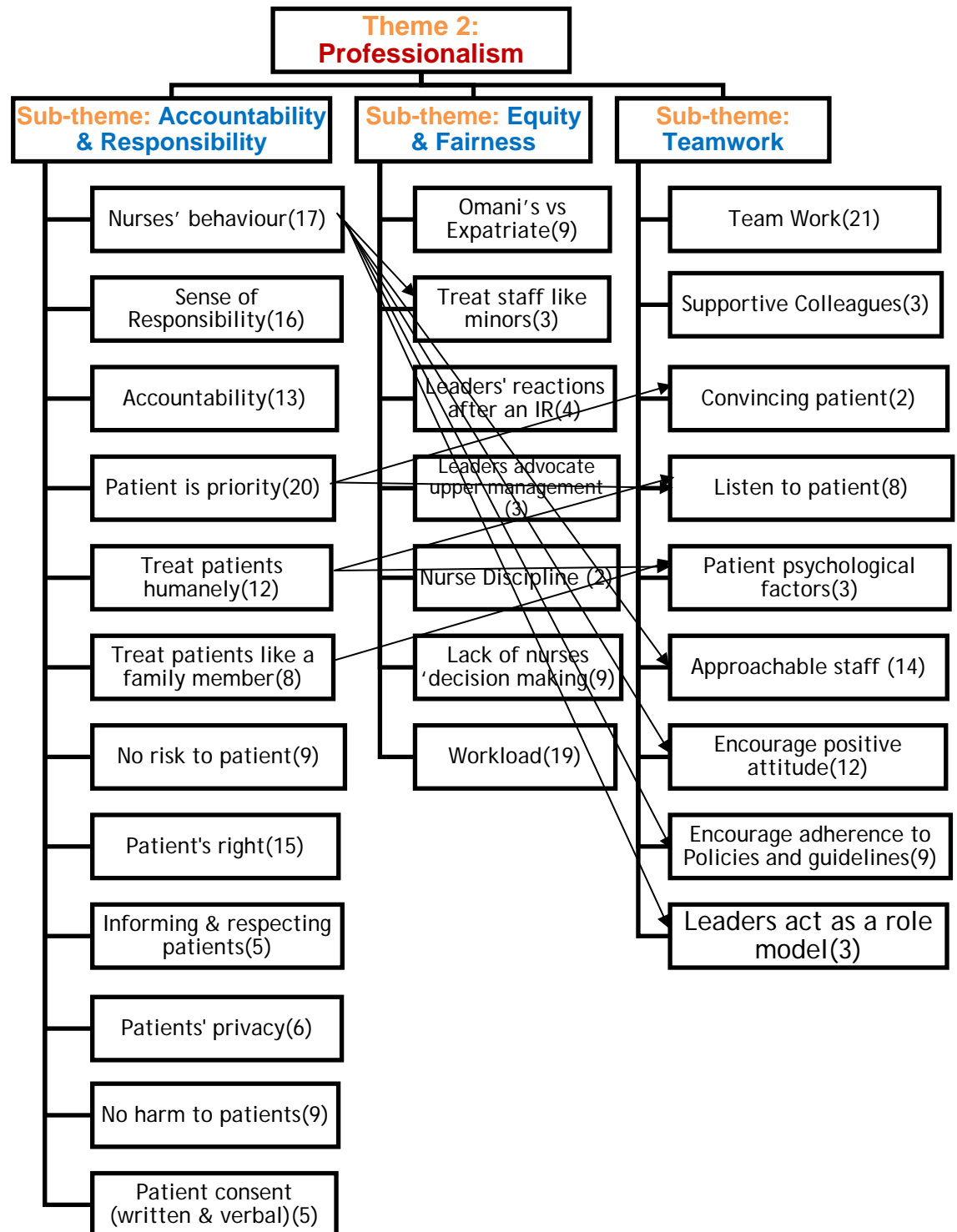




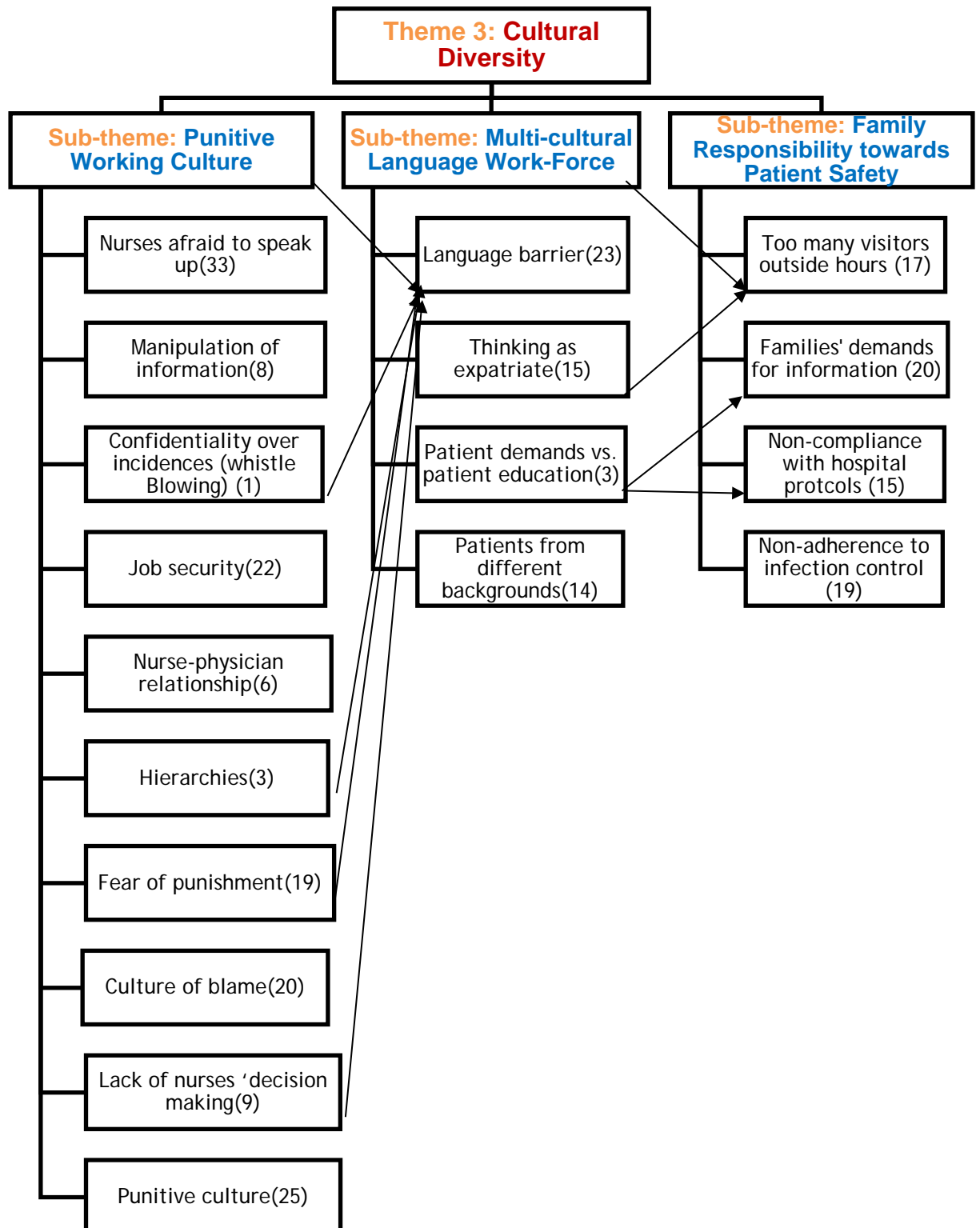


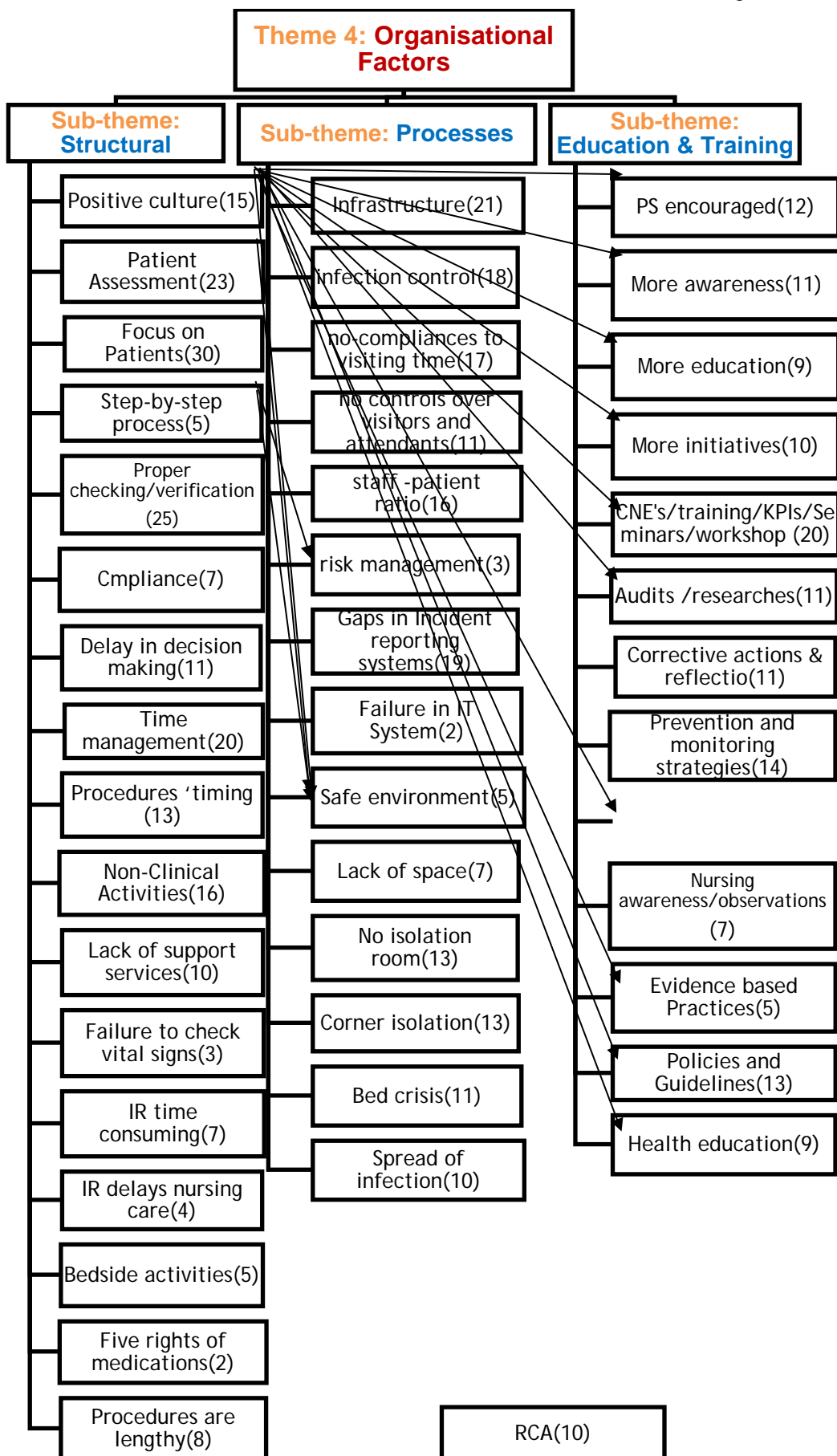
## Appendix 22 Analytical Framework-Qualitative Analysis











Manchester Patient Safety Framework (MaPSaF) – Acute

**Adapted from:** Kirk et al. (2007)

**Adapted from:** Kirk et al. (2007)