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TRADITIONAL BIRTH ATTENDANTS IN MALAWI:

The Development of a Training Programme

by

COLIN HOWARD WATSON BULLOUGH

M.B., Ch.B., M.R.C.O.G., D.C.H.(Glasgow)

A thesis presented to the University of Glasgow for
consideration for the degree of Doctor of Medicine.

The research was conducted while the candidate was
an employee of the Ministry of Health, Government
of Malawi, appointed as a Contract Designated
Officer of the British Overseas Service Aid Scheme.

Submitted in the

Martinmas Term of 1979-1980

UNIVERSITY OF GLASGOW

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SUMMARY

The maternal and perinatal mortality rates in Malawi are very high, almost certainly being the result of poor socio-economic conditions, parasitic diseases, undernutrition and an underdeveloped maternity service. Clinical experience, however, led me to believe that the most significant avoidable factor was the failure of patients to attend hospital early when complications arose during home confinement. This situation was likely to continue as the maternity services were developing only slowly due to financial restrictions, and it was to be expected that a high proportion of confinements would continue to occur in the home for many years. It seemed logical that an attempt should be made to influence the conduct of home deliveries, and an investigation was therefore carried out to find out how such deliveries were conducted and who attended the patient. It was found that the majority of home deliveries were conducted by close relatives of the pregnant woman, but that a substantial number, about 15%, were conducted by women who carried out midwifery as a profession, although having had no training. These women can be called traditional birth attendants or TBAs.

A study of the facilities and practices of these TBAs showed that they lacked both the knowledge and equipment to carry out midwifery in a safe fashion, but that most of them were willing to receive a short training. A training course for TBAs was therefore planned, and in preparation for this, further investigations of their beliefs and herbal medicines were carried out. Their beliefs and practices were classified according to whether they were harmful or harmless which determined the attitude to be taken to them during training. In the study carried out on their herbal medicines, two medicines used in labour by one TBA, *Boscia salicifolia* and "Choosi", an unidentified plant, were found in laboratory tests to have

an oxytocic effect on uterine muscle. One other plant used as medicine, *Indigofera antunesiana*, is a known poison.

Other investigations were carried out to help plan the syllabus and teaching methods. To determine subjects that should be priorities an analysis of the maternal deaths occurring in the Central Region of Malawi was carried out, with special emphasis on the mortality associated with home labour and delivery. The findings emphasised the dangers of prolonged labour at home, and also suggested that some of the herbal medicines used by TBAs are poisonous. In another investigation the heights of women who required Caesarean section for conditions related to a small pelvis were compared with a group of unselected ante-natal patients. This suggested that TBAs should be advised to refer for hospital confinement any women below the height of 150 cm. The haematological findings in a group of TBA patients were compared with those of women who attended ante-natal clinics. The TBA patients could not be shown to be at a disadvantage haematologically and it was concluded that it was therefore better not to supply TBAs with iron and folic acid tablets to dispense to their patients.

Finally in planning the training course a study was made of methods of communication and teaching which are suitable in the education of illiterate people. This influenced the teaching methods used.

A two week training programme was conducted for 15 TBAs in batches of 3 or 4 at a time. This was followed by a 9 month period of follow-up with further teaching sessions. The effects of the course were assessed in a number of ways, including the repetition of a questionnaire which had been used at the very beginning of the course before any teaching had been given. During the period of follow-up the 15 TBAs performed 1,289 deliveries with 22 perinatal deaths. Most of these deaths had been

unavoidable. They had referred 58 patients to hospital. The training programme was thought to have been worthwhile. Cost analysis showed that the cost of a delivery by a trained TBA is very much less than the cost of a delivery in a rural maternity unit, and that a national programme for training all TBAs in the country was feasible.

In the light of the experience gained a plan for such a national TBA training programme was prepared. This was presented to the Secretary for Health, and was accepted in April 1979 with the support of the World Health Organization (WHO) regional representative and the United Nations Children's Fund (UNICEF) representative in Malawi. I believe this makes Malawi the first African nation to plan to train all its TBAs within a limited period of time. This is a good example of the new concept of primary health care, the aim of which is to improve the standard of rural health by recruiting ordinary villagers as health workers, thus bringing the health services within the reach of everyone.

CHAPTER 1THE RATIONALE FOR AN INVESTIGATION OF HOME DELIVERIES.Section 1. Place and period of research.

This thesis described the results of research which I carried out in Malawi between October 1973 and March 1979. The initial stages of the investigation were conducted while I was Medical Superintendent of Zomba General Hospital in southern Malawi. The remainder and main part of the research was carried out in Lilongwe District in central Malawi, where I held the appointment of Obstetrician and Gynaecologist at the Kamuzu Central Hospital, from March 1976 until March 1979.



FIGURE 1. THE POSITION OF MALAWI IN EAST CENTRAL AFRICA
(Reproduced with permission from 'Malawi in Maps'
by Agnew and Stubbs)

Section 2. The country of Malawi and its people.

Malawi is a small country in East Central Africa. Figure 1 shows its geographical location. With a population of 5.5 million, and a land area of 94,396 sq.km. it has for Africa a high density of population.

After seventy-three years of British administration, during which time it was called Nyasaland, the country became an independent state within the British Commonwealth in 1964. It became a republic in 1966. The Malawi Congress Party is the only political party in the country, and the President of the Party, Dr. H. Kamuzu Banda was elected Life President in 1970.

On becoming a republic, Malawi was the second poorest country in the world, as judged by gross national product per head. Since then, however, it has enjoyed political stability and this, together with an efficient and non-corrupt civil service, has encouraged foreign loans and investment. The agriculturally based economy has therefore developed quite remarkably, but nevertheless the amount of money available for expenditure on the social services is very limited.

About 92% of the population live in the rural areas and the majority of people are subsistence farmers. There are only three urban centres (Lilongwe, Blantyre, Zomba) with a population of 20,000 or over. Villages are usually small, of approximately 40 to 100 people, and as people commonly live next to their fields, dwellings are not grouped closely together. In most of the country, and in the areas where this research was conducted, descent is matrilineal and husbands live uxorilocally, that is with their wives extended family. The people are Bantu and many tribes are represented, but fortunately there are no tribal

factions. Although over 14 languages are known, Chichewa, the national language of the country is understood by the majority of people. Where any non-English word is placed in parenthesis in this thesis it is a Chichewa word, unless stated otherwise.

There are considerable sociological similarities between the people of Malawi and the people of neighbouring countries. It seems likely therefore that the findings in this thesis will be valid also for the other countries in Central and East Africa.

Section 3. The Health Service of Malawi.

Part of the rationale for carrying out research into the work of TBAs is that the health services of Malawi are unable to provide an adequate maternity service for the entire population. An account of the health services and the prospects of their further development will therefore be given.

The Ministry of Health has overall control of the country's health services. It directly controls the Government health services, and in planning services it takes into account the contributions that can be made by the Private Hospitals Association of Malawi (PHAM)*, and the District Council health departments.

A 15-year national health plan was introduced in 1973. This outlined the way in which the health services were to be developed, and put much emphasis on the strengthening of the preventative services, in particular those in the field of maternal and child health.

As a result there has been considerable development of under-fives' and ante-natal clinics, and an efficient supervisory service arranged. This includes a system for the issuing of vaccines and the reporting of statistical data. More emphasis has been put on the training of auxiliaries and training for a clinical officer grade has been introduced, this being one step higher than the medical assistant grade. The plan for the provision of health services is as follows:

* PHAM is an organisation which co-ordinates the work of the medical missions, who are responsible for almost 40% of the medical work in the country.

health posts to serve a population of 2,000;

health sub-centres to serve a population of 10,000;

primary health centres to serve a population of 50,000.

A 10-mile limit is to exist between two units. This plan is being put into action but is very far from completion.

The facility of next importance after the primary health centre is the district hospital, and there is a full complement of these. For the 24 districts in the country there are two central hospitals, one general hospital (which act as district hospitals also), and 21 district hospitals.

The medical establishment for the district hospitals is one district medical officer, and these posts were held in 1978 by non-specialist doctors in 11 cases, and by a senior clinical officer in 10 cases. These district medical officers are responsible for the obstetric services of their districts. There are only two specialist obstetric and gynaecological units in the country, one each at the two central hospitals where the staffing is one obstetrician gynaecologist and one senior registrar, plus one or more general medical officers.

The senior clinical officers mentioned in the last paragraph are the senior members of a cadre of auxiliaries who are the backbone of the country's health services. They are men who are given a 3 year training in medical work and who, as medical assistants, man the health sub-centres and primary health centres, acting virtually in the capacity of a doctor. On promotion they become clinical officers, and later senior clinical officers, and in these posts have major responsibilities in obstetrics for which their training has not prepared them. Fortunately plans have just been made to provide these men with an up-grading course in hospital

medicine, including obstetrics, before they achieve promotion.

The need to make such plans is the result of the very small number of doctors working in the country. Table 1 shows that the number is increasing only very slowly and a continual shortage can be anticipated.

YEAR	NUMBER	DOCTOR: POPULATION RATIO	REFERENCE
1961	74	1: 40,000	International Federation of Gynaecology & Obstetrics and the International Confederation of Midwives (1966) ¹
1962	58	1: 60,000	Stevenson (1964) ²
1974	98	1: 52,000	Stevenson (1975) ³
1978	116	1: 49,000	

Table 1. Number of doctors in Malawi
and proportion to population.

The situation in respect of midwives is somewhat better, the number of appropriately trained midwives having risen considerably recently. In 1961 there were only 12 professional midwives and 180 other midwives in the country, while in 1978 there were some 400 registered (professional) midwives, and 1040 enrolled nurse midwives. The number of maternity beds has risen likewise, there being 6,593 in 1968, whereas by 1977 there were 9,623.

The effect that this modest growth in facilities has had on the health of the population can be gauged best by an examination of the country's obstetric statistics.

Section 4 National obstetric statistics.

Health statistics for Malawi prior to 1973 are difficult to obtain and probably unreliable, and so will not be shown. Table 2 shows the number of live births that occurred in maternity units from 1973 to 1977, and the proportion of expected live births in the country that they represented. The figures were obtained from unpublished Ministry of Health reports.

	1973	1974	1975	1976	1977
Population	4,952,839	5,100,761	5,253,101	5,409,991	5,571,567
Expected number of* live births	249,623	257,078	265,100	272,900	280,900
Number of live births in maternity units	72,915	90,756	110,919	117,875	120,291
Percentage of expected live births occurring in maternity units	29.2%	35.3%	41.8%	43.2%	42.8%

* The expected live births were calculated from birth rate of 50.4/1000.

Table 2. Live births occurring in maternity units in Malawi 1973-1977.

The proportion of deliveries occurring in maternity units must depend basically on two factors, namely, women's choice, and the balance between development of the maternity services and the annual population growth which is currently 2.9%. The way in which these factors will alter is not known, so the future must be regarded as uncertain whatever trend the figures show at present.

It was for this reason that the figures in Table 2 were not graphed, as projections would be invalid. However it is known that in many areas of the country the distance between maternity units is so great that women cannot exercise a choice and are bound to deliver at home, and that it will be many years before these gaps are filled.

Table 3 shows national maternity unit figures for stillbirths and maternal deaths, again obtained from unpublished Ministry of Health reports.

	1973	1974	1975	1976	1977
Number of stillbirths in maternity units	2,262	3,194	4,349	3,551	4,398
Stillbirths in maternity units per 1,000 births	30.1*	34.0	37.0	28.6	34.5
Number of maternal deaths in maternity units	312	NA	273	261	237
Maternal deaths in maternity units per 1,000 births	4.2	NA	2.4	2.1	1.9
Maternal deaths in 100,000 expected births	125	NA	102	96	84

* Number of deliveries only known, and births calculated from a twin rate of 1:46.

Table 3. Stillbirths and maternal deaths in Maternity units in Malawi 1973-1977

These mortality figures are very high, and yet are an underestimate of the true figures as many maternal and perinatal deaths must occur at home and remain unreported. It can be seen that the rate of maternal deaths per 1,000 births in hospital is falling whereas the stillbirth rate

has remained static. The reason for this situation is not known and it is better not to speculate. The only figures which do give some reason to hope that progress is occurring, are those showing the falling rate of maternal deaths per 100,000 expected births.

Section 5. Prospects for development.

It can be seen that the health services of Malawi as they stand, and even as they are presently developing, seem unlikely to cope with the obstetric problems facing them. But is it possible that the rate of development could accelerate?

This would depend on the country's economic progress. Since 1964 the total gross domestic product has grown by 13.1 per cent per annum at current prices, or 6.8 per cent per annum at 1964 prices. The corresponding growth rates on per capita basis are 10.3 per cent per annum and 4.1 per cent per annum (Economic Planning Division, 1978)⁴. A 10 per cent annual budgetary increase for the health services has been in operation since 1973 which means that development is only just keeping pace with inflation. With the economy almost entirely based on agriculture, no radical alteration in the growth rate is to be expected, and only gradual development can be expected to continue. In 1970, 43.5 per cent of the population of the country was under 15 years of age (National statistical office 1973)⁵ so that the already high birth rate of approximately 50 per 1,000 is quite likely to rise even higher. This is likely to slow down the process of development even further.

In brief it would be irrational to hope that the present problems are likely to be quickly solved by an increased rate of economic development

Section 6. Obstructed labour. A major cause of maternal and perinatal mortality.

If anyone working in the field of obstetrics in Malawi were to be asked what was the main factor which caused the obstetric results in the country to be poor I have no doubt that he would say it was unsupervised, prolonged labour at home, due mostly to cephalo-pelvic disproportion. Certainly it was the common occurrence of obstructed labour developing in this way plus the common occurrence of other preventable conditions which caused me to consider how the conduct of village deliveries could be influenced, and which lead to the work described in the thesis.

The clinical features of such cases are as follows. Commonly the history is of a labour which has lasted somewhere between one and four days. Exhausted by the length of her labour the patient is mentally and physically distressed, sunken-eyed, dehydrated and sometimes in a state of shock. The tense, tender uterus with a large distended bladder and gaseous distension in the flank tells the tale of prolonged labour, and her oedematous vulva and labiae, sometimes smeared with herbal concoctions, give evidence of the prolonged attempts by her attendants to help her. Fetal heart sounds are usually absent and such patients are commonly delivered by craniotomy, or by decapitation, where the cause of the trouble was a shoulder presentation, or by laparotomy for repair of uterine rupture. Nor is this the end of the matter. The long illnesses that often follow such events are dreadful in their severity. Bacteraemia and prolonged pelvic sepsis may threaten the patient's life for weeks after delivery. Osteitis pubis when it occurs adds severe pain to her problems which may include drop-foot or even more severe obstetric paralysis. The final indignity is incontinence from a vesico-vaginal fistula, and this may be

compounded by faecal incontinence from a recto-vaginal fistula as well. It may be years before some women pluck up enough courage to come for repair of their fistula(e) and even when they do there are still the unfortunate ones who require multiple operations, or are left with a degree of permanent disability. Future sterility too is the fate of many, and this has profoundly harmful implications for their social life. Dyspareunia from vaginal stenosis may further damage their marital prospects.

The high incidence of obstructed labour and its effect on the obstetric results obtained are shown in some figures obtained at the Kamuzu Central Hospital in Lilongwe (known as Lilongwe Central Hospital until 1977). See Table 4.

	1965	1968	1974	1975	1976	1977
Deliveries	1,087	1,996	3,673	4,914	5,049	5,310
Maternal deaths	21	23	35	30	26	29
Rate per 1,000 deliveries	19.3	11.5	9.5	6.1	5.1	5.5
Stillbirths	82	137	222	167	184	214
Rate per 1,000 total births	75.4	66.4	58.7	33.2	35.6	39.5
Ruptured uterus	34	23	52	26	32	36
Rate per 1,000 deliveries	31.3	11.5	14.2	5.1	6.3	6.8
Destructive operation	NA	18	26	14	33	40
Rate per 1,000 deliveries	NA	9.0	7.1	2.8	6.8	7.5

Table 4. Obstetric Figures,

Kamuzu Central Hospital, Lilongwe.

References: 1965 - BILJ (1967)⁶1968 - ARMON (1977)⁷

The figures for ruptured uterus and destructive operations (craniotomy and decapitation) have been shown as they are virtually restricted to cases of obstructed labour occurring during attempted home delivery. A reduction in the rate of occurrence of these obstetric disasters is shown but the actual number occurring is similar. The falling rate probably reflects only a greater use of the hospital by the growing urban population of Lilongwe, and it is contended that the number of neglected home labours occurring in the district have remained much the same between 1965 and 1977. As the infant is necessarily stillborn in the case of destructive operations and almost always so in cases of ruptured uterus, it can also be seen that these conditions are responsible for about one third of the stillbirths. Cases of obstructed labour where delivery is achieved by some other means are responsible for yet more of the stillbirths. Obstructed labour is also responsible for a good number of the maternal deaths the mortality rate for ruptured uterus for example being between 20 to 30%.

Obstructed labour is not of course the only condition made worse by delivery at home before seeking medical advice. Severe anaemia, puerperal sepsis, and post-partum haemorrhage are just a few more of the many conditions seen frequently in advanced stages in Malawi, due to late attendance at hospital. Yet all of these, obstructed labour included, seem quite easy to recognise, and certainly all are amenable to treatment by fairly simple obstetric measures at any district hospital. It was this situation which influenced me to look for a way in which the conduct of home deliveries could be influenced so that such conditions could be recognised and treated before they became life-threatening. The best way of doing this appeared to be to contact those people who attend pregnant and labouring women in the villages, and if possible teach them some basic midwifery. It was from this premise that the investigation began.

Section 7 Outline of the thesis.

The general term applied to unskilled women who attend other women in labour used to be traditional midwife, but in recent years the term traditional birth attendant or its abbreviation TBA has become more common. These terms have been used both to describe women who carry out village midwifery as a profession, and women who only attend the labours of their close relatives and who would make no claim to a particular interest in midwifery. It will be argued later that these two groups require different names, and it must be stated now that in this thesis the term TBA refers only to those women who take a particular interest in village midwifery.

The main theme of the thesis concerns the development and evaluation of a training programme for these TBAs. The first step was to obtain some basic information about the TBAs of Malawi as almost nothing was known about them. The introductory investigations carried out for this purpose are described in Chapter 2.

Chapter 3 goes a step further with a study of the TBA practices, beliefs and medicines some knowledge of these being considered essential before planning the programme. For the purposes of planning it was found that further information was needed on certain subjects. Factual information was needed as to the causes of maternal mortality particularly in relation to home deliveries. A study designed to provide this information is described in Chapter 4 together with two other investigations preparatory to the training programme.

Chapter 5 described the pilot training programme itself and the way in which it was evaluated. Finally Chapter 6 outlines a national programme that was designed in the light of the experience gained.

The work was carried out over a period of years and a number of investigations into different aspects of the subject were often being conducted simultaneously. It was therefore not possible to describe the findings in a strictly chronological order. The different chapters do however represent distinct phases in the work. Each has been allotted its own introduction with a review of the literature appropriate to the subject or subjects of the chapter, and each section of Chapter 4 likewise has its own introduction. This has been done purposely in the belief that it will provide better continuity than a single introductory chapter would have done. The concluding chapter, Chapter 7, applies to the thesis as a whole.



ILLUSTRATION 1. A TRADITIONAL BIRTH ATTENDANT (TBA)

CHAPTER 2

THE MALAWIAN TRADITIONAL BIRTH ATTENDANT.

Section 1 Introduction.

The idea of training TBAs was not entirely new in 1973 but it was being carried out in relatively few countries, and the bulk of the literature on the subject consisted of theoretical encouragement to carry it out, rather than the reporting of successful ventures. The concept had received considerable support from international health agencies, notably in the WHO Expert Committee Report⁸ on the Midwife in Maternity Care (1966), and at a joint WHO/UNICEF meeting held at Brazzaville (1973)⁹ where basic proposals for the training of TBAs were made with recommendations regarding the organisation and objectives and evaluation of a programme. More readily available texts had also included recommendations that TBAs be trained or supervised in their work. King (1966)¹⁰ pointed out that in the developing countries even enrolled midwives are not present in the numbers in which they are wanted and until such times as they were, TBAs must be regarded as valuable members of the medical community. King's book "Medical Care in Developing Countries" produced a revolutionary change in thought amongst health workers. His ideas were summarised in twelve axioms (King (1966))¹¹ which are based on the belief that there are not the resources of finance or manpower to allow the health services of developing countries to develop along the same lines as those of the developed world. An alternative approach was needed. His expositions of the following axioms could have been used as cogent arguments for the training of TBAs.

King's axioms:

No.5. Patients should be treated as close to their homes as possible in the smallest, cheapest, most humbly staffed and most simply equipped unit that is capable of looking after them adequately.

No.6. a. Some form of medical care should be supplied to all the people all the time.

b. In respect of most of the common conditions there is little relationship between the cost and size of a medical unit and its therapeutic efficiency.

c. Medical care can be effective without being comprehensive.

No.7. a. Medical services should be organised from the bottom up and not from the top down.

b. The health needs of a community must be related to their wants.

Stewart and Lawson (1967)¹² argue that seeking the cooperation of TBAs and giving them some training is the best reaction we can have to the realisation that TBAs exist and are going to remain a factor to be reckoned with for many years to come. They saw the TBA¹³ as being at the base of the referral system of a regional obstetric system.

Bryant (1969)¹⁴, who with others carried out a study to provide guidelines for health planners in developing countries, could see only a sombre future for the economic development of most developing countries and there is no reason why Malawi should be different from any other.

He recommends the continued use of auxiliaries to man the health services in Malawi, and other nations,¹⁵ and acknowledges the very large workload which the auxiliaries already in Malawi have to bear¹⁶. Although he does not consider the role that trained TBAs might have, it seems a logical extension of his arguments that TBAs would be helpful if they could be efficiently enrolled into the health team.

The above references thus supported my conclusion that it would be reasonable to give some training to the women who carry out home deliveries, but it was necessary first to obtain more information on the subject. At that time in Malawi there was considerable disagreement as to who carried out home deliveries. The most commonly held view was that it was nearly always the mother of the pregnant woman, or other elderly relatives. A few held the view that there were women who took a special interest in midwifery and carried it out as a profession, and could be called TBAs. I was unable however to find anyone who knew or could introduce me to such a woman, except for one missionary midwife whose contact with a TBA had been through reporting her to the police for mismanaging a patient in labour. The common belief of people working in obstetrics or midwifery was that it would be quite hopeless to try and co-operate with or teach these women anything.

There had been no previous investigation of this subject in Malawi but there were reports from neighbouring countries. Montgomery (1955)¹⁷ writing from eastern Rhodesia, says that a native midwife or "mbuya" (i.e. TBA) is present at all home deliveries. Gelfand (1956)¹⁸ in writing a full account of pregnancy in the Mashona in Rhodesia, has similar views but says that occasionally the case may be put in the hands of the "nganga" whom we can call a diviner. Likewise, Moller (1961)¹⁹, writing

about the customs of pregnancy and child rearing in Tanganyika (now Tanzania) implies that a tribal midwife (i.e. TBA) with special experience is in charge of all home deliveries.

Although both Rhodesia and Tanzania are Bantu countries, it was not certain that these customs were similar in Malawi. Two separate investigations to obtain local information on the subject were therefore carried out and are reported in Sections 2 and 3 following.

Section 2 A survey of Home Deliveries.

The purpose of this investigation was as follows:

1. to determine in what ratio home deliveries were carried out by relatives of the patient and by TBAs respectively;
2. To locate some TBAs so that they could be interviewed and assessed for their suitability for training;
3. to obtain information on the types of condition which caused patients attempting home delivery to give up and come into hospital. Also to determine whether these might be foreseen or prevented by a trained TBA.

Methods.

A field survey in which enquiries could have been made from village chiefs and headmen might quickly have achieved the desired results. Ministry of Health officials, however, would not give permission for such a survey for fear of causing local resentment and suspicion. The question thus had to be answered from an enquiry conducted within the hospital and clinics.

The survey was carried out in the maternity clinics and hospitals of Zomba and Kasupe (now Machinga) Districts during late 1973 and 1974. At that time only 15% of the expected births in these districts occurred in clinics or hospitals.

Midwives were asked to collect details from any patient who had initially tried to deliver at home but who had come to hospital because of delay or difficulty in delivering. Printed questionnaire forms were supplied, requesting the following information:

patient's name and village;

name and village of the person conducting the
delivery;

does the patient regard this person as a TBA
that is, someone practising midwifery as a
"profession"?

is this person a relative of the patient and if
so what is the relationship?

was any payment made or expected?

what complications of labour were present?

If a midwife referred a patient to a larger hospital she did not complete the form but this was done at the receiving hospital.

Although the forms were distributed throughout the districts it is certain that midwives frequently omitted to fill them out so it is not possible to make any calculations of the frequency of such admissions in proportion to time or the population at risk. Likewise, the complications of labour were at times written on admission and sometimes retrospectively, and it was not possible in most cases to check the diagnosis of the enrolled or student midwives who completed the forms. The findings must therefore be interpreted with this in mind.

Results.

The first 100 completed forms were analysed.

The number of attendants who were present during labour is shown in Table 5.

81 patients	had	1 attendant
12 patients	had	2 attendants
4 patients	had	3 attendants
2 patients	had	4 attendants
1 patient	had	5 attendants

Table 5 The number of attendants in 100 cases of attempted home delivery.

Eighty-five of the patients were attended by people from their own villages only, and in all but 2 of these cases the patient and the attendant(s) were related to each other. Of the 15 with attendants from other villages, 5 were related and 10 were unrelated.

Eighty-five women were attended only by relatives. Twelve women had an unrelated person(s) attend them, but of these 12, there were 2 who had a relative present as well. In 2 cases there were 2 non-related attendants so that there were altogether 14 non-related attendants mentioned. The relatives listed as attending are shown in Table 6.

Great-grandmother	1	Mother-in-law	3
Grandmother	32	Sister-in-law	5
Mother	35	In-law	6
Aunt	17	Stepmother	1
Sister (2 noted as elder, 2 younger)	11	Niece (sister's daughter)	1
Cousin	2	Not stated	2

Table 6 Relatives who were in attendance in 100 cases of attempted home delivery.

Of the 100 patients only 6 said that the attendant expected payment. Of these 1 was later found to have been referring to a midwife at a mission hospital, and to the normal fee chargeable there. Of the others, 4 said that money was expected, and in all cases the attendant was unrelated to them and was regarded as a TBA. The sum of 50 tambala (approximately 25p) was mentioned by 1, and another said that payment was expected only if the child was alive. The remaining 1, who was attended by her aunt said that a "thanks-giving", e.g. maize flour, was expected. She did not consider the aunt to be a TBA.

The complications noted are listed in Table 7. Multiple findings have been recorded where appropriate.

Ruptured uterus	14
Vesico-vaginal or recto-vaginal fistula	4
Signs of obstructed labour	42
Shock	2
Maternal distress	4
Anaemia	3
Still-birth (with no mention of other complications)	11
Neo-natal death (with no mention of other complication)	2
Other abnormalities of labour or puerperium, most of which could not have been foreseen or prevented by a TBA	18
No abnormality, successful outcome	10

Table 7 Complications which occurred in 100 cases of attempted home delivery.

The limitations of the details in Table 7 have already been mentioned, and the figures are not suitable for comparison with any other group of admissions. The perinatal death rate, for example, must have been much higher than shown.

Results of home visiting.

From the results it was not possible to say conclusively which attendants were truly TBAs, and it was necessary to select the most likely ones for visiting and interview. The selection process need not be detailed but in general those who were delivering close relatives were discarded. Those who were unrelated to the patient and those who lived in a different village were selected. In all, 13 attendants appeared to warrant further investigation.

An attempt was made to visit these 13 attendants at their homes, and this was successful in 9 cases.

One woman who was selected for interview only because she came from a different village from the patient was not a TBA. She had only delivered neighbours and relatives and did not expect payment.

Of the other 8, 7 were practising TBAs and 1 had recently retired. They were all conducting between 3 to 15 deliveries per month, and all either charging for their service or expecting a thanksgiving present after delivery. One of them was a male. Four of them set aside a room in their own home for deliveries, and had some special facilities there, while the others went to the patient's own home to conduct the delivery.

Of the 13 selected for interview, 4 could not be traced. This was perhaps because of inaccuracy in recording the name of the village. But as they had been delivering women who were unrelated to them, and who lived in different villages it seems fairly certain that they also were TBAs. Therefore, in the 100 deliveries it is likely that 12 TBAs were involved.

The 7 practising TBAs were all asked three questions:

Would he/she like further training in midwifery?

Would he/she be willing to work in co-operation with recognised health units?

Would he/she be willing to exchange knowledge with qualified midwives?

All the TBAs answered in the affirmative to each question.

At the same time, an assessment was made of whether the TBAs seemed likely to benefit from training as assessed from age and apparent intelligence. Of the 8, 1 had retired, 1 was too old, but 3 seemed definitely capable/

of benefiting from a training, and for the 3 others it could only be said that it was possible and worth attempting.

Discussion.

The aims of the investigation had thus been achieved. It had been found that approximately 12% of home deliveries are conducted by TBAs, and interviews with these TBAs had suggested that they did have some potential as far as training was concerned. It had also been shown that obstructed labour was the commonest condition with which patients, presented in hospital, following home delivery. This is a condition which should be readily recognised, and avoided by a TBA who has received some training.

Of the facts obtained on the questionnaire form the important ones leading to the discovery of the traditional birth attendant were that the patient and her attendant were unrelated and lived in different villages. Asking about payment was less accurate, 3 patients being attended by TBAs saying that no payment had been made or was expected. This may have been because the delivery had not been successfully completed and the TBA had decided not to charge in these circumstances.

As most of the home deliveries are attended by relatives it is worth considering what experience they must have.

The Malawi Population Change Survey (National Statistical Office, 1973)²⁰ gives figures for total fertility as 8, and for the net^{re} productive rate as 1.811. For the sake of calculation, however, the net reproductive rate can be taken as 2. It is possible, using these figures together with those in Table 6, to calculate the number of deliveries that the average woman might attend.

The average woman having 8 children will have 4 daughters, 2 of whom

will live to reproduce, each having 8 deliveries or 16 between them. Using the national figures for 1977, 66.6% of these deliveries will occur at home, that is, 10.66 deliveries. As a mother the index woman will attend 35% of these (see Table 6), or 3.73.

Of her 16 grandchildren, 8 will be female and 4 will reproduce giving another 32 deliveries. Again 66.6% or 21.31 will occur at home. As a grandmother, the index woman will attend 32% (see Table 6) of these, that is, 6.82, making a total of 10.55 deliveries that she will attend. But again from Table 6 it can be seen that for every 67 mothers and grandmothers in attendance there were 48 other relatives or 71.6% as many. 71.6% of 10.56 being 7.56, it can be calculated that for every two daughters that the average woman rears to reproductive age she will attend approximately 18 deliveries in her lifetime.

This is a crude calculation and the result must be regarded as an approximation of the truth. But it does suggest that a woman with a large family where the daughters do not attend at a clinic for their deliveries, either from choice or because of reasons of distance, may well perform enough deliveries in her lifetime to gain useful experience.

It is odd that in some recent writing on this subject no distinction is made between women who carry out midwifery as a profession and women who merely deliver their close relatives. Verderese and Turnbull (1975)²¹ give the definition of the traditional birth attendant as a "person (usually a woman) who assists the mother at childbirth and who initially acquired her skills delivering babies by herself or by working with other traditional birth attendants". By this definition both of the categories mentioned above can be named TBAs, despite the fact that a big difference exists between them in experience and in training potential. It would seem a pity that separate terms have not been found for the two groups/

and it is suggested that the term traditional birth attendant (TBA) be reserved for the woman who makes a profession of village midwifery, and family birth attendant for the woman who assists only her relatives in labour.

From the point of view of a training programme to reduce the mortality and morbidity associated with home deliveries it was disappointing to find that such a small proportion of the deliveries were conducted by TBAs. Later in the thesis, however, it is shown that in the country as a whole the proportion is slightly greater. It also has to be supposed that a training course might increase the influence of TBAs and that the beneficial effects of their training might spread to affect a reasonable proportion of home deliveries.

As for the possibility of training family birth attendants it seemed that the difficulties in selecting appropriate women would be great, and this idea was rejected. -----

Permission to publish the work described in Chap. 2 Sec.2 was refused by the Secretary for Health as the subject was considered to be one which might cause unwanted reaction in the country.

The field work described in this section, that is the visiting of these TBAs was carried out by Mr. E.D. Kadongola and Mrs. F.J. Chinyama. The planning and conduct of the work was otherwise all carried out by myself.



ILLUSTRATION 2. A TEA'S MATERNITY UNIT

Section 3 Characteristics and facilities of TBAs.

Following the results of the investigation in Zomba, it had been decided that a pilot training programme for TBAs should be planned, and that this should be in Lilongwe District. It was thus necessary to find a sufficient number in that district so that suitable candidates for training could be selected. On my transfer to Lilongwe in March 1976 I began this work, and it continued throughout 1976 and 1977.

It was decided to take the opportunity of finding out as much as possible about the TBAs and by making the search as thorough as possible to obtain some further information as to how many TBAs there were.

Methods.

Duplicated forms as described in Chapter 2 Section 2 Page 33, were sent to all the maternity units in Lilongwe district with the request that they be completed whenever a patient was admitted after having either tried or succeeded in a home delivery. When completed forms were returned it was possible to decide which attendants were TBAs. Also by this time consent had been obtained to speak with village headmen on the subject and to obtain the names of women whom they considered to be TBAs. Visits were made to TBAs whose name and village had been found by these methods.

At the visit a full assessment of the TBA was made. To ensure that appropriate details were recorded, a form with the following questions was used:-

Name of Traditional Birth Attendant

Estimated age

Village

Village headman

Traditional authority.

Does she agree that she specialises in midwifery, or feels that it is something which she does better than most other women in the neighbourhood?

Does she attend women in their home villages or do they come to her home?

How many does she attend - a month? or a year?

Does she keep records?

Does she attend patients from the beginning of labour, or is she called in when there are obvious difficulties or delays?

Does she act as a sing'anga* for other types of illness?

Does she know of other traditional birth attendants in practice?

If so, is she willing to give us their names and addresses?

How did she learn skills in midwifery?

What age was she then?

What formal education has she had?

Would she like further training in midwifery?

Would she be willing to work in co-operation with recognised health units (government of PHAM)?

or even exchange knowledge with qualified midwives?

Does she charge the patient?

How much?

Any other relevant information obtained on how she goes about her work, what sort of facilities she has, how she decides which patients to attend and which to refuse to attend, or when and how she decides that patients should go to hospital.

Has she a separate house for deliveries?

How many rooms?

Does she have a delivery bed?

* Sing'anga is Chichewa for traditional medical practitioner or herbalist.

Delivery instruments?

Do you feel that the TBA has potential and would gain something by being given extra training?

Results.

Sixty-two TBAs were identified in Lilongwe District. Again it was found that where a patient admitted to hospital after attempted home delivery, said that her attendant was unrelated and lived in a different village, then the attendant almost always turned out to be a TBA.

When visiting the TBAs it was found that a careful and sympathetic approach was needed, not only to obtain answers to our questions, but sometimes to be enabled to speak to them at all. Some hid themselves in their houses when first approached and one or two ran off into the fields because of their fear of the authorities. It was clear that they mostly considered themselves to be working illegally and were frightened of exposure. Occasionally repeat visits were necessary before the full assessment could be made.

The information on these sixty-two TBAs in Lilongwe District plus that on the seven practising TBAs from Zomba District have been analysed together.

It was found that the TBAs worked in one of two different ways, either going themselves to the home of the patient and delivering her there, or having a house or houses in her own home which she kept for the confinement of patients, and which acted as a static maternity unit. In this way 43 ran a domiciliary service and 26 had a static maternity unit. As a static unit appears to offer more potential from the point of view of training and up-grading the standards of hygiene and equipment, the characteristics of the two groups are compared and contrasted in the



ILLUSTRATION 3. A TBA'S MATERNITY UNIT JUST OUTSIDE THE BOUNDARY
OF LILONGWE, THE CAPITAL CITY OF MALAWI.

following analysis.

No TBA was found living in a township but many lived quite close to maternity units which their patients could easily have attended if they had so wished. See Illustration 3.

Ages.

Figure 2a and 2b shows the ages of the TBAs. Almost none knew their date of birth and the ages were deduced from circumstantial evidence and the woman's appearance. The age distribution is similar in the two groups. The mean age is 53 years, median 50 years, and modal value 55 years.

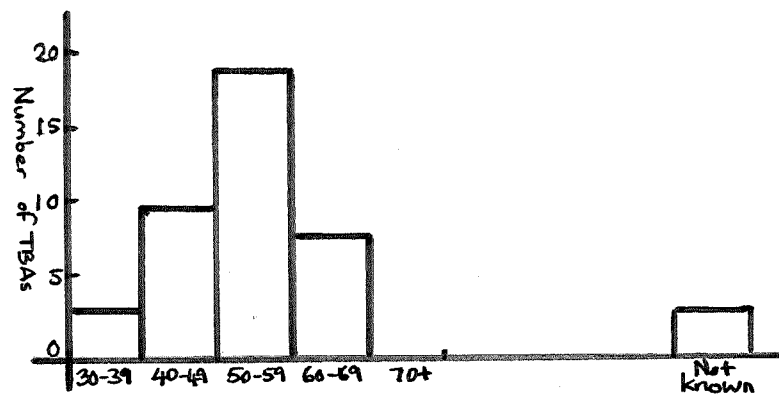
Number of deliveries.

Figure 3a and 3b shows the number of deliveries performed, as estimated by the TBA. Many gave a range but the mean figure was used in producing Figure 3. Fifty-six of the 62 TBAs from Lilongwe District were willing to estimate the number of deliveries they carried out. The total of their estimates would result in them carrying out between 3,800 and 4,600 deliveries per year. This is from 17.3% to 20.9% of the 22,000 village deliveries estimated to have occurred in Lilongwe District in 1977. As six did not estimate their deliveries, and as there are likely to be other TBAs in the district who were not identified in the survey this percentage must be an underestimate.

Fees.

Some TBAs who carry out ante-natal checks on their patients charge a fee for this service, and nearly all charge for delivery. Ten of those doing domiciliary deliveries did not charge directly, but expected a gift of some kind instead. A chicken was a fairly standard and acceptable gift. Of the others who were willing to discuss the subject

a.
Domiciliary
service



b.
Static
maternity
unit

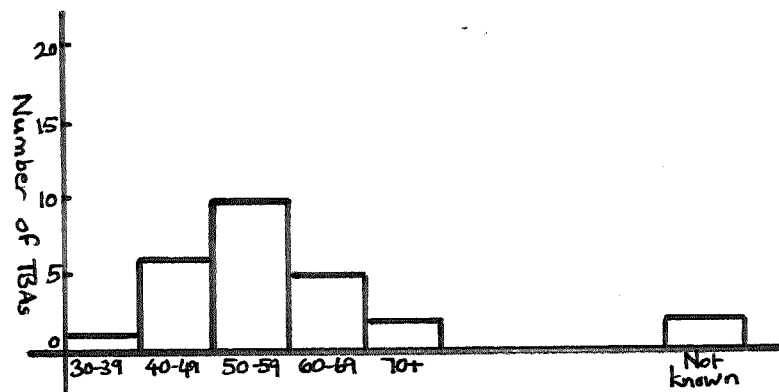
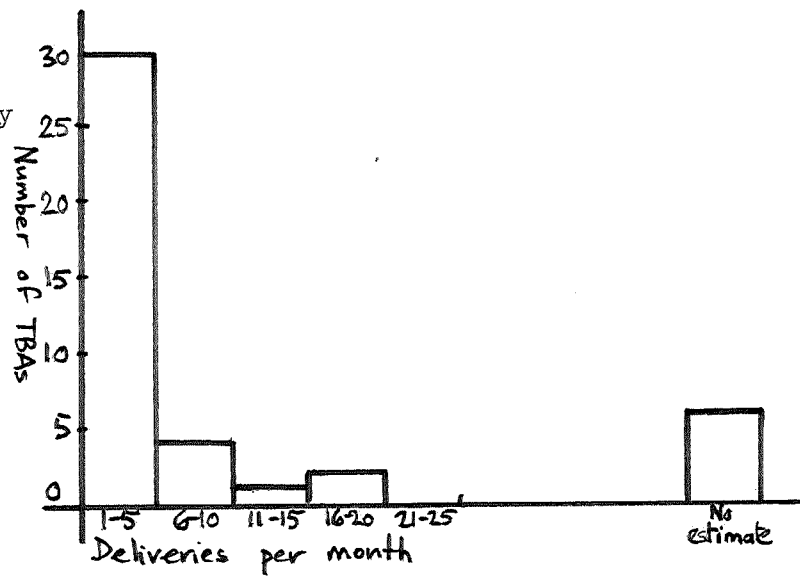


FIGURE 2. AGES OF TBAs.

a.
Domiciliary
service



b.
Static
maternity
unit

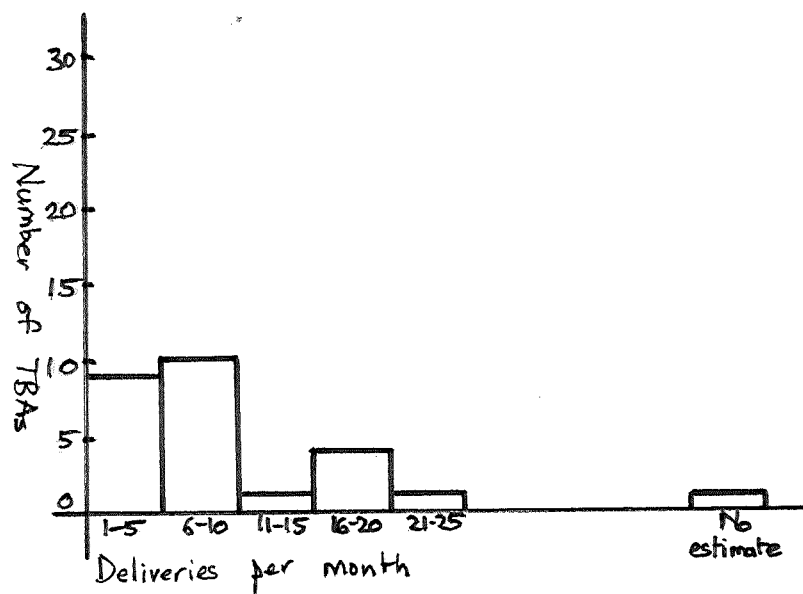


FIGURE 3. NUMBER OF DELIVERIES PER MONTH CARRIED OUT BY TBAs.

twenty-eight charged one Malawi kwacha or less; 17 between one and two kwacha; seven over two kwacha, and one charged six kwacha. (1 Malawi kwacha = 0.6 pound sterling approximately). These prices compare with hospital charges ranging from one kwacha in a small maternity unit to three kwacha in a general or central hospital.

Training and previous education.

With a few exceptions, mentioned below, the TBAs had learned their skills in midwifery from working with an older TBA, usually her own mother or another relative. They only began attending deliveries when they themselves had one or more children. It seems that they selected themselves for the work or just naturally took it up through assisting their older relative.

Many of the TBAs had assistants working with them, the assistants all being related to them and usually younger. It was generally accepted that they would continue the work when the TBA retired.

Seven TBAs had at some time worked in a hospital. Two who carried out domiciliary deliveries and 2 with static units had been hospital servants, and 3 with static units had had a brief training in midwifery in the 1940s but none had achieved a certificate.

Only 7 had received any education in school, Standard 8 of the primary school being the highest level attained by any. It is thus not surprising that only 3 TBAs kept any record of their work, and none did this well.

Equipment and facilities.

None of those carrying out domiciliary deliveries had any instruments or equipment for carrying out a delivery, with the exception of a razor blade which many owned for the purpose of cutting the cord. By comparison,

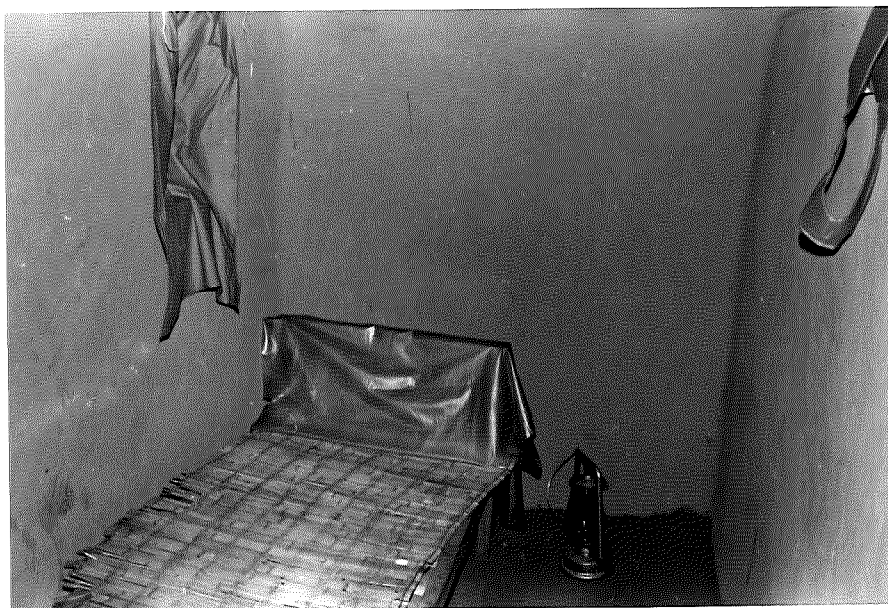


ILLUSTRATION 4. A TBA's DELIVERY ROOM AND BED

fifteen of those with static units had instruments and equipment of one kind or the other. Scissors and a mackintosh or a plastic sheet were the most common, but pails, bowls, enema cans and tubing, forceps, cord and ligature, hurricane lamps were owned by some.

Seven had a delivery bed or couch, See Illustration 4, and 2 had a table with a hole in the centre for the escape of blood and liquor. The others delivered their patients on mats or on the uncovered floor.

Of the 26 with static units, all but 1 had set aside a building for their maternity work. These were mostly mud and thatch buildings, many being rondavels. There were others of sundried or burnt brick, some of which had iron sheeting roofs. Five had two rooms, and 5 had 3 rooms in this case 1 being for ante-natal waiting mothers, 1 for delivery, and 1 for post-natal patients and their babies.

Clinical practices.

All the TBAs were herbalists in that they gave herbal medicine to their patients ante-natally and in labour. All without exception also treated patients for infertility, and many also for other gynaecological complaints. They care for the neonate but do not treat childhood diseases.

Only the 1 man who was practising as a TBA and 3 women, making 6% of the total, acted as traditional doctors (sing'anga) treating all forms of disease.

In the majority of cases the TBA looks after the labouring woman from the onset of labour. They are also sometimes called in by the relatives of a patient when difficulty has been experienced during a labour being conducted at home.

Willinoness to accept training.

All the TBAs were asked whether they would accept a short residential training course in midwifery to help them with their work. Thirty (72%)

of those doing domiciliary deliveries and 24 (92%) of those doing static work said "Yes". Even those who declined this offer seemed keen to co-operate with the recognised maternity services and many gave reasons for not accepting such as being too old, or too busy, or being unwilling to leave their work unattended.

Discussion.

The average age of the TBAs might be considered to be a factor unfavourable to the success of a training programme. But the Malawi Population Change Survey (National Statistical Office, 1973)²² records the average years of life remaining to women of 50 years living in rural areas as 35.5, so it would seem that a reasonable period of working life could be expected for most TBAs after training.

The investigation suggests that in choosing TBAs for attendance at training courses it would be an advantage to choose first those with their own static maternity units. Not only did they carry out more deliveries, and own more instruments and equipment but they were also more uniformly anxious to co-operate with, and receive a training from, the recognised medical service. It would in addition be easier to supervise the hygienic methods employed in childbirth when the actual delivery room used can be visited. Finally, there is the distinct advantage that the TBA would be more commonly found at home when follow-up supervisory visits are made.

In carrying out the work in this section I was assisted by Dr. J. Beijering, of the Lilongwe Land Development Programme and Mrs. I.B. Kawonga MCH Supervisor for Lilongwe District, who helped to locate the midwives and fill out the questionnaire forms. I did some of this myself and also undertook the overall planning of the work; sending out and receiving back the forms from maternity units from which the addresses of TBAs were obtained preparing the question form used when TBAs were visited; and analysing the data.

Section 4. The Number of TBAs in Malawi

With a national training programme for TBAs being a possibility for the future, it was clearly desirable to find out the approximate number of TBAs that existed in Malawi. The information already available could have allowed a rough estimate but it was felt that some information from other districts should be obtained to make it more representative of the country as a whole. The following investigation was carried out to find out the percentage of village deliveries attended by TBAs, as knowing this a calculation of the number of TBAs in the country could be made.

Methods.

It has already been described how in Zomba and Machinga districts it was possible to estimate that 12% of village deliveries were conducted by TBAs and the remainder by relatives. In September 1978 I asked the maternity staff in four other districts to fill out a form similar to the one used in Zomba and Machinga Districts whenever they admitted a patient who had attempted village delivery. Forms were returned from three districts in February 1979 as requested.

Results.

In analysing the results the attendants were considered to be TBAs if they were unrelated to, and lived in a different village from, the patient. In one case an unrelated woman living in the same village was identified as "African doctor", and she was also considered to be a TBA.

The results, together with the Zomba and Machinga results, are shown in Table 8. Figure 4 shows the geographical location of the districts involved, and also Lilongwe district.

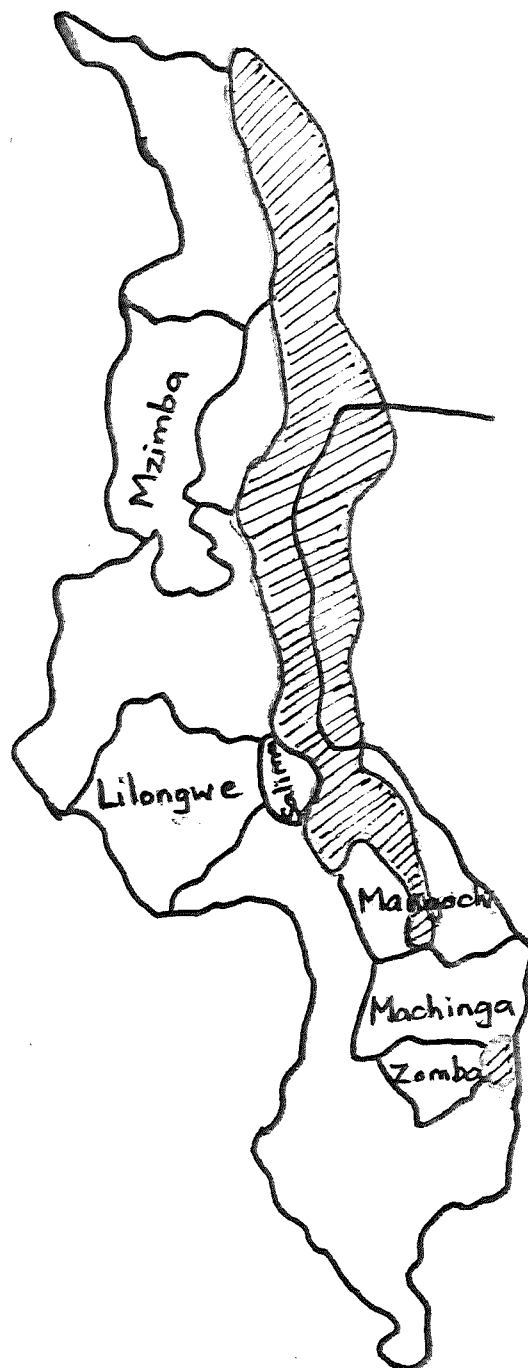


FIGURE 4. MAP OF MALAWI SHOWING DISTRICTS FROM WHICH INFORMATION WAS OBTAINED ABOUT TBAs.

	Number of village deliveries	Number of TBAs	Percentage of village deliveries attended by TBAs
Mzimba (Ekwendeni & Mzuzu mission hospitals)	29	4	13.8%
Salima	12	2	16.7%
Mangochi	23	4	17.4%
Zomba & Machinga	100	12	12.0%
Total	164	22	13.4%

Table 8. The percentage of village deliveries attended by TBAs.

Discussion.

It has already been described (page 44) how it is possible to calculate that in Lilongwe district 17.3 to 20.9% or more deliveries are carried out by TBAs.

Thus in all the districts studied the percentages of village deliveries attended by TBAs are broadly similar, and for the purposes of further calculation a figure of 15% will be taken to be approximately representative for the country as a whole.

The population of Malawi in 1977 was 5,561,821, and the birth rate is approximately 50 per 1,000. The expected number of live births for the country can then be calculated as 278,091 per year. As approximately 45% of these occur in maternity units, it can be calculated that 152,950 occur in villages. If 15% of these were carried out by TBAs they would be responsible for 22,942 in the country per year.

Fifty-six TBAs in Lilongwe district had estimated the number of deliveries they conducted (see page 44). The range in total was 3,800-4,600 deliveries per year. This gives a mean of 75 per TBA per year. If we use this figure as representative of TBAs throughout the country,

together with the figure of 22,942 for the number of deliveries attended by all TBAs in a year, it can be calculated that there are 306 TBAs in the country. However, as can be seen in Figure 3 (page 44/5), the mean of 75 deliveries per year was calculated from figures which have a skew distribution, with the majority of TBAs doing a smaller number of deliveries. The number of TBAs can thus be assumed to be larger than 306.

Another way of approaching the question is by the number of TBAs found in Lilongwe District. After a fairly intensive search over almost two years, 62 were located in this district, the population of which is 12.4% of the total population of Malawi. If Lilongwe is representative of the country we could expect to find 500 TBAs in the entire country.

No final conclusion will be drawn. The figures worked with here are small and calculations of this nature are likely to give inaccurate results. Nevertheless, an impression has been gained that the TBAs of Malawi can be numbered in hundreds rather than in thousands, and that the number is small enough to make it practicable to plan to train them all rather than a proportion of them, when a national programme is being designed.

CHAPTER 3

THE BELIEFS AND PRACTICES OF TBAS AND THEIR HERBAL MEDICINES.

Section 1 - Introduction.

A trainer of TBAs who knew nothing about the TBAs beliefs and practices would find her job much more difficult. A study of the subject was therefore considered necessary.

There has been no published report fully covering the subject of childbirth in Malawi, but some mention of it is made by the following authors. In a study of the social structure of the Yao, one of the major tribes of southern Malawi, Mitchell (1956)²³ describes how difficulty in labour is believed to be due to the adultery of either the woman or her husband. He relates the story of a particular woman's difficult labour, and how birthpang confessions were forced from her. When this was unavailing a diviner was consulted, who indicated that the cause of the prolonged labour was malice felt by the labouring woman's niece because of an unresolved argument that they had had in the past. The diviner advised that the niece should blow water from her mouth at the hut door where the woman was confined in order to annul this effect. Schoffeleers (1968)²⁴ in writing about evil spirits and problems of human reproduction in the Lower Shire Valley of Malawi also mentions the confessions required of both husband and wife in cases of difficult labour. In an anthropological study of the Ngoni of Malawi, Read (1956)²⁵ said little about childbirth other than to mention that at a woman's confinement she was looked after by her husband's own mother, aided by other female members of the husband's family if they were present in the village. This is because the Ngoni live virilocally in marriage. Most of the

other tribes in Malawi, are uxotrilocal in habit which explains why it is usually the women's relatives who are in attendance.

African traditional beliefs in connection with pregnancy and child-birth have been quite widely reported from other African countries. Gelfand (1956)²⁶ described beliefs in connection with pregnancy and gynaecological complaints amongst the Mashona in Rhodesia, and the information he supplies might be thought to be applicable to most of the Bantu tribes, those of Malawi included. Montgomery (1955)¹⁷, also from Rhodesia, gives an interesting account of obstetrics in an African population. However, these descriptions from Rhodesia include many more references to magic and divination than I encountered in Malawi, and it would seem that there are considerable differences in this respect between the two countries. Evidence of the need for a local study is supplied by Moller (1961)¹⁹ writing from Tanganyika (now Tanzania). He described the customs related to pregnancy in seven tribes, all of which showed significant differences.

Although there seems to be a case for a local study, much can still be learned from other references, and, in addition to those mentioned, descriptions of customs in Buganda by Billington, Welbourn, Wandera and Sengendo (1963)²⁷, and of the Ga people in Ghana by Otoo (1972)²⁸ are worthwhile.

During the study of TBAs in Lilongwe the opportunity was also taken to investigate the herbal remedies they use. There were a number of reasons for doing so.

For many years scientists have taken an interest in the traditional herbal remedies of many societies throughout the world, and a number of drugs useful to practitioners of western medicine, like quinine, morphine and digitalis, have been discovered in this way. The flora of Africa is

particularly diverse and as yet incompletely studied, as are the traditional herbal remedies prepared from it, and it has to be considered quite likely that the empirical use of the wide range of plants available may have resulted in traditional practitioners identifying pharmacologically active plants. It seems important in this era of rapid social change to investigate this field and record any relevant information before knowledge of this sort held by traditional medical practitioners is lost for ever.

Personal experience of obstetrics in Malawi also provided reasons for making a local study. As described later in Chapter 4 Section 1, there is reason to believe that medicines used by TBAs have toxic effects on the gastro-intestinal tract, and kidneys. If the medicines that have these effects could be identified and the active principle isolated, then measures could be taken to stop their administration and possibly a rational form of therapy deduced.

Schoental (1972)²⁹ suggested that toxic and/or carcinogenic constituents present in the diet, or in herbal remedies used by women during pregnancy and lactation, or given to babies, might be the cause of certain childhood disorders and of some of the tumours encountered in developing countries. This has not been proved but, on the other hand, many genera of plants are known to be definitely poisonous. There was therefore good reason to record the plant medicines used by TBAs being trained by us and check whether any of them were known to be poisonous, and look for any other association between them and disease.

There was one particular association which was of interest. Malawi, in common with other African countries, has a high rate of uterine rupture, and it is widely believed by people involved in maternity care

that some of these cases result from the ingestion of herbal medicine. This belief was documented by Moller (1961)¹⁹, who claimed that a medicine made of powdered bark and dried leaves of unknown origin used by midwives of the Bahaya tribe in Tanganyika (now Tanzania), stimulated the uterus and resulted in cases of ruptured uterus. Scientific evidence to support such a belief was reported by Lipton (1959)³⁰ and (1960)³¹. He carried out experiments on the dried bark of the tree *Albizia gummifera* (Gmel) which he was informed was the source of medicine used by a traditional midwife. Aqueous extracts of the bark produced powerful contractions in vitro in strips from the gravid uteri of laboratory animals and humans. Intravenous administration of the extracts to intact monkeys produced powerful prolonged uterine contractions. Abortion could be induced in gravid rodents even when the extract was given by gastric tube, although much larger doses were needed when given by this route. Toxic effects were studied, but no precise abnormality was discovered, except for a somewhat inflamed intestine in the laboratory animals. *Albizia chinensis* and *Albizia grandibracteata* were similarly active. Another plant, *Achyranthes aspera* was very powerfully abortifacient in gravid rodents although not active in isolated uterus preparations. *Albizia gummifera* (Gmel) and *Achyranthes aspera* are both listed in a "Dictionary of Plant Names in Malawi" by Binns (1972)³², and so it was important to check if these plants were in use by TBAs in Malawi.

Gilges (1955)³³ reported the toxic effects of many herbal medicines in a study of the African poison plants and medicines of Northern Rhodesia (now Zambia). He was, however, rarely able to name the toxic principle. Nevertheless, his publication again provided a means of checking for any known toxic effects of medicines used in Malawi. In Malawi itself, an

interesting work "Useful Plants of Malawi" had been written by Williamson (1975)³⁴ in which she recorded many attributed medicinal uses of local plants, although making no mention of toxic effects, and it was felt that it was worth trying to confirm her findings, and provide useful information for people involved in the training of TBAs.

Section 2 Beliefs and Practices.

This section deals with the traditional beliefs and customs connected with pregnancy, labour and the young infant in Malawi. The practices of TBAs are also described.

Methods.

My first experience of village deliveries occurred when as a mission doctor I was obliged from time to time to act as driver of the hospital ambulance. This gave me the opportunity to witness women in labour at home, and even to deliver a baby onto the unprepared earth of a village hut. Fuller information on the subject was gained during the period of research from 1973 onwards by discussions with patients, midwives and traditional birth attendants. I kept notes of what I learned in this way. I also made a systematic enquiry of 15 TBAs who attended a pilot training programme which is described later. Finally before preparing this report I compared my information with that of two midwives, Mrs. I.B. Kawonga and Mrs. R. Chinyama, who had worked with me on the pilot training programme. This description, therefore, only includes material which I have had confirmed either in my own experience or through discussion with others.

Results.

It may seem surprising that the name given to TBAs had to be the subject of investigation. However, in conversation a TBA is usually spoken of merely as "a woman who helps mothers" or "adocotola", which is a corruption of the English word "doctor". More exact Chichewa words for TBA are "mzamba" (pl. "azamba") or "namwino" (pl. "anamwino"), but these are used less often.

TBAs do not systematise their beliefs but they can be said to



ILLUSTRATION 5. ANTE-NATAL PATIENTS NEAR TERM AWAITING LABOUR
TBA'S. (TBA WEARING HEAD-CAP IN CENTRE)

believe, as in common throughout Africa, in the following types of disease, classed according to causation: natural diseases, magical diseases, and diseases caused by spirits. A desire for revenge is often the underlying cause of the magical diseases. I believe, though, that most TBAs, except those who are diviners or doctors (sing'anga), feel themselves fairly helpless in the face of diseases caused by other than natural causes. They do, however, know how to placate spirits that have been offended. It was not easy to draw information from them on the subject of magic and spirits and most of the following relates to natural disease.

Pregnancy.

It is still commonplace for young girls (at around the age of puberty) to be given a formal course of instruction by their elders on the subjects of pregnancy, labour and child care.

A pregnant woman calculates her gestation from the movements of the moon. If the moon returns to the same phase as it was when she last menstruated, and she then misses a period, she counts herself as one month pregnant. She expects to deliver at the end of the tenth month. If she is going to be delivered by a TBA she usually visits her ante-natally from the sixth or seventh month. There is no ritual attached to the way in which she requests the TBA's assistance. The TBA sees her weekly, sometimes on special ante-natal clinic days. She palpates the pregnant woman's abdomen at each visit and gives her some herbal medicine, either then or to take home. A woman who does not deliver by the tenth month is considered to be in danger and may believe herself to be bewitched. In this case she would go to a diviner rather than a TBA. TBAs do also, however, give medicine to induce labour.

During the pregnancy the TBA will not make special recommendations

about the diet but it is generally believed that a pregnant woman should not eat eggs. If she does, the "way" out of the womb will be closed, or the baby will be born bald; both good examples of sympathetic magic. She will also not eat the meat of a cow slaughtered while pregnant, and is not supposed to sit cross-legged. It is expected that intercourse will stop at about six to seven months. Vernix caseosa is taken to be the husband's semen.

TBAs do not understand the anatomy and physiology of labour nor understand the function of the placenta. Some believe it to be a cushion for the baby. They have no way of telling beforehand whether a patient will have difficulty in labour. Short women and those with a history of previous Caesarean section or stillbirth are not considered as being at increased risk. On the other hand, anaemia does seem to be something that they recognise, and pallor, weakness, palpitations, dizziness, and oedema are all known by some as symptoms of anaemia. Many also appreciate its serious significance and would send such a patient to hospital. Some are aware of the virtue of cleanliness and hygiene but few know the rationale behind it. Transverse lie is a fairly well recognised condition and its association with arm prolapse is known.

Reasons for delivery at home.

The distance to a maternity clinic and the cost of clinic fees are two of the reasons why many women still prefer to deliver at home. Other reasons include the belief that childbirth is a family affair which should be conducted at home. Also age and experience are highly regarded in Malawi and it is natural for a young pregnant woman to have greater faith in the ability of her elder relatives, than in that of the relatively younger women who often staff the maternity clinics. Hospitals also often acquire a bad reputation unjustifiably because they ultimately have to

manage the difficult cases which have a high mortality rate. Reasons based on mysticism and magic also play a part, notably the wish to have the placenta buried safely and correctly. However, I believe that one of the main reasons for choosing home delivery, especially among primigravida, is related to the belief, already mentioned, that difficulty or delay in labour is the result of previous marital unfaithfulness. It seems that if a woman shows a desire to be delivered in hospital it may be believed that this is because she wants to hide from her relatives so that they cannot witness the difficulties she expects to have. To avoid suspicion many a woman, who might otherwise deliver in hospital, decides to stay at home.

The conduct of labour at home, attended by relatives (Family Birth Attendants).

Labour is traditionally conducted in a hut away from the main living quarters, although there is no special significance in this apart from ensuring that the events take place in seclusion away from the patient's husband. Even after delivery the patient is customarily secluded from her husband for a period of 4 or 5 days, or sometimes until the cord stump has dropped off. The patient's mother, and other female relatives who may be involved, keep in constant attendance on her but make little or no preparation for the arrival of the baby. The labouring woman is naked and usually labours in a squatting position, often with her buttocks resting on a cloth ring (nkhata), and leaning back against the strong wooden pole used for ~~pounding~~ pounding maize (mtondo). While in this position a relative in front supports her knees and another at her back supports her shoulders. The woman will be encouraged to bear down as soon as labour begins or the membranes have ruptured, and she will be expected to continue to push with every contraction until the baby is

delivered. The delivery of the baby's head is not controlled in any way, the baby being caught, however, and placed in a cloth or mat put on the floor for the purpose. This is often thrown away later. No attempt is made at resuscitation and the baby is left alone until the placenta is delivered, and only then is the cord tied with a strip of cloth and cut with a razor blade or some sugar cane peel. The placenta is taken by the older woman and buried carefully and in secret, because of the fear that it may be dug up and used by someone to make medicine for the purposes of witchcraft. The stump of the baby's cord is also given special significance and when it separates it is carefully buried close to the home.

Should a problem occur or there be delay in labour this is attributed initially to the woman being lazy and she is urged even more forcibly to push hard. Almost certainly she will already have drunk some local herbal medicine but when delay occurs she will be given more. After the passage of more time without successful outcome it comes to be recognised that the delay is due to the woman having been unfaithful to her husband. Her attendants then insist that she confesses the name or names of her lover(s). It is apparent that this is a time of tremendous psychological and physical torment for the labouring woman. Should she in the end confess, fairly immediate delivery is hoped for. If she fails to confess she may be beaten by her relatives until she does. At times the husband is called upon to confess his acts of adultery during the pregnancy, but if he has any to confess he is afforded a greater degree of understanding than his poor wife. Should the outcome be a maternal death this is, however, usually blamed on her husband's unfaithfulness. When confessions of this nature have proved unhelpful the next step is to call for the



ILLUSTRATION 6. TWO POST-NATAL MOTHERS, THEIR BABIES, THE TBA
AND HER ASSISTANT

assistance of a woman outside the family who has special experience in midwifery (a TBA), or else for a diviner who may be able to find the magical cause of the trouble. If these measures also fail consideration will be given to taking the patient to hospital. Even then there may be difficulties to overcome because permission for doing so may have to be obtained from the patient's maternal uncle who is ultimately responsible for her welfare. He, if he is married, will be living with his wife's family and so may not be immediately available to give the necessary permission. It seems that in this situation men are more than willing to give such permission. The prolonged delay in the proceedings is probably partly due to the fact that the business of labour exclusively belongs to the women who tend to be more conservative and less well travelled than their menfolk.

TBAs knowledge of labour.

TBAs recognise the onset of labour by palpating contractions. They mostly regard show or ruptured membranes as evidence that it is time for the patient to begin pushing. Most TBAs examine the patient vaginally with the intention of feeling if the head is presenting and to tell how low it is, and they assess progress in this way. Only 2 out of 15 questioned were able to say that they had recognised the process of cervical dilatation. Questioned about the causes of prolonged labour three of the 15 were aware of the concept of cephalo-pelvic disproportion, and 2 mentioned malpresentation. The remainder knew nothing useful. One thought it occurred because the patient was lazy, 1 because the placenta had blocked the way out, and 1 because the patient was pre-term.

Whereas in village deliveries conducted by close relatives of the patient the usual position for delivery is a semi-sitting or squatting

attitude, TBAs mostly deliver their patients in the dorsal position. Some also cut the cord before the baby is delivered, unlike most village women. It would seem that they have voluntarily copied hospital practice in these respects. However, when the head is being delivered they do not control it or support the perineum in any way. Should the placenta not be delivered easily, the usual management is to press or push over the uterus, although attempts at manual removal are sometimes made. TBAs often owe their reputation to their ability to do so, and definitely are not aware of what a dangerous condition it is. The method of controlling post-partum haemorrhage by rubbing up a contraction is not known by TBAs and I met none who had any idea of how to cope with this condition.

Breast feeding.

There are few special beliefs attached to breast feeding. The idea of feeding expressed breast milk from another mother to an orphan is abhorrent to Malawians, including trained nurses. However, if a foster mother without a child of her own can be found, she is able to suckle the child after the breasts have been washed with herbal medicine.

Puerperium.

After delivery all women tie a thin strip of material around their waists. This is to help involution of the uterus and prevent the abdomen being flabby. TBAs agree with the practice of inserting herbs or chemicals into the vagina to tighten it following childbirth. This is usually done some weeks later, however, and many patients do this themselves without help from the TBA. Women do not cook food for their husband for one month after giving birth, and many do not resume sexual intercourse until after they have a period even if this is over a year later. This seems



ILLUSTRATION 7. A TBA HEATING WATER FOR A "HOT-WATER BOTTLE"
TO WARM PREMATURE BABIES

to be variable, but there is always a delay of some months.

Care of the neonate and infant.

When the baby is delivered the TBA clears the mucus from the baby's mouth, either by inserting a finger into the mouth and wiping it away, or by the same method but using a cloth. Some even do this by sucking the mucus out with their own mouths.

A few appear to be aware of the need to take special measures to keep the baby warm, and some untrained TBAs put premature babies in cardboard boxes and keep them warm by the use of blankets and bottles with warm water. See Illustration 7. On the whole, however, very little is known about neonatal care. In normal cases the cord is left alone without medication, but hot ashes are sometimes applied. Cow dung, which is used in other cultures, is not used in Malawi. If there is delay in separation of the cord a dressing of leaves may be applied. Pumpkin leaves are quite commonly used in this situation because they themselves drop off their stalk leaving a nice clean surface.

The infant's fontanelle is considered to need attention and is protected, or helped to close, by a small cloth cushion hung around the neck of the child. The Yao constantly apply a black medicine to the fontanelle itself.

The TBAs knowledge of nutrition is poor despite all the teaching which health personnel have given on this subject. Of 15 who were asked about the cause of kwashiorkor, only 5 knew that it was associated with insufficient or incorrect foods. Six thought it was due to lack of blood, two considered it to be the result of the parents' adultery, and one attributed it to the continuation of breast feeding after sexual relationships had been resumed.

However, TBAs do not consider child care to be part of their work, and if any is undertaken it is only in the immediate post-partum period.

Clitoridectomy and infibulation are not carried out in Malawi, contrary to some recent press reports.

Gynaecological diseases.

There are many customs and beliefs related to menstruation, the diseases of women, and sexual matters, and TBAs adhere to these. A woman who is menstruating is a source of danger to others, especially her husband and other men. She will not put salt in the food or put a pot on the fire at such a time. Likewise, it is unsafe for a man to have intercourse with a recently delivered woman or one who has recently aborted. If intercourse does take place, the man will suffer from "chitaye", a disease characterised by paralysis from the waist down. A man affected by this condition is indeed in danger of dying simply because of his firm belief in the disease. A man or woman who has recently had sexual intercourse or is recently married is considered to be "hot" and must not touch either a newborn baby or^a child with measles.

Infertility is the commonest gynaecological disease treated by TBAs and many initially gain a reputation from their success in treating it. They may begin their midwifery work by delivering those patients who conceived following treatment.

For incomplete abortion TBAs give an oral medicine and claim consistent good results. For threatened abortion, a length of string is tied round the waist and oral medicine given.

Contraceptive advice is only given when a patient makes a direct request for it. This consists solely of a piece of string tied around the waist. One TBA told me that she hunts in the bush to find a hole in the ground which is crossed by the root of a tree. If, in the rains,

the hole never fills with water, then string is made from the root. The string is tied around the waist of the patient with the words "As the hole was not filled, so you also will not be filled". The effectiveness of the method is widely believed, and was once quoted to me by a student midwife in her final examination. On the other hand, one TBA said that she had stopped recommending this practice because she had found it gave poor results.

Venereal disease is recognised but syphilis and gonorrhoea and any vaginal discharge are taken to be one disease. TBAs give medicines to increase the discharge in the hope of curing it. Repeated abortions are considered to be due to venereal disease.

There is a belief in a disease called "masungu" (or "mauka" in Southern Malawi) in which the woman is believed to have a growth in the vagina. This in turn is suspected if she is infertile, her child is sick or she has vulvar itching. It can be cured by making short incisions in the vaginal skin. Only once have I seen a complication of this, namely, some mild bleeding from the incisions.

Discussion.

Although the beliefs and practices described are commonplace amongst the villagers of Malawi it is my experience that knowledge of them is quickly lost by educated townspeople. The average nurse or midwife is likely to have heard of only a small proportion of the contents of this section. Yet if she is to work with and train TBAs it seems essential that she should have an understanding of their customs. This, I believe, justifies this study.

It is also instructive to note that the TBAs practice included much more gynaecology than paediatrics, and I believe that this should influence

the contents of our syllabus and our expectations of what the trained TBA can do. Although childhood diseases are of great importance, I believe it to be unrealistic to think of involving the TBA much in such work, but that instead we should build on her interest in gynaecological disease.

A large number of factors were identified which have the effect of increasing the length of time which ensues between the recognition of a problem during labour and the ultimate arrival of the patient in hospital. It is not surprising in view of this that obstructed labour is such a major problem. In this connection it is of interest that the practice of extracting confessions was forcibly attacked by the Life President Dr. H. Kamuzu Banda a few years ago in a public speech. He strongly criticised the custom declaring repeatedly that the use of the question "Ndani ndani?" must end. "Ndani?" means "who was it?", that is, with whom you committed adultery.

In training TBAs it should be our aim to conflict as little as possible with their system of midwifery, and in fact to encourage to the full any good customs or habits that they have. Customs and procedures can be classified as being either beneficial, harmless, harmful or of uncertain effect. We should encourage the beneficial customs, make no comment or judgment on the harmless ones or those of uncertain effect, and only discourage those which are positively harmful. Table 9 lists some customs categorised in this way for the benefit of trainers of TBAs. Classifying the use of herbal medicine ante-natally as something of uncertain effect which can be ignored is however a matter of expediency rather than conviction. It has to be recognised that at the present time advice to stop using it would not be accepted.

Beneficial: to be encouraged	Instruction at puberty about labour and child care. Ante-natal examination by TBA. Putting baby to breast immediately after delivery. Taboo on sexual intercourse after delivery.
Harmless: to be ignored	The non-involvement of the husband in matters relating to labour and delivery. Use of abdominal binder after delivery. String tied around waist for prevention of abortion.
Harmful: to be discouraged	Attributing delay in labour to marital infidelity or lack of courage. Herbal medicine taken orally in labour. Herbal medicine on vulva or in vagina during or after labour. Unsterile techniques for vaginal examinations and cutting of cord. Lack of preparation of clothes for the baby. Immediate cessation of breast feeding when next pregnant.
Uncertain: to be ignored meantime	The avoidance of eating eggs in ante-natal period. The squatting position in labour. Use of string around the waist as a contraceptive Use of herbal medicine ante-natally. Herbal medicine rubbed into abdomen in labour.

Table 9. Traditional customs related to reproduction categorised as beneficial, harmless, harmful, or of uncertain effect.

Section 3. Herbal medicines.

This study aimed to record the herbal medicines used by TBAs, and the manner in which they used them, to identify if any were of known toxicity, and to make tests of both toxicity and pharmacological action. The main pharmacological action to be sought was an oxytocic effect.

Methods.

At the beginning of the pilot training course the 15 TBAs were individually questioned about the medicines they gave their patients. They were asked specifically what they gave, when they gave it and why they gave it, and these questions were asked in respect of the ante-natal period, labour, and the puerperium.

It was realised that the TBAs guarded knowledge of their remedies rather closely and were suspicious of our enquiries. As good rapport was essential to the success of the programme, it was only later at the follow-up visits when they were more certain of our good intentions that plant specimens were requested. They were asked to supply a specimen of the leaves, flowers and/or seeds of the plant as well, wherever possible.

When obtained, the leaves were pressed overnight and sent for identification to the Curator of the Herbarium, Chancellor College, University of Malawi. This was initially Mr. J.H. Seyani, and then later, Mr. S. Blackmore. When leaves were not obtained the scientific name was obtained by me from works by Binns (1972)³² and Williamson (1975)³⁴ which list the vernacular and scientific names of plant names in Malawi.

The plant specimen itself was numbered, wrapped in polythene, and posted to Professor W.P. Leary, Head of the Department of Clinical and Experimental Pharmacology of the Faculty of Medicine, University of Natal. Details of the actions attributed to the specimens, and their mode of administration were included.

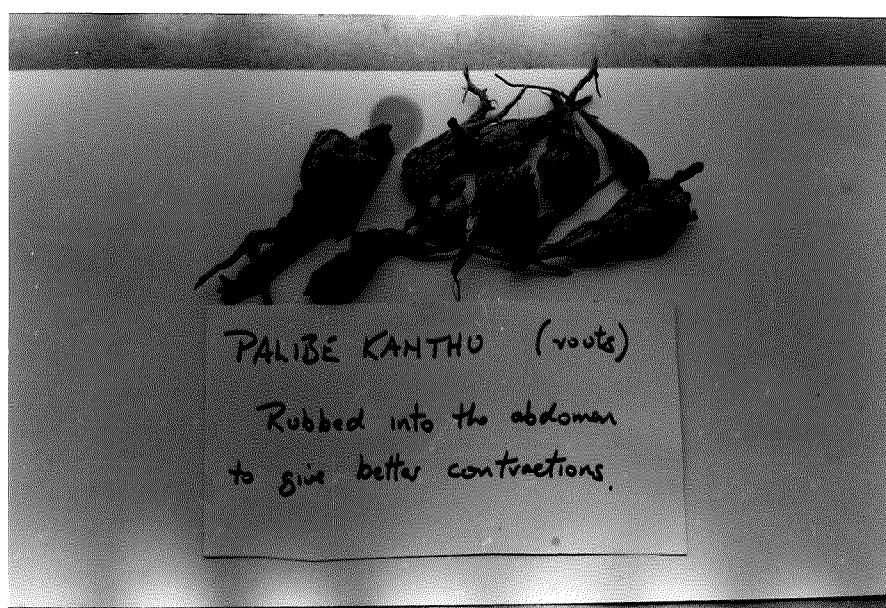


ILLUSTRATION 8. ROOTS USED AS A MEDICINE IN LABOUR

My suggestions to Professor Leary were to test the specimens for oxytocic actions, and where therapeutic or pharmacological effects were claimed by TBAs to attempt to confirm them. Also to analyse the specimen for known toxic substances, and to look for toxic effects in laboratory animals. I explained my findings (see Chapter 4 Section 1) that herbal medicines were associated with the retention of gastric contents and the vomiting of large volumes of vomitus, and requested that effects of this nature be looked for.

Results.

When initially questioned, 14 of the 15 TBAs said they gave their patients medicine during pregnancy, 12 that they gave medicine in labour, and only 8 after delivery. When plant specimens were asked for, however, only 2 supplied the same plant specimen as they had mentioned when questioned, and many gave a large number of specimens which they had not mentioned earlier.

All of the medicines were made from either the roots, bark or leaves of locally available plants. These are usually prepared either as an infusion or a decoction to be taken orally. The dose varies from one spoonful weekly to a cupful four times daily. Sometimes the powdered bark or root is taken by being added to porridge. During labour, medicine is sometimes administered by rubbing it into the skin of the abdomen.

Reasons given for prescribing medicine for the ante-natal patient are, to make the baby grow well; to make the pregnant woman strong; and to ensure an easy labour. There is also a common belief that the "way" should be cleansed so that the baby will be free from infection, and this is done by prescribing medicine which has both a diuretic and a laxative action.



ILLUSTRATION 9. A TBA ASSISTANT ISSUING HERBAL MEDICINE TO
AN ANTE-NATAL PATIENT

Many TBAs give their patients medicine as soon as they begin labour; others wait until the cervix is fully dilated, or until they find that labour is becoming prolonged. In labour the medicine is nearly always given with the intention of promoting good contractions or shortening labour. In the post-natal period, medicine is given to expel retained products, to encourage the flow of lochia, or to control bleeding. Most TBAs use a variety of medicines, but others use only one, prescribing it for a number of different purposes on different occasions.

A list of various plants used as medicines by TBAs is shown in Table 10. This is listed alphabetically according to the vernacular name of the plant, as the scientific name was not known in all cases. Where corroborating information about the uses of the plant has been found in "Useful Plants of Malawi" (Williamson 1975)³⁴, this has been inserted as a footnote. Please see the end of the table, page 76 for the abbreviations used.

Vernacular name for plant	Scientific name	Part of plant used	Claimed medicinal uses
1. AZITONIA		?	For headaches and backache. To hasten delivery.
2. BVUMBULUKANI Ch.		?	To improve contractions in prolonged labour
3. CHEWE Ch.	<i>Ceratotheca sesamoides, Sesamum angolense. (c)</i>	?	For good fetal growth, to make labour easy, and to ensure a quick delivery of the placenta *
4. CHIBELE Ch.		?	To ensure a short second stage of labour
5. CHIDYAYANI (a) ?SYNONYM FOR CHIDYANKHWERE Ch.	= <i>Dolichos trinervatus (c)</i>	Roots	In pregnancy.
6. CHIGARA (a) Ch.	<i>Acacia senensis (b) & (c)</i>	Leaves	Rubbed into the abdomen to hasten delivery.

Table 10. * Williamson (1975)³⁴ - An infusion of the roots
of *Sesamum angolense* is used to hasten delivery.

Vernacular name for plant	Scientific name	Part of plant used	Claimed medicinal uses
7. CHILAMBE Ng.	Cissampelos mucronata (a)	?	For good fetal growth, an easy labour, and a short third stage of labour
8. CHOOSI Ch. (a)	Sida acuta (b)	Root	In pregnancy
9. CHOOSI Ch. (a)		Bark	The bark is crushed in water and rubbed into the abdomen during labour to produce better contractions
10. FUTSA Ch. (a)	Veronia adoensis, Veronia amygdalina, Veronia glabra (c)	Bark	A palmful of the powdered bark in water in labour to give better contractions *
11. GUNDUMULA		?	Rubbed into the abdomen in labour to hasten delivery
12. KAMTSOKOYA Ch. (a)	Uapaca nitida (b)	Roots	In pregnancy to increase urine output
13. KANTOCHO Ch. (a)	(Leaves examined but not known) (b)	Root	Rubbed into the abdomen to produce better contractions
14. KHUWO Ch. (a)		Root	Powdered roots taken twice daily with 6 other roots for syphilis Nos. 17 25 26 35 40 41

* Williamson (1975)³⁴ - Veronia sp. many medicinal uses and includes Veronia amygdalina as an abortifacient.

Table 10 Cont'd

Vernacular name for plant	Scientific name	Part of plant used	Claimed medicinal use
15. MAKANDA- NCHEMBELE Ch.		Leaves	At onset of labour to hasten delivery
16. MBUTOYAICHULI Ch. (a)	Rhynchosia sp. (b) & (c)	Root	For infertility and recurrent abortions *
17. M'BWAZI Ch. (a)		Root	Taken twice daily with 6 other roots for syphilis Nos. 14 25 26 35 40 41
18. MFULATIRA Ch. (a)	Boscia salicifolia (b)	Root	In labour for better contractions
19. MGUNDUMULA Ch. (a)	Triumfetta tomentosa (b)	Leaves	Rubbed into the abdomen in labour to hasten delivery
20. MIWAWI Ch. (a)		Branches	For strength and to improve the appetite in pregnancy
21. MKHADZE Ch.		?	As a diuretic and laxative in pregnancy
22. MLAMBUZI Ch. (a)	Cissus cornifolia (b)	Source I - ? Source II - Roots	To relieve pains in pregnancy. To promote fertility
23. MLIMBIKIRA Ch.	Indigofera antunesiana (b)	Root	To prevent abortions

* Williamson (1975)³⁴ - An infusion of the roots of *Rhynchosia sublobata* drunk at puberty.

Table 10 - Cont'd

Vernacular name for plant	Scientific name	Part of plant used	Claimed medicinal uses
24. M'MAYE Ch. (a)		Root	Used in prolonged labour
25. M'MWAYE Ch. (a)	Strychnos spinos (b) & (c)	Source I- roots Source II - ? Source III - roots	To treat constipation in pregnancy As a diuretic & laxative in pregnancy Taken twice daily with 6 other roots for syphilis Nos. 14 17 26 35 40 41
26. M'NKHOLOBWE Ch. (a)		Roots	Taken twice daily with 6 other roots for syphilis Nos. 14 17 25 35 40 41
27. MTANTHAYERERE Ch. (a)	Cassia (b) petersiana	Roots	In pregnancy for bilhar- ziasis
28. MTANTHAYERERE Ch. (a)	Asparagus sp; (b)	Roots	For retained placenta
29. MTEME Ch.	Strychnos spinos (c)	?	To relieve the pains of pregnancy & improve the circulation
30. MTSATULE Ch.	Allophylus africanus, A.chaunosta- chys (c)	?	As a diuretic and laxative in pregnancy. In early labour to help the cervix to dilate. *

* Williamson (1975)³⁴ An infusion of the roots of *Allophylus africanus* is drunk by women at time of menstruation.

Table 10 - Cont'd

Vernacular name for plant	Scientific name	Part of plant used	Claimed medicinal uses
31. MTUKUMPHAKO (or ?MTUKAMBAKO) Tu. (a)	Ozoroa reticulata var. crispa (b) & (c)	Source I - roots Source II - ?	In pregnancy for abdominal pains and to improve the circulation
32. MUKUWIKUWI Ch. (a)		Source I - root Source II - ?	To improve contractions For abdominal pain
33. MUWAWANI Ch	Cassia sp. (c)	?	To promote flow of lochia *
34. NAMWALICHECHE Ch. (a)	Cyphostemma sp. (b) & (c)	Root	Given during pregnancy
35. NSAKAMBWA Ch.		Root	Taken twice daily with 6 other roots for syphilis Nos. 14 17 25 26 40 41
36. NTHOCI Ch. (banana - Eng.)	Musa paradisica (c)	Roots	To prevent premature labour
37. NTHUNDZA Ch. (a)	Flacourtia indica (b)	Source I - bark Source II -	For induction of labour when overdue To turn fetus to correct presentation
38. NYANGA ZA INSA Ch.		?	Given at onset of labour and at full dilation to hasten delivery

* Williamson (1975)³⁴. An infusion of the roots of Cassia sp.
mixed with those of Mikania cordata is said to be abortifacient.

Table 10 - Cont'd

Vernacular name for plant	Scientific name	Part of plant used	Claimed medicinal uses
39. PALIBEKANTHU	Dicoma kirkii (c)	Source I- roots Source II -	Rubbed into the abdomen to improve contractions In pregnancy to promote appetite and clean the bladder. In labour to hasten delivery.
		Source III -	In pregnancy to clean the inside of the body.
40. SULULU Ch. (a)		Root	Taken twice daily with 6 other roots for syphilis Nos. 14 17 25 26 35 41
41. THOMBOZI CHIPETA (a)	Holarrhena pubescens	Root	Taken twice daily with 6 other roots for syphilis Nos. 14 17 25 26 35 40
42. KAZINDA KATUPE Ch. (a)	Gnidia Macrorrhiza (b)	?	Taken in labour

Table 10 - Plants used by TBAs for medicinal purposes.

- (a) = Pharmacological and toxicological studies performed.
 (b) = Plants identified from specimens of leaves sent to
 The Herbarium, University of Malawi.
 (c) = Scientific name from either "Dictionary of Plant Names
 in Malawi" by Binns (1972)³², or from "Useful Plants
 of Malawi" by Williamson (1975)³⁴.

Ch. - Chichewa
 Ng. - Ngoni
 Tu. - Tumbuka
 Eng. - English

For ease of cross reference an alphabetical list of the
 scientific names of the plants is given in Table 11.

	<u>Plant number in Table 10</u>
<i>Acacia senensis</i>	6
<i>Allophylus africanus</i>	30
<i>Allophylus chaunostachys</i>	30
<i>Asparagus sp.</i>	28
<i>Boscia salicifolia</i>	18
<i>Cassia petersiana</i>	27
<i>Cassia sp.</i>	33
<i>Ceratotheca sesamoides</i>	3
<i>Cissampelos mucronata</i>	7
<i>Cissus cornifolia</i>	22
<i>Cyphostemma sp.</i>	34
<i>Dicoma kirkii</i>	39
<i>Delichos trinervatus</i>	5
<i>Flacourtia indica</i>	37
<i>Gnidia Macrorrhiza</i>	42
<i>Holarrhena pubescens</i>	41
<i>Indigofera antunesiana</i>	23
<i>Musa paradisziaca</i>	36
<i>Ozoroa reticulata var. crispa</i>	31
<i>Rhynchosia sp.</i>	16
<i>Sesasum angolense</i>	3
<i>Sida acuta</i>	8
<i>Strychnos spinosa</i>	25 and 29
<i>Triumfetta tomentosa</i>	19
<i>Uapaca nitida</i>	12
<i>Veronia adoensis</i>	10
<i>Veronia amygdalina</i>	10
<i>Veronia glabra</i>	10

Table 11 - Scientific names of plants used
by TBAs.

The medicines in Table 10 are all given orally unless otherwise specified. In some cases where the plant was not identified by examination of leaf specimens, two or more scientific names are given because the vernacular name is applied to plants of different genus or species. For example, Mtanthayerere[^] was the vernacular name for both specimens 27 and 28 and Binns (1972)³² lists three other plants of the same name.

Some plant specimens collected were given names by the TBA which from their meanings were recognised as being the name of the medicine and not of the plant of origin. These have been listed in Table 12. Three of these also are being tested for pharmacological or toxic effects.

Vernacular name for medicine	Part of plant used	Claimed medicinal uses
Akaleka ku beleka (a)		For infertility in women with gonorrhoea. Coincidental diuretic action. Later, another drug is needed for treatment of fertility.
Mayi odwala pakati (a)		Given in pregnancy.
Mkazi wa pakati (a)	Root	To promote healing in vulvar haematoma. The powdered root is applied locally after the blood has been evacuated.
Muti		Used ante-natally to improve the circulation to the mother and fetus. Also for infertility.

Table 12 - Medicines used by TBAs whose plant name is unknown.

(a) = specimen sent for pharmacological and toxicological studies.

Pharmacological and Toxicological tests.

Thirty different plant specimens were sent to Professor W.P. Leary for pharmacological and toxicological tests, and these are still continuing at the time of writing.

Those specimens which were reputed to help in labour were tested for possible effects upon the mammalian uterus. Crude extracts were made and tested on the uteri of guinea pigs primed by being fed oestrogens over a period of weeks. Two specimens, "Choosi" (No.9 in Table 10) and "Mfulatira" (*Boscia salicifolia*) No.18 in Table 10 were found to have striking effects, producing uterine muscle contractions equivalent to or greater than those obtained when pharmacological doses of pitressin were administered to the same tissues.

Figure 5 and Figure 6 are photocopies of smoke drums showing the effect of 2 different concentrations of "Choosi" which was specimen No.6 of my original collection of plants. The effect of different volumes of pitressin is also shown.

Figure 7 shows the effect of an extract of "Mfulatira" i.e. *Boscia salicifolia*, which was specimen No.31 of the original collection.

It is not certain if "Choosi" (specimen 9 Table 10) is the same plant as "Choosi" (specimen 8 Table 10). Steps have been taken to obtain further specimens of it, together with leaf and flower or seed specimens for accurate identification.

None of the other specimens so tested were found to have any oxy-tocic effect.

Toxicological tests up to the present have failed to demonstrate any toxicity with any extract from the specimens.

Discussion.

It is not easy to create a relationship with a TBA such that she is

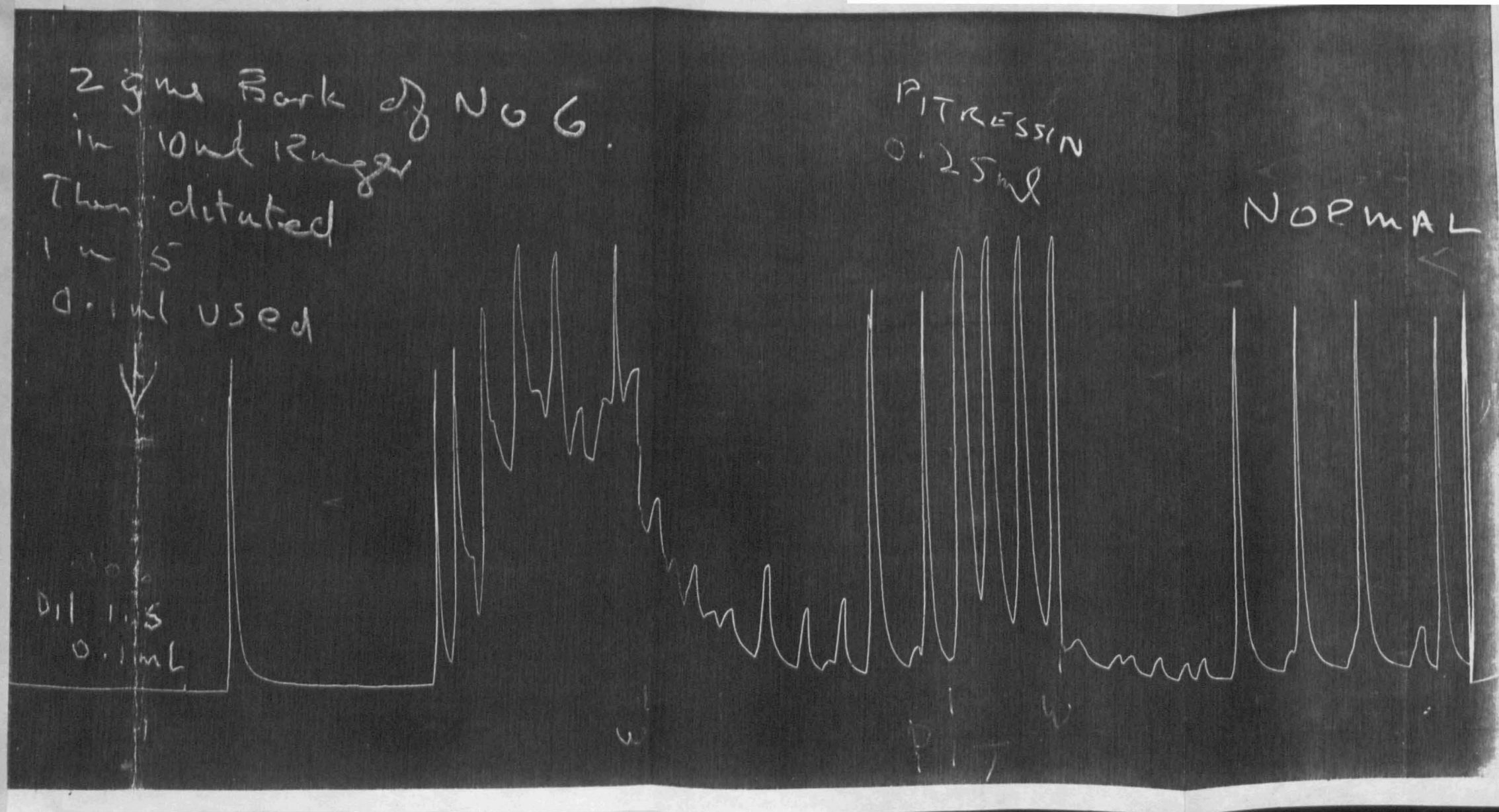


FIGURE 5. SMOKED DRUM SHOWING OXYTOCIC EFFECT OF "CHOOSI" ON GUINEA PIG UTERUS

(2 g. bark in 10 ml. Ringers solution, diluted 1 in 5 and 0.1 ml. used. Pitressin 0.25 ml. used for comparison)

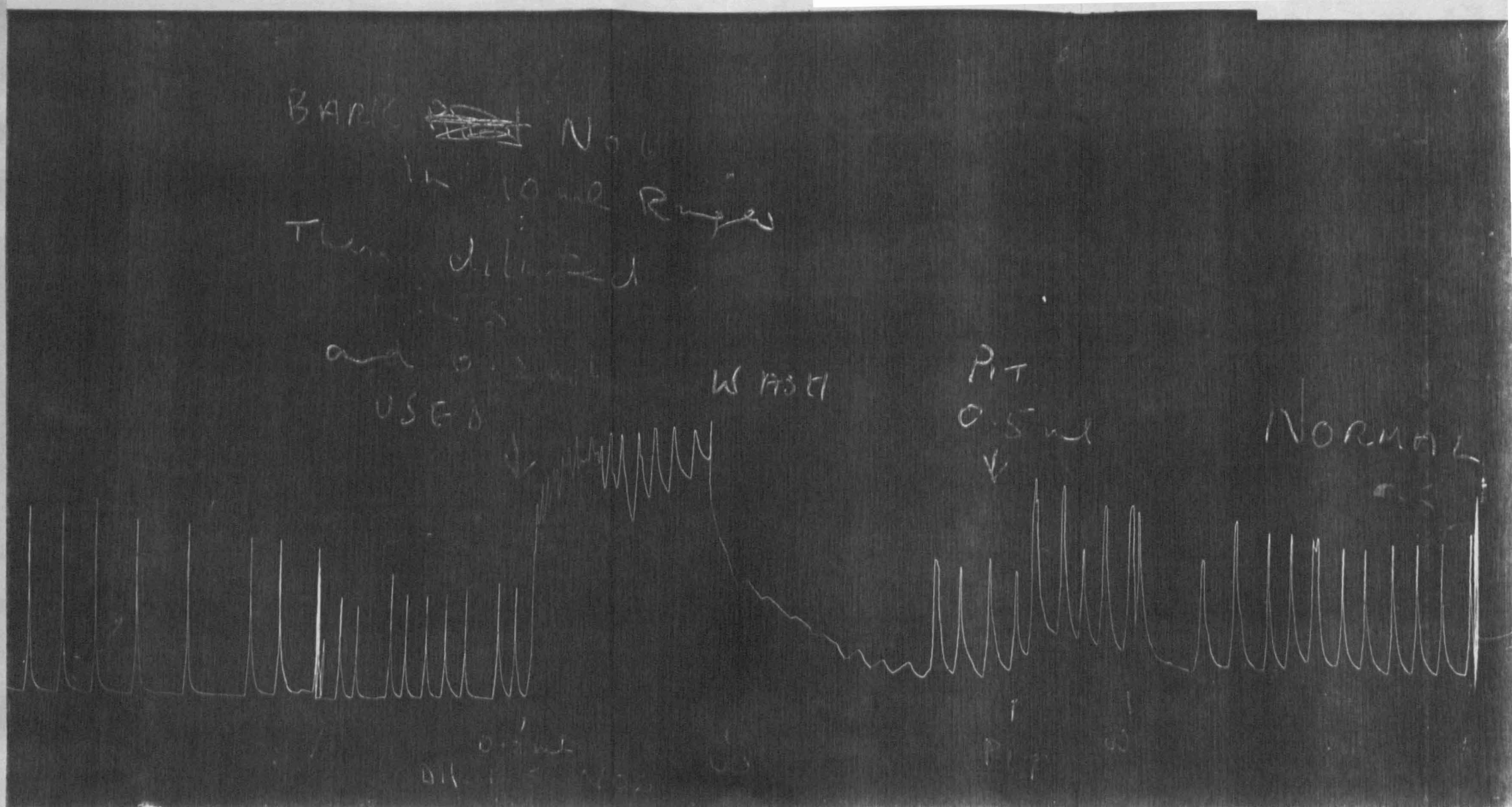


FIGURE 6. SMOKED DRUM SHOWING OXYTOCIC EFFECT OF "CHOOSI" ON GUINEA PIG UTERUS

(2 g. bark in 10 ml. Ringers solution, diluted 1 in 5 and 0.2 ml. used. Pitressin 0.5 ml. used for comparison).

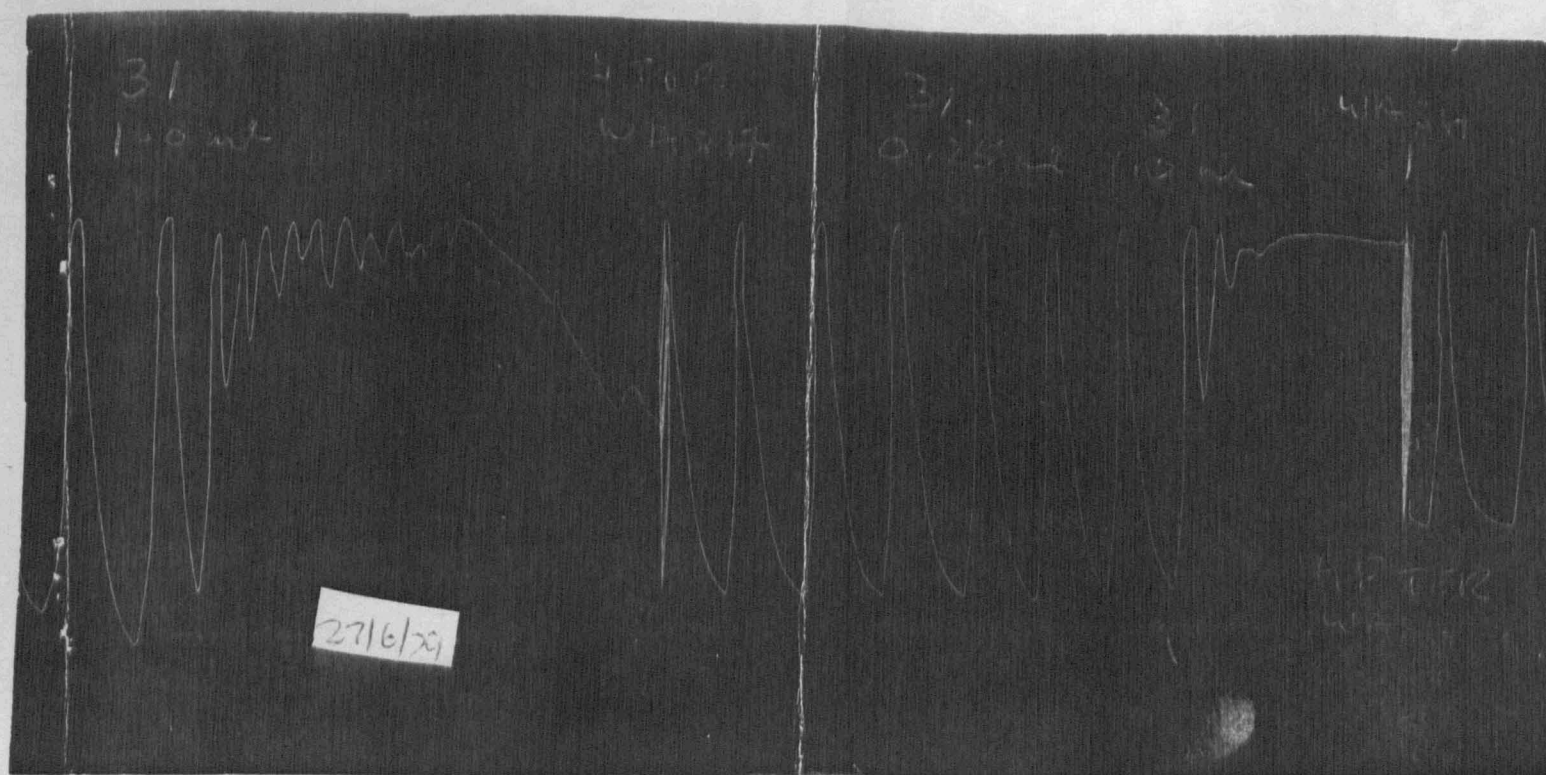


FIGURE 7. SMOKED DRUM SHOWING OXYTOCIC EFFECT OF "MFULATIRA"
OR BOSCHIA SALICIFOLIA

willing to impart knowledge of her medicines. Traditionally, knowledge of the plants and methods used to make medicines seem to be closely guarded even from fellow TBAs. This explains why, although TBAs would tell me the vernacular name, leaves for positive identification were not always supplied. It probably also explains why such a variety of plants are used, and why the attributed uses of a plant were so often different. Indeed only in the case of specimens 31 and 39 are the same uses mentioned by different TBAs. There were also only 5 cases where there was any correlation with the uses of plants mentioned by Williamson (1975)³⁴. These were mentioned in footnotes to Table 10. All this emphasises what a large number of different herbal medicines must be in use throughout Africa, and makes it seem likely that the majority of the medicines used are ineffective.

That two of the plants used for improving uterine contractions were found, at least in vitro, to have the oxytocic effects which they were claimed to have, may therefore seem surprising. However, this is a case where an immediate and obvious effect is expected of the medicine, a situation which makes it more likely that empirical experimentation will result in the recognition of an active medicine. In this light, it is of interest to note that the specimens of plants with oxytocic effects were both provided by the same TBA, and she is one who together with her husband is also a traditional doctor (sing'anga) (see page 148). She was the most professional of all the TBAs and her husband had a notebook containing details of the medicines and plants that he used.

The investigation of the oxytocic activity of *Boscia salicifolia* and of "Choosi" is as yet incomplete. Tests using strips of human uterus are required to determine if they are oxytocic in the human. It is planned

to carry out tests in intact animals to determine if the root extracts of *Boscia salicifolia* are active when taken orally. *Boscia angustifolia*, which also exists in Malawi, will be tested as well. Further investigation of "Choosi" (specimen 9) will determine if it is absorbed through skin and could be active when administered in this way. This is quite possible as it is known that certain plant poisons are readily absorbed through the skin. This is of some significance because during the training course TBAs were given instructions not to give any medicines orally in labour but were actually encouraged to use the abdominal applications of medicine as a substitute. It seemed to me that TBAs were unlikely to accept advice to give nothing at all in labour, and that the above advice, by exploiting a custom that already existed, was a reasonable way of maintaining their co-operation. Illustration 10 shows a TBA demonstrating the ritual way in which such medicine is massaged into the abdomen. However, in view of the findings it seems wise to advise that "Choosi", at least, should not be used in this way.

Tests of toxicity in the plants specimens obtained have as yet yielded no positive results, but are still continuing. However, one of the plants has been reported elsewhere to be toxic. Gilges (1955)³⁵ described the poisonous properties of species of *Indigofera* one of which, *Indigofera antunesiana* (No.23 Table 10), is amongst those in this study. Roots of a species of *Asparagus* were also present in a mixture found to have caused acute renal failure by Dukes et al (1969)³⁶. The toxic properties of *Asparagus* sp. are, however, doubtful. Nevertheless, there is no doubt of the potential danger that exists for patients of TBAs from medicines that are either oxytocic in character or are frankly poisonous. It seems clear that any TBA programme should include some study of the



ILLUSTRATION 10. A TBA DEMONSTRATING THE METHOD OF MASSAGING
ROOTS INTO THE ABDOMEN IN LABOUR

herbal medicines being used even if this only involves identifying the plant from its leaves, seeds or flowers, or using the vernacular term to identify it from a dictionary. For this purpose it would be an advantage if the trainers of TBAs had an easily available list of the local plants with known poisonous or oxytocic properties. Such a list has accordingly been prepared for Malawi, see Table 13.

As the number of poisonous plants is so great, it includes only those which have been recorded as being used as medicine by traditional doctor or TBAs in Central Africa.

<u>Scientific name</u>	<u>Vernacular name</u>	<u>Action</u>	<u>Reference</u>
ABRUS PRECATORIUS	Minimini Lo. Kantubwi Nk. Ulangawiu Y.	Poison (enteritis)	Gilges ³³ (1955)
ALBIZIA GUMMIFERA	Chikwani Ntangatanga, Ch. Mpumundo Y.	Oxytotic	Lipton ³¹ (1960)
ALBIZIA CHINENSIS	?	Oxytotic	Lipton ³¹ (1960)
ALBIZIA GRANDIBRACTEATA	?	Oxytotic	
ACHYRANTHES ASPERA	Ngwirise ndi kakose Ch.	Oxytotic	Lipton ³¹ (1960)
ASPARAGUS	Katsitsi Tsitsi-mzukwa Ch.	Toxicity doubtful	Dukes <u>et al</u> ³⁶ (1969)
BOSCIA SALICIFOLIA	Mfulatira Ch. Lusyunga Y.	Oxytotic	This thesis
CROTALARIA SP.	"various names"	General poison Renal toxicity	Dukes <u>et al</u> ³⁶ (1969)
INDIGO SP.	Denje Ch.	Poison	Gilges ³³ (1955)
INDIGOFERA	Mlimbikira Ch.	Poison	This thesis and Gilges ³³ (1955)
MARKAMIA ACUMINATA	Kamsongole Katsongole Ch.	Poison	Gilges ³³ (1955)
MARKHAMIA OBTUSIFOLIA	Msewa Mwanambewe Ch. Walamba Nk.		Gilges ³³ (1955)
PHYSOSTIGMA MESOPONTICUM	?	Poison	Gilges ³³ (1955)
SECURIDACA LONGEPEDUNCULATA	Bwazi Ch. Mwuluka Ch. Choosi Y.	Intravaginal poison	Gilges ³³ (1955)

Ch. = Chichewa

Y. = Yao

Nk. = Nkhonde

Lo. = Lomwe

Table 13 - Plants of harmful effects known to be used as traditional medicine in Central Africa.

As mentioned in the text the Curators of the Herbarium, Chancellor College, University of Malawi, identified the plant specimens. The laboratory investigation of the pharmacological effects of the specimens was conducted by Professor W.P. Leary and the staff of the Department of Clinical and Experimental Pharmacology of the University of Natal.

Otherwise the work described was my own. This included collection of the specimens from the TBAs, confirming their local name, and recording their use. I also pressed the leaf specimens and carried out initial identification whenever possible.

CHAPTER 4PREPARATORY STUDIES RELEVANT TO THE PLANNING OF
A TBA TRAINING PROGRAMME.

In planning a training for TBAs it becomes clear that further information was needed on certain subjects if the correct decisions were to be made. The three investigations included in this chapter were carried out for the purpose of providing some of this information. Those described in sections 1 & 2 were both completed before the pilot training programme described in Chapter 5 was begun and the results were used in planning it. The investigation described in sections 3 only took place during the pilot training programme.

Section 1 . Analysis of maternal deaths in the central region
of Malawi, in 1977.

The rationale on which TBA training was being proposed was that a large proportion of the community's obstetric problems was related to home delivery. This belief had arisen from experience in large referral hospitals, and it was thought that it should be tested from study of results in a defined geographical area. This prospective study of all the known maternal deaths in the Central Region of Malawi aimed to do this.

It was hoped that the results of the analysis would be of value in other ways as well. Firstly, the identification of the major causes of death, and those most commonly associated with attempted home delivery would be of assistance in the preparation of a syllabus for a TBA course. In a course where time would be limited, it seemed essential to concentrate the teaching on subjects which were of proven significance.

Secondly, the survey appeared to be likely to have value by providing a baseline from which to record changes in the frequency and causes of maternal mortality, and possibly a means of assessing the efficiency of a TBA programme if it was run on a nationwide basis.

There had never been any previous study of this nature in Malawi. Rendle-Short (1961)³⁷ had analysed the causes of 240 maternal deaths from January 1952 to June 1959 at Mulago Hospital in Uganda. But the time that had elapsed since then, the distance between the two countries and the fact that the deaths she studied were all from the main obstetric referral centre of Uganda, all seemed to suggest that the findings could not be relied upon as being relevant to the situation in Malawi.

Materials & Methods.

The survey was carried out in the Central Region of Malawi for which statistics for 1977 are given:

Population	2,122,000
Surface area	35,548 km ²
Population density	60 per km ²
Percentage of population in rural areas	93.5%
Adjusted crude birth rate - rural	53.3/1,000
- urban	60.6/1,000

Health services.

Health services are organised on a district basis and the medical facilities of the Central Region in 1977 were one central hospital (Kamusu Central Hospital), eight district hospitals, and six mission hospitals. There were 92 other maternity units, the majority being small units staffed by two midwives. The total number of maternity beds in the region was 1,249.

Home deliveries.

62.7% of the expected live births in the region in 1977 occurred outside the maternity services. TBAs carry out approximately 15% of these deliveries. The remainder occur in the pregnant woman's own home, where the labour is supervised by her mother, grandmother or other relative. TBAs, however, are often called in by these relatives to give assistance when problems arise.

There is no birth or death registration in Malawi and hospital maternal deaths are merely reported numerically. Questionnaire forms were sent in late 1976 to the doctors in charge of the district and mission hospitals in the region and to the midwives of the larger

maternity units. Forms were also sent to any maternity unit from where a maternal death was reported in the monthly returns. The completeness of the return of questionnaire forms was checked by scrutinising the monthly return form for all units. Information was requested on every death occurring in pregnancy or within 42 days of delivery, ectopic pregnancy or abortion during 1977. This is the definition of maternal mortality adopted by the Maternal Mortality Committee of the International Federation of Gynaecology and Obstetrics (FIGO) 1971. Every death heard of was to be reported even if it only took the form of second hand reporting of a village death. Permission for autopsy is almost always refused and in this series no post-mortem examination was carried out.

Definition of terms: Parity. Where parity is quoted it relates to the number of previous pregnancies of 28 weeks or more duration, no matter what the outcome, but the fatal pregnancy is not included.

Classification of cause of death. It was impossible in many cases to ascertain the underlying or primary cause of death, and so deaths have been classified according to the main cause of death. However, deaths related to operative procedures, and deaths related to anaesthesia have been assigned to the condition for which operation was performed. In the analysis of deaths due to particular causes, cases in which that cause also played a part although not being the main cause of death, are included. Some cases are therefore described more than once and included in more than one table.

Avoidable factor. A factor was considered to be avoidable if it could have been avoided with the existing medical facilities. The lack of a facility was also regarded as avoidable if it could be achieved by the

expenditure of a reasonable amount of money. The lack of widespread advanced laboratory facilities, or lack of expensive equipment were not considered as avoidable. Home delivery by itself was not regarded as an avoidable factor, if the patient apparently made normal efforts to reach hospital care when it was seen that she was ill.

Analysis.

There were 118 maternal deaths, 112 in hospital and six at home. It is likely that many unreported deaths occurred at home and mortality figures for the region must be grossly under-estimated. Table 14 shows mortality figures calculated in respect of hospital deaths as well as for the region.

Hospital figures.

Women delivered	42,481
Live births	42,533
Hospital maternal deaths	112 (4 abortion deaths)
Maternal mortality rate	2.63/1,000 live births

Regional figures (hospital and home)

Expected live births	114,103
Maternal deaths	118 (4 abortion deaths)
Maternal mortality rate	1.03/1,000 live births

Table 14 - Maternal mortality rate/1000 live births
(including deaths from abortions)

Central Region of Malawi.

Of the 118 deaths, information as to the cause of death was received in 116 and these are classified in Table 15.

Causes of death coded according to the international classification of diseases, 1975, revision.

<u>ICD No.</u>	<u>Cause of death</u>	<u>No.</u>
<u>I. Infectious and parasitic diseases</u>		
011	Pulmonary tuberculosis	2
<u>III. Endocrine, nutritional and metabolic diseases</u>		
260	Kwashiorkor	1
<u>VII. Diseases of the circulatory system</u>		
428	Heart failure	3
<u>VIII. Diseases of the respiratory system</u>		
481	Lobar pneumonia	1
485	Broncho-pneumonia	1
486	Pneumonia, unspecified	1
<u>XI. Complications of pregnancy, childbirth and the puerperium</u>		
633	Ectopic pregnancy	3
634	Spontaneous abortion	4
641.1	Placenta praevia	7
641.9	Ante-partum haemorrhage, unspecified	1
642.6	Eclampsia	1
646.7	Fulminating hepatitis or acute yellow atrophy in pregnancy	1
646.9	Unspecified complication of pregnancy	1
648.2	Anaemia, complicating pregnancy	7
652	Malpresentation of fetus (compound presentation)	1
653	Disproportion	3
660	Obstructed labour	8

660.4	Shoulder dystocia	1
665.1	Rupture of uterus	19
666.0	Post-partum haemorrhage with retained placenta	8
666.1	Other immediate post-partum haemorrhage	12
669.3	Acute renal failure following labour and delivery	2
669.9	Unspecified complications of delivery	2
670	Major puerperal infection (unspecified)	10
670	Puerperal tetanus	3
673.1	Amniotic fluid embolism	1
673.2	Puerperal pulmonary embolism	1
674	Cerebrovascular accident in pregnancy	1
674.9	Sudden death of unknown cause during the puerperium	3

E Code

E.858.9	Accidental poisoning by herbal medicines	7
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Table 15 - One hundred and sixteen cases of maternal deaths occurring in the Central Region of Malawi in 1977.

Of the 116 cases, the information in respect of seven cases from one hospital was received late and with only the cause of death supplied. Further analysis is therefore limited to 109 cases. Of these, four deaths were due to abortion, three to ectopic pregnancy and six others occurred before the end of the 28th week of gestation. The figures shown in Tables 16 and 17 show that in the majority of the deaths the maternity services had no influence on the pregnancy in the ante-natal period, nor in labour until a problem had already established itself during home delivery.

	No.	%
Attended ante-natal clinic	33	32
Never attended ante-natal clinic	42	41
Not known	28	27

Table 16 - Ante-natal attendance in 103 cases of maternal deaths after 16 weeks' gestation.

	No.	%
Delivered at home	21	22.8
Attempted but failed home delivery	28	30.4
Hospital labour and delivery	37	40.2
Full details not known	6	6.5

Table 17 - Home or hospital delivery in 92 cases of maternal death where labour occurred.

Seventeen patients were considered moribund on arrival at hospital, and four died at home without ever attending hospital.

In only one of these cases, that of fulminating hepatitis was the condition incurable.

Avoidable factors

Table 18 lists all the avoidable factors, dividing them into those caused by the patient or her home environment and those where the medical services were responsible.

Patient and home environment

Delay at home	38
Use of herbal medicine	15
Refused admission	1

Medical services

Shortage of blood	43
Medical staff factors	30
Nursing staff factors	26
(Staff shortage	1
Delay in carrying out an order	6
Failure to use cervicograph	3)
Ambulance service inadequate	17
Lack of telephone	12
Poor equipment or facilities	5

Table 18 - Avoidable factors in 109 maternal deaths.

In addition to the factors listed there were 12 other cases where actual or attempted home delivery took place and had a detrimental effect on the patient's condition. These patients could not be considered at fault however as normal efforts to reach hospital were

made when a problem occurred. Of the 38 cases of delay, the delay occurred during labour in 24 cases and in every case it seemed that death could have been avoided if the patient had come to hospital after failing to deliver within 12 hours. Shortage of blood was a factor in 43 cases and in 20 of these it appeared to be a vital factor. To demonstrate more clearly the effect of these factors, the three non-preventable deaths (heart disease - 2, fulminating hepatitis - 1), the 13 cases where there was no avoidable factor, and the five unexplained deaths were excluded. In the remaining 80 cases medical and nursing staff factors and patient factors were grouped according to whether they were causative of disease, that is, errors of commission actually worsening the patient's condition, or non-causative, that is, errors of omission having the effect of failing to help the patient to recover. Seventeen of the medical and nursing errors were considered to be causative, compared with 35 in the case of the patients. The patient factors considered to be causative were nearly all cases of abnormal delay at home either in the face of prolonged labour or haemorrhage and this emerges as the most important factor of all.

Table 19 shows the place of death in the 109 cases.

Home	6
Rural maternity unit	3
During transfer to district hospital	2
Mission hospital with doctor	23
District hospital	39
Central hospital	30

Table 19 - Place of death in 109 maternal deaths.

The main causes of death are now analysed separately, with an emphasis on the effect of actual or attempted home delivery and omitting details of hospital management.

Haemorrhage.

There were 28 cases where haemorrhage was the main cause of death, eight being of ante-partum haemorrhage, eight of retained placenta and twelve of post-partum haemorrhage.

Ante-partum haemorrhage (8 cases).

Seven of the cases were of placenta praevia, and one could not be classified. Delay by the patient was an avoidable factor in three cases. The haemoglobin of the latter two were 8.10% and 3.00% respectively.

Retained placenta (8 cases).

Six of these delivered at home. One died at home, and one was moribund on admission. Two delayed in coming to hospital, arriving 36 hours and 48 hours after delivery. Septicaemia occurred in both of these and was partly responsible for the outcome.

Post-partum haemorrhage (12 cases)

Attempted or actual home delivery played a role in five out of the 12 cases. Two women died at home, both of whom had had the opportunity of coming to hospital. Another patient who had delivered at home was moribund on arrival. Two others attempted home delivery. One had an obstructed labour with a dead fetus, but had a spontaneous delivery soon after admission and then died almost immediately with a post-partum haemorrhage. A patient who had spent 48 hours labouring at home, had the labour terminated by caesarean section. She had taken herbal medicine. Post-partum haemorrhage occurred but the main avoidable factor was that nursing staff delayed in reporting this and the post-operative shock.

Ruptured uterus.

Nineteen deaths were classified as being due to ruptured uterus, and ruptured uterus also occurred in a case where death was classified as being due to abortion. There were thus 20 deaths out of a total of 105 cases of ruptured uterus. Only 18 cases are available for analysis. None were due to rupture of a previous caesarean section scar. Parity was known in 16. One (6%) was a primigravida, seven (44%) were para 1-3, three (19%) were para 4-7, and five (31%) were para 8-10. Eight patients ruptured their uterus at home during attempted home delivery and four others because of the delay due to attempted home delivery. Only three were known to have taken herbal medicine. The length of labour at home was known approximately in six of these 12 cases, namely 36, 42, 48, 48, 72 and 96 hours.

Obstructed labour.

The cases described here include any where labour was allowed to

continue in the face of obstruction whether due to cephalo-pelvic disproportion, malpresentation, or any other cause. Cases of ruptured uterus were not included. There were 18 cases available for analysis. They had been classified as shown in Table 20.

Obstructed labour (all due to cephalo-pelvic disproportion)		Shoulder dystocia	1
	6	Sepsis of childbirth and puerperium	4
Disproportion	1		
Post-partum haemorrhage	2	Accidental poisoning by herbal medicines	2
Malpresentation of fetus (compound presentation)	1	Pulmonary embolism	1

Table 20 - Classification of cause of death in 18 cases of obstructed labour.

Sixteen patients attempted home delivery, one did not, and in one case this information is not recorded. The length of labour at home known approximately in 11 cases was 14 hrs. in one case, 24 hrs. in two, 36 hrs. in one, 48 hrs. in five, and over 48 hrs. in two. Two were moribund on arrival and five gave evidence of taking herbal medicine.

Delivery was achieved as shown in Table 21.

10 caesarean section	1 internal podalic version and breech extraction
3 vacuum extraction	1 assisted breech delivery
1 craniotomy	1 died undelivered
1 cleidotomy	

Table 21 - Method of delivery in 18 cases of obstructed labour.

The secondary causes of death in most cases were either obstetric or post-operative shock or sepsis, ileus or anaemia.

Poisoning by herbal medicine.

TBAs in Malawi give their patients herbal medicines during the ante-natal period, and while in labour. The medicines are mostly made from roots or bark. Seven patients were classified as dying from accidental poisoning by herbal medicine. The diagnosis in each case was made purely on a clinical basis. It was in each case the diagnosis or provisional diagnosis of the doctor who looked after the patient. Four cases occurred in mission hospitals and three in district hospitals. Six of the cases had enough in common for a clinical syndrome to emerge.

1. A patient aborted at home. She then became constipated and took local medicine to relieve this. Vomiting and severe diarrhoea followed. The diarrhoea stopped before admission but the vomiting continued. She was found to be dehydrated and to have albuminuria. Anuria occurred and she died of acute renal failure.
2. A para 5 was admitted at 28 weeks' gestation complaining of severe abdominal pains for two days. The abdomen was distended and there was albuminuria. The next day she had a spontaneous delivery of a live premature baby. The day after she was found to be in shock. Naso-gastric suction produced 1 litre of fluid initially and green and black gastric contents continued to be sucked up. In the last four hours of life there was complete anuria.
3. A primigravida was awaiting labour in a mission hospital. She became fevered, complained of generalised abdominal pain, and had diarrhoea. After four days of this, she went into labour and was delivered with minimal blood loss. However, she seemed weak, and on

questioning admitted to having taken 2 cupfuls of herbal medicine daily for two days. Gaseous abdominal distension was then noticed and within an hour of delivery she became shocked. Nasogastric suction was begun but she died 14 hours later. Bacterial shock might have explained this except that no source of infection was identified.

4. A para 8 began vomiting at home and took herbal medicine for seven days to treat this. The vomiting however continued. She then went into labour and after two days labouring at home came to hospital. She was in shock and continuously vomited a dark fluid said to be similar to the medicine she had been taking. Other herbal medicine was seen in the vagina and on the vulva. She was dehydrated and anaemic and there was intrauterine death. An internal version and breech extraction was carried out and a macerated fetus delivered. Decapitation would have been better. She died without coming out of shock.

5. A para 6 delivered a first twin at home and came to hospital the next day with a shoulder presentation of the second twin which was still alive. An easy caesarean section was performed. On the first post-operative day she started vomiting a brownish black fluid. On the second day she became pyrexial and died while still vomiting brownish blood-grained vomitus. A naso-gastric tube had not been passed. There was no proof that she had taken herbal medicine but the doctor's diagnosis was poisoning by herbal medicine.

6. A para 5 had a retained placenta after home delivery. Manual removal was performed the next day in hospital, On the 6th post-operative day she developed a pyrexia of 38°C but was otherwise well. While sitting outside talking she suddenly vomited green fluid and died.

The taking of herbal medicine was not proven, but it is known that it is commonly taken even by patients in hospital. Pulmonary embolism, the other possible diagnosis, is extremely rare in Malawi.

In all of these cases arguments could be put forward for other possible diagnoses but as stated accidental poisoning by herbal medicine was the diagnosis or provisional diagnosis of the doctors who looked after the patients, and in 4 of the six cases I was able to speak to the doctor concerned for confirmation. The clinical picture that emerges is one of a toxic effect on the gastro-intestinal tract, with vomiting in 5 cases and abdominal distension in the 6th, and diarrhoea in two. In three the large volume of vomitus was commented on, this together with its description as brown or black in colour is suggestive of an acute dilatation of the stomach. Renal failure was the terminal event in two.

The suspicion that some local medicines have a toxic and paralysing effect on the gastro-intestinal tract, in particular on the stomach is reinforced by the findings that of the seven other cases in the series where the taking of herbal medicine was admitted, but death was classified to another cause, vomiting was a feature of the condition in four, and two of these were said to be vomiting large amounts. Another developed paralytic ileus and two litres of fluid were removed when a naso-gastric tube was passed.

The history of another patient who took herbal medicine but whose death was classified to other causes is worth describing. A para 6 who had delivered twins at home came to hospital three weeks' later in terminal renal failure. Her vulva was badly excoriated by the use of local medicine and for want of another clear cause renal damage caused

by herbal medicine has to be suspected. An alkaloid contained in a herbal medicine caused a similar death from renal failure in a non-pregnant patient in the Kamuzu Central Hospital in 1978 and acute renal failure caused by herbal medicines in Central Africa has been documented by Dukes, Dukes, Gordon, Mynors, Heinberg & Davidson (1969)³⁶

Sepsis of childbirth and the puerperium.

Thirteen patients died of sepsis and in three others sepsis played a role, so that sixteen cases are analysed. Infection is almost invariable in ruptured uterus and these cases are not included.

There were three cases of puerperal tetanus all following home delivery. It is not clear as to whether the patients delayed in coming to hospital once symptoms appeared. Unhygienic home conditions alone are to blame. One was known not to have attended ante-natal clinic, and in two this information was not recorded. It cannot be said therefore as to whether routine tetanus immunisations at ante-natal clinics would have prevented these deaths. Of the other cases of sepsis, infection appeared to occur at home in eight cases, in hospital in three, and in two the source was not certain. The types of delivery are shown in Table 22.

Caesarean section	5
Destructive operation	2
Vacuum extraction	2
Spontaneous delivery at home	6
Spontaneous delivery and retained placenta at home	1

Table 22 - Method of delivery in 16 cases of maternal death complicated by sepsis, excluding ruptured uterus.

This shows that no patient who had a spontaneous delivery in a maternity unit died of sepsis. Only three who came straight to hospital at the onset of labour died of sepsis, and all had caesarean sections.

Anaemia.

Only cases of pre-existing anaemia are considered here, anaemia secondary to blood loss being excluded.

Six patients died of anaemia. The haemoglobin was known in four cases and was 3.2G%, 3.7G%, and in two patients 5.2G%. In four other patients anaemia was recorded as being a relevant factor. Of these ten, only three had attended ante-natal clinic. Three died in the ante-natal period before labour and seven after delivery. Two of those died suddenly immediately post-partum and one in the same way just after an abortion, emphasising the danger of the post-partum period in the very anaemic patient.

Abortion.

Four deaths were classified as being due to abortion. This is about 1 per 10,000 deliveries, which is a fairly low incidence. In one case the death was due to uterine rupture, this occurring during induction of a missed abortion. The three others were all spontaneous abortions. All three patients delayed before seeking medical treatment. Sepsis was well advanced in two before admission. One of these cases developed a faecal fistula after laparotomy and a further two laparotomies were carried out at a district hospital. Referral to the Central Hospital was indicated after the first operation, but it is not certain whether the patient would have accepted this advice. The last patient had been bleeding for 12 days before admission. Her Hb was 5.2G%.

There were six other deaths associated with early pregnancy or abortion but they were classified according to their main causes these

being: accidental poisoning by herbal medicines, broncho-pneumonia, heart failure, anaemia, pulmonary tuberculosis and unspecified complication of pregnancy.

Ectopic pregnancy.

There were three deaths, which gives a death rate of 0.7 per 10,000 hospital deliveries. One patient delayed for several days after the onset of symptoms and was very ill when she arrived at hospital. She proved to have the rare condition of an infected tubal pregnancy. Delay was the only avoidable factor.

Anaesthetic deaths.

Three deaths were associated with complications of anaesthesia. This gives an anaesthetic death rate of 0.7 per 10,000 hospital deliveries.

Caesarean section.

There were 21 deaths associated with, but not necessarily due to caesarean section. The percentage of hospital births carried out by caesarean section was 3.1%.

Associated and fortuitous deaths.

Using the classification suggested in "A Report on an Enquiry into Maternal Deaths in Scotland 1965-1971", all the cases already analysed can be classified as 'pregnancy deaths'. Seven of the remainder can be classified as 'associated deaths', namely two cases of pulmonary tuberculosis, one of kwashiorkor, three of heart failure and one of cerebrovascular accident in pregnancy. Finally the three cases of death due to pneumonia can be classified as 'fortuitous deaths'.

None of these and the few remaining miscellaneous 'pregnancy deaths' are discussed further as the numbers are small and the avoidable factors few.

Discussion.

Until death certification is made compulsory it will be impossible to analyse all the maternal deaths in any specified area of Malawi, and the exact proportion of them related to home delivery will not be known. It is suggested, however, that the very numbers reported in this survey are a matter of concern and themselves warrant the introduction of any public health measure which has a chance of improving the situation. Hopefully TBA training will prove to do so.

The survey has provided useful guidelines on ~~what~~ subjects deserve most attention in a TBA teaching syllabus. Teaching on the danger of prolonged labour at home, post-partum haemorrhage, ante-partum haemorrhage and hygiene in labour can be seen to be priorities. In contrast, eclampsia, abruptio-placentae, and even abortion are not numerically of much importance and could be given less attention. The number of deaths from eclampsia provides the one big difference in these results from those of Rendle-Short (1961)³⁷, there being 1 in 116 deaths in this series and 15 from eclampsia and toxæmia from 240 deaths in Mulago Hospital.

What should be said about herbal medicines during a TBA course? Strong advice against such medicines might cause lack of rapport with TBAs. Advice to give nothing orally in labour, but to substitute the local abdominal application of medicine, which some TBAs do anyway, is a reasonable compromise. They should, however, be told of the possibility of adverse effects from oral herbal medicine, one of which is vomiting. Advice to stop the use of medicines with this effect would be sound. Unfortunately TBAs often look upon vomiting and diarrhoea following the taking of medicine as evidence that the medicine is working

well. What can be learned from this report however is that where it is suspected that herbal medicine has been taken there should be early recourse to naso-gastric suction, and this should be persisted with until very normal volumes of gastric aspirate are being returned. This needs to be coupled with effective replacement of fluid and salt losses by intravenous drip. It was apparent in many cases reported in this series that this latter fact was not well appreciated and that replacement was inadequate.

Secondly, some herbal medicines have a toxic effect on the kidneys, and it is advisable to maintain accurate urine output records so that the correct management can be begun as soon as oliguria occurs.

This Analysis of Maternal Deaths has been accepted for publication in the East African Journal of Medicine, in an expanded version containing also a description of the management in hospital.

Section 2. Maternal height and the incidence of Caesarean Section.

It is known that there is an increased incidence of cephalo-pelvic disproportion in small women, and that this results in them having a higher rate of Caesarean section than women of normal height. For this reason it was planned to teach TBAs to measure their patients and encourage small women to go to a maternity clinic for their delivery. However, it was not certain what the critical height should be. To have chosen too low a figure would have meant an increased risk for a number of small women who would have attended the TBA for delivery. To have erred the other way might have meant that TBAs would be expected to refer such a large number of their patients that they would have been discouraged and have been likely to ignore the instructions. No survey of the heights of pregnant women had previously been conducted in Malawi to give guidance, and therefore the following investigation was conducted.

Methods.

The ante-natal cards of 300 consecutive patients attending at the non-paying clinic of the Kamuzu Central Hospital in 1977 were examined and the patients' heights recorded.

The case notes of patients delivering in the hospital in 1977 were examined to select 50 consecutive patients whose heights were known, delivering by Caesarean section for one of the following indications: cephalo-pelvic disproportion, contracted pelvis including elective repeat Caesarean sections for this reason, and prolonged labour. The heights of these patients were recorded.

Results.

The mean height of the ante-natal patients was 5 ft.0.8in. (154.4 cm.) and that of the patients delivered by Caesarean section was

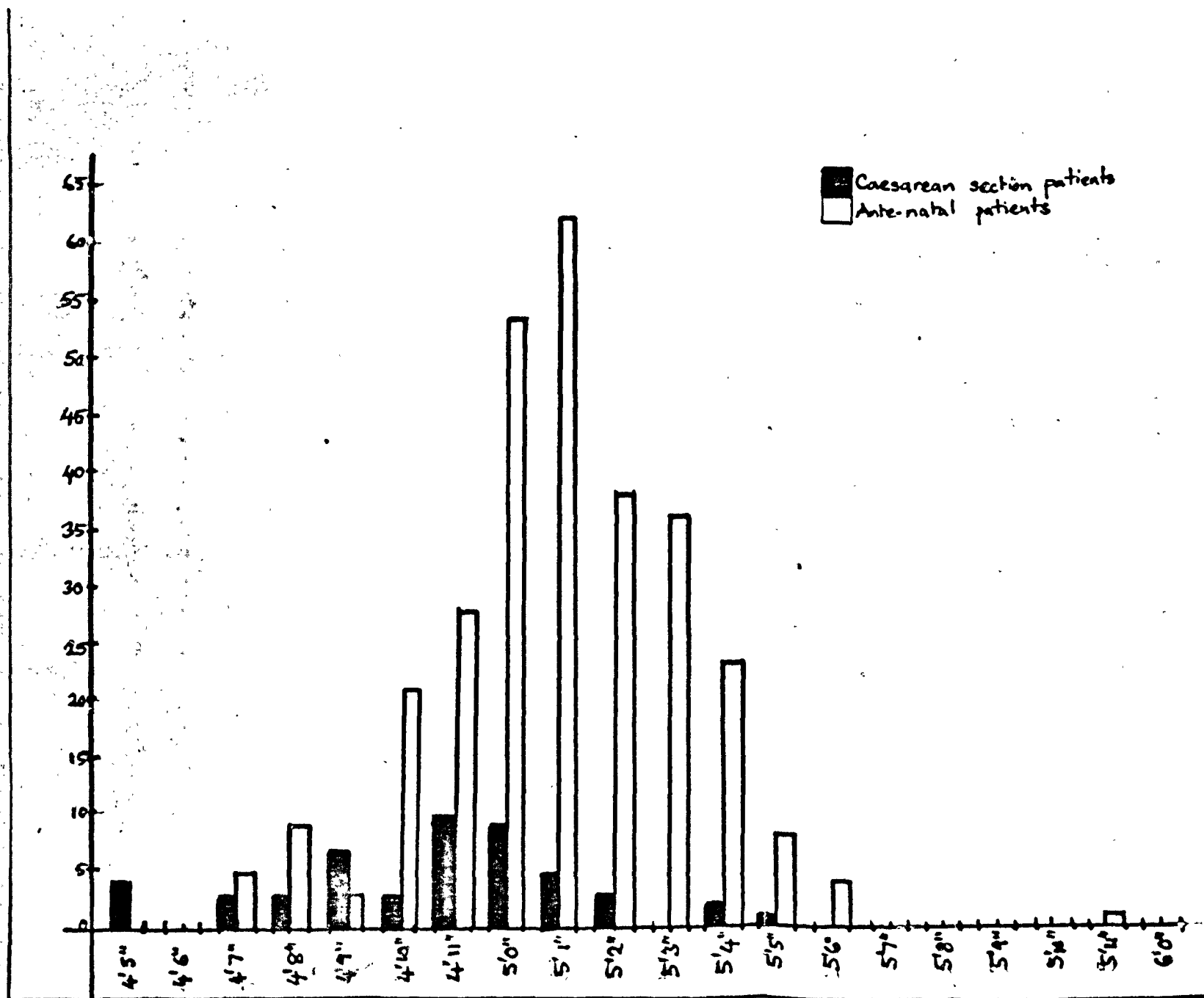


FIGURE 8. THE HEIGHTS OF ANTE-NATAL PATIENTS COMPARED WITH THE HEIGHTS OF PATIENTS UNDERGOING CAESAREAN SECTION FOR CEPHALO-PELVIC DISPROPORTION, CONTRACTED PELVIS AND PROLONGED LABOUR

4 ft. 10.6 ins. (148.8 cm). The difference is significant,
 $p < 0.001$.

The range of heights of both groups is shown in Figure 8.

The number and percentage of the patients in both groups that were under 4 ft. 10 ins. (147.3 cm.), 4 ft. 11 ins. (149.9 cm.), 5 ft 0 ins. (152.4 cm) and 5 ft. 1 in. (154.9 cm.) are shown in Table 23.

	<u>300</u>		<u>50</u>	
	<u>Ante-natal</u>		<u>Caesarean Section</u>	
	<u>No.</u>	<u>%age.</u>	<u>No.</u>	<u>%age.</u>
Under 5 ft. 1 in. (154.9 cm.)	128	42.7	39	78
Under 5 ft. 0 in. (152.4 cm.)	75	25	30	60
Under 4 ft. 11 in. (149.9 cm.)	47	15.7	20	40
Under 4 ft. 10 in. (147.3 cm.)	26	8.7	17	34

Table 23. The number and percentage of ante-natal and Caesarean section patients whose heights fall below certain figures.

Discussion.

Paying patients who attend another clinic were excluded from this study. Being generally of a higher socio-economic status they would probably have had a higher average height, but they represented only 1 : 14 of the deliveries in the hospital and only 1 : 102 in the district so their exclusion must have made little difference to the results.

The ante-natal patients whose heights were recorded may not be representative of the population as a whole, nor of the patients who attend TBAs, whose management the results were intended to guide. They were, however, the most readily accessible group to use for this purpose.

To have selected a group of patients who had delivered in hospital and looked at the outcome in relation to height would have been the best approach, and would have given the additional information of the chance of needing a Caesarean section for the indications mentioned for women of different heights. However, the heights of many patients who had not attended the hospital ante-natal clinic would not have been known and so the group would not have been much more representative of the population of pregnant women. Likewise, some Caesarean section patients could not be included in this series because their height was not known.

Bearing these deficiencies in mind the results do seem to provide data from which a decision can be made. If all patients under 5 ft. (152.4 cm.) were to be referred, the TBAs would have to send approximately 25% of their patients for delivery in hospital, but at the same time these would contain approximately 60% of the patients from ~~their~~ clientele who would require Caesarean section for reasons connected with a small pelvis. If they sent patients of under 4 ft. 11 in. (149.9 cm.), the figures would be 15.7% and 40% respectively. As it seemed unlikely that the TBA would accept the advice to send 25% of her patients to hospital it was considered that under 4 ft. 11 ins. (149.9 cm.) was the best compromise.

Section 3. The TBA and routine drug prophylaxis. A
haematological study.

Introduction.

One problem which has not been resolved, and on which no work has been reported from elsewhere, is whether it is necessary or desirable for the TBA to be supplied with drugs to dispense to her patients in the ante-natal period.

The question of whether it is necessary to dispense iron and folic acid routinely at ante-natal clinics is open to argument. However, it is not within the scope of this thesis to enter into a full review of the literature on this subject.

Lawson (1971)³⁸ states the generally accepted view that iron medication is usually required in the tropics, particularly where hookworm infestation is heavy. Also, that in areas of endemic malaria, prophylactic anti-malarials are necessary to prevent anaemia from haemolysis and that, similarly, supplementation with folic acid is usually indicated. In the absence of a local study on the aetiology of pregnancy anaemia and in the face of both hookworm and endemic malaria, it has been the practice in Malawi to follow such teaching.

However, although this may be deemed an acceptable routine for maternity clinics, it cannot be assumed thereby that it should be practised by TBAs. There would be considerable danger of incorrect therapy being given, and the cost of maintaining supplies would be high.

This investigation which was carried out with the help of Dr. R.A. Tozer, Pathologist, Queen Elizabeth Central Hospital, Blantyre, Malawi, was therefore planned to compare the haematological findings in TBA and ante-natal clinic patients. From this we hoped to determine

whether the patients of TBAs are at a significant disadvantage in not receiving the iron, folic acid and anti-malarial therapy as routinely dispensed at ante-natal clinics in Malawi.

Methods.

Single blood samples were taken between October 1978 and February 1979 by me from patients in the Lilongwe District either awaiting delivery or attending ante-natally at the home of one of three TBAs, and from similar patients at the five maternity clinics closest to the homes of these TBAs. The ante-natal and delivery fees charged by the TBAs were similar to the clinic fees. Neither the TBAs nor the staff of the maternity clinics were warned of the visit. Blood was taken from the first patients examined who were of 32 weeks' gestation or over. Those with twin pregnancies were excluded. Splenomegaly was recorded when present.

TBA patients were asked if they had also attended a maternity clinic and any medication received there was recorded. Maternity clinic patients were asked if they had been referred from a TBA and their medication also recorded.

Twenty ml. of venous blood was taken from each patient. Haemoglobin microhaematocrit PCV, thick and thin films were all done the same day. Serum was stored deep frozen until sent, usually within two weeks, to the South African Institute for Medical Research, Johannesburg, for serum iron, folate and B₁₂ estimation.

Results.

Twenty-seven TBA patients and 38 clinic patients were examined and compared for age (in many cases estimated from appearance and circumstantial facts), parity and gestation. The distribution in both groups was similar. The mean values which are also similar are

recorded in Table 24.

	Total no.	Mean age in years	Mean parity	Mean gestation in weeks
TBA patients	27	24.48	3.27	35.86
Clinic patients	38	22.92	2.92	36.44

Table 24. Age, parity and gestation of TBA and clinic patients.

No clinic patient had attended or been referred to a clinic by a TBA. This could have resulted in a biased sample if a patient had been referred on grounds of anaemia. All patients lived in rural areas and there was no apparent difference in the socio-economic status of the two groups.

Patients prescribed prophylactic medication are detailed in Table 25.

	Total no.	On iron		On folate		On anti- malarial	
		Yes	No	Yes	No	Yes	No
TBA patients	27	5(5)*	22(20)	0	27(26)	5	22
Clinic patients	38	34(30)	4(4)	22(21)	16(13)	32	6

* The figures in brackets are the numbers who had serum levels estimated. All except four clinic patients and one TBA patient had serum B₁₂ levels estimated.

Table 25. Prophylactic medication given in pregnancy to TBA and clinic patients.

Patients were considered to be haematologically normal if the following criteria were satisfied: Hb $\geq$ 10 g%; serum iron $\geq$ 11 μ mol/litre; serum folate $\geq$ 5 μ g/litre; serum B₁₂ $\geq$ 400 pg/ml; no malaria parasites (MPs) on thick or thin films; no other significant abnormality on thin film. Those who fell below these levels are summarised in Table 26.

	Total no.	Hb 10g%	Serum iron 11 μ mol /litre	Serum folate 5 μ g /litre	Serum B ₁₂ 400 pg /ml	MPs+	Other sig- nificant abnormal- ity on thin film microscopy
TBA patients	27	5	3	10	2	2	0
Clinic patients	38	5	6	5	3	2	0
Total no.	65	10	9	15	5	4	0

Table 26. Summary of haematological abnormalities in TBA and clinic patients.

The final table relates the abnormal haematological findings to prophylactic therapy. See Table 27.

	TBA patients	Clinic patients
Hb < 10g%	5	5
Received any or all of, iron, folate, antimalarials	0	5
MPs+	2	2
Received anti- malarials	0	2
Serum iron < 11 μ mol/litre	3	6
Received iron	1	3
Serum folate < 5 μ g/litre	10	5
Received folate	0	1
Serum B ₁₂ < 400 pg/ml	2	3
Received vit. B ₁₂	0	0

Table 27. Prophylaxis related to haematological abnormalities in TBA and Clinic patients.

Discussion.

This small survey was based on circumstances as we found them in the field. They were not always ideal. The standard procedures in maternity clinics in Malawi is to prescribe prophylactic iron, (180 mg.) and folic acid (750 mcg) daily given in divided doses, and chloroquine 300 mg. base weekly. As Table 25 shows, this is not always done, due

usually, to irregular supplies. Even when supplies are available, it is not always certain that the patient takes her medicine. Two patients allegedly on anti-malarial prophylaxis nevertheless had a parasitaemia and of nine patients with a low serum iron, four were apparently taking oral iron. But as we are only trying to compare the effect of one set of working conditions with another it is not relevant to try to show what actual medication was received. The findings that haematological abnormalities occurred in approximately the same proportion of TBA patients as clinic patients (Table 26) and that prophylactic medication did not alter the incidence (Table 27) are therefore valid.

Serum folate levels are the only exception to the latter statement. These are not the best indication of folate status in pregnancy, but it is interesting that of 22 patients prescribed folate supplements, only one had a slightly low serum level. In contrast, of 43 not receiving folate, 10 had a low level. Also clinic patients had significantly higher serum folate levels, $p \ll 0.001$ than the TBA patients. But it was not the purpose of this investigation to show such an association. It was clinically significant findings or differences that were sought and as none of the patients had a serum folate level of less than $3 \mu\text{g/litre}$, which we believe to be the critical level, or a peripheral film suggestive of megaloblastosis, it can be said that no difference of significance was found between the two groups. It can therefore merely be concluded that the patients on medication had significantly higher serum folate levels, but that it was not possible to show whether this was of benefit in preventing anaemia. However as in most populations, only 1 to 2% of pregnant women develop megaloblastic anaemia, the small sample studied was unlikely to contain a significant number with overt

megaloblastosis. These findings on megaloblastic anaemia must therefore be regarded as preliminary only.

No conclusion can be drawn from the vitamin B₁₂ results. In any case, Whitfield (1966)³⁹ has shown that low vitamin B₁₂ levels do not represent true tissue deficiency of the vitamin but are a secondary result of folate deficiency. The findings that the patients with a low vitamin B₁₂ levels all had serum folate levels of 6.0 µg/litre or less may result from this association between the two factors.

Of the 10 patients with anaemia, i.e. Hb below 10 g% 7 had a Hb above 9 g% and the lowest of the remaining three, two of whom were clinic patients, was 7.8 g%. This patient had a grade 1 splenomegaly. Four other patients had splenomegaly but none were anaemic although one had a parasitaemia.

In both groups of patients none had a seriously low Hb, none had a very low serum folate of B₁₂. With one exception, none had a very low serum iron (< 8 µmol/litre) unless she was also anaemic.

It is therefore concluded that under present conditions in the area of Malawi studied, TBA patients are not at a serious disadvantage haematologically compared with clinic patients. It seems likely that this will be true for many other areas and countries as well. It is suggested that, rather than involve the TBAs in storing and dispensing iron and folic acid tablets with all the attendant hazards that this involves in a rural community, it would be better to teach them simple clinical aids to the recognition of anaemia and to refer anaemic patients to the maternity clinics.

Acknowledgements.

The assistance given by the staff of the South African Institute for Medical Research in carrying out the serum level estimations is acknowledged.

My role in this investigation was as follows. I initiated the investigation and drew up the plans. I personally took all the blood specimens, and examined the patients both at the TBAs' and ante-natal clinics. The haemoglobin, PCV, and thick and thin films were carried out in the laboratory of the Kamuzu Central Hospital and I arranged this and at times assisted with the preparation of the films.

Dr. Tozer's role was to arrange the despatch of the serum to Johannesburg, and to carry out microscopic examination of the blood films.

The final plans for the investigation were decided in consultation with Dr. Tozer. The results were analysed together, and the original draft of the report prepared together. The final copy of the report was prepared by me.

A paper on the subject has been presented for publication with me as first author.

CHAPTER 5

A Pilot training programme for TBAs

Section 1

Introduction

A pilot training programme for a number of TBAs was planned with the intention that its effectiveness and cost should be recorded and analysed. It was intended that this would be of assistance in the development of a national training programme. The literature referring to TBA training will first be reviewed with some comments on its relevance to the situation in Malawi. In the second part of this introduction a review of educational methods for illiterate people is presented.

1.1. Literature referring to TBA training.

Work in other countries.

The results of two questionnaires carried out on behalf of WHO give an idea of the extent of TBA training throughout the world. Verderese and Turnbull (1975)⁴⁰ report that of 64 countries that replied to a question about TBA training, 24 (37.5%) had an existing training programme, as against 40 (62.5%) that had none. Of the 24 countries conducting training programmes (data is given for 20), nine are listed as requiring either an ability to read and write or an elementary school certificate for admission to the programme and five of these show that women of 21 or under, as well as older women, are accepted for training. These facts suggest that these countries are selecting younger village women who could not strictly be called TBAs. Only two of the countries were from Africa, and the course in Togo which was for 18-20 year-old girls with elementary school certificate and lasted 18-24 months could certainly not be described as a course for TBAs. The Central African

Republic with a 3-week course for practising TBAs obviously is a genuine TBA course.

Another questionnaire completed by 18 countries in Africa was reported by Imoagne (1976)⁴¹. In this case seven, or 39%, of the countries contacted reported training schemes. There was considerable variety in teaching methods. In Ghana, for example, TBAs were brought together once every two weeks for eight sessions, whereas in Sierra Leone a 3-week course was run. Neumann, Ampofo, Nicholas, Ofosu-Amash and Wurapa (1974)⁴² listed details of training for several eastern countries showing that India, Indonesia, Malaysia, West Pakistan, Philippines and Thailand have trained considerable numbers of TBAs. Much emphasis has been put on their role in promoting family planning in those countries. Dwivedi and Rai (1971)⁴³ describe the dais (TBAs of India), but their role, social position, and practices are so different to that of the Malawian TBA that it cannot be certain whether experience in India would be of relevance in the planning of a programme in Africa, except in general terms. In fact, the central point of their article concerning training methods did seem relevant and is quoted later.

Reports of TBA programmes in Africa are few. Village midwives have been trained in the Sudan since 1921, and the history and present status of this unique training programme was described by Bayoumi (1976)⁴⁴. This began as a simple course for established TBAs but over the years has developed so that now a 9-month course is given, for women aged 18-25 years of age. The trained village midwife earns her title and can measure blood pressure, carry out simple urine tests and dispenses simple medicines. Despite the sophistication of the programme many of the training methods do have relevance to a TBA programme.

The remaining African literature on TBAs comes from Ghana. Neumann et al (1974)⁴⁵ published a list of guidelines which they, in the Danfa Rural Health and Family Planning Project, were intending to follow in an investigation of the work of TBAs, and this was very similar to what had already been carried out by me in Malawi. They also similarly planned a training programme and planned to evaluate it. In another publication from the Danfa project, Nicholas, Ampofo, Osoe-Amaah, Asante and Neumann (1976)⁴⁶ described the characteristics of Ghanaian TBAs. There were close resemblances to the TBAs in Malawi except that in Ghana 48% were men, and that there were clearly many more TBAs, the ratio of TBAs to population being 1 to 137. Also in Ghana the TBA does fewer deliveries, males averaging 8.5 and females 4.4 deliveries per year. These differences will be likely to result in different techniques of training and supervision being appropriate.

Some further information to be gained from these and other sources on particular points are mentioned below.

Organisation and Plans.

Verderese and Turnbull (1975)⁴⁷ make specific proposals in great detail but their report is so couched in the language of the professional planner that it is difficult to understand and make use of it. Ampofo, Nicholas, and Amonoo-Acquah (1975)⁴⁸ quoted the suggested protocol for study of traditional midwives in the Danfa Project, but most useful of all references was the simple proposals made from the joint WHO/Unicef meeting in Brazzaville (1973)⁹. Under the headings organisation purpose, objectives, supervision, operation, participating agencies and evaluation, this sets down a straightforward plan of action.

Cultural factors.

The training of TBAs involves the intrusion of people and ideas from one culture into another. The more the trainers know of, and understand about, the culture of the villages and TBAs with whom they are working the more likely they are to succeed. Cultural practices in connection with pregnancy and birth, in rural tropical areas of the world are described by Read (1966)⁴⁹, and she contrasts the secluded home delivery accompanied by the support of near relatives with the anxiety-producing situation of the strange and impersonal hospital delivery. Kelly (1956)⁵⁰, an anthropologist, in writing about midwifery training in Mexico, emphasises the need to define the cultural background, analyse it and apply the findings in planning the training. Three main points emerged. Firstly, there should be avoidance of unnecessary conflict with existing cultural patterns and this should be so not only in a TBA programme, but probably in hospital practice as well. This would enable the TBA and patient to view the hospital facilities with more tolerance. Secondly, elements of the local culture which can be seen to be beneficial should be exploited. Thirdly, the practices of the local midwives which are positively harmful and which do need combating should be delineated.

Kelly also recognised one particular cultural habit which I think of great significance; that is the tendency of the TBA to await God's will in difficult cases in the belief that the outcome is predestined. This has to be combated and the TBA enabled to recognise cases which are beyond her capacity, and which should be referred to a doctor. Neumann et al (1974)⁵¹ mention how the proper handling of the placenta and the way of cutting or dressing the cord may be

important to the patient, and the fact that certain foods and herbs may be mandatory for her before and after delivery. Clearly there should be no interference with local practices of this nature unless there are very good reasons.

Legal aspects of TBA practice.

The legal position of TBAs throughout the world is confused. In Africa only six out of 18 countries sampled recognised TBAs (Imoagene, 1976)⁵², and from 64 countries throughout the world Verderese and Turnbull (1975)⁵³ report 26 or 40.6% giving legal recognition or some form of registration in selected health units, and six different forms of this were recognisable.

Syllabus of a training course.

The details of the syllabus for training TBAs should be determined with regard to the common obstetrical problems of the locality concerned.

The general principles and subjects to be included can be gleaned from reading 'Training and Supervision of Traditional Birth Attendants', a publication of the WHO Regional Office for Africa (1976)⁵⁴. Verderese and Turnbull (1975)⁵⁵ published a syllabus twenty pages in length and including such subjects as auscultation of fetal heart tones, performing dipstick urine testing, and identifying the side effects of contraceptives. These and other suggested topics appear to me to be quite beyond the capability of a TBA, and the syllabus in general to need much simplification. The syllabus which was designed for use in Malawi is shown in Appendix I.

The status of the TBA.

The TBA's status in society has been the subject of some writing, with attention paid to three aspects. Firstly, the TBA's traditional

status before training; secondly, the way in which the community consider a training programme to alter her status; and thirdly, the effect that the trainer's attitude has on her status.

Kelly (1956)⁵⁰ points out that the TBA's response to training and her ability to give advice that will be accepted by her clientele may vary with her position in the community. She believes that the social position of the TBA might be a consideration that could influence the decision as to whether a TBA programme should be developed in a particular area or not. Neumann et al (1974)⁵⁶ concurs with this view and feel that some problems in TBA programmes may have resulted from insufficient studies of their influence and social status. In Malawi the situation in this respect gives little cause for worry, as TBAs are highly regarded.

On the subject of the community's attitude to a training programme, Dwivedi and Rai (1971)⁴³ report their belief that the failure of a TBA training programme in India was partly due to the community being unaware of the value of the programme, and quote some families as even refusing to accept the services of a trained TBA. This is a useful reminder that the views of the community must be considered and even intentionally influenced if necessary.

Can the TBA's trainers and health workers influence her status? Can improved status give improved results? It seems that both these questions need positive answers. Dwivedi and Rai (1971)⁴³ obtained better results, not only by taking regard of the community, but after changing their attitude, as implicit in their statement "our aim was not to reduce the dai to the role of an employee, but to develop in her the pride of being a dignified worker". It is only possible for staff

to act in that way towards TBAs if they themselves wholeheartedly believe in the programme, and it may be necessary to spend time convincing not only would-be trainers but other staff who will come in contact with them. This may not be easy. Neumann et al (1974)⁵⁷ quoting from another source, report researchers in Pakistan having difficulties in convincing some government health service personnel (mainly obstetricians and gynaecologists) of the potential benefit of utilising TBAs.

Read (1966)⁵⁸ writes of how prestige may be acquired in traditional societies, and it seems clear from what she says that the new association which trained TBAs form with educated people and urban society through their training is bound to increase their prestige. It seems to me much more likely to have such an effect if TBA supervisors act in a friendly manner when visiting a TBA, praising her efforts in front of others and acting like a colleague, rather than a supervisor.

Incentives.

The question of whether or not TBAs should be given any incentive to encourage them to participate in training schemes needs careful thought. Unwanted precedents have to be avoided. Verderese and Turnbull (1975)⁵⁹ list a number of possible incentives including simple midwifery kits, uniforms, certificates of attendance, cash incentives and even a modest salary. However, they had no information as to the impact such incentives had had on the performance of TBAs. In the unsuccessful programme described by Dwivedi and Rai (1971)⁴³ TBAs had received a certificate, sometimes a delivery kit and even a stipend. But it was a change in attitude of the training staff, plus other educational efforts aimed at the community which achieved success in the end, and not extra incentives. This still tells us however very

little about incentives and their efficacy, and it has to be concluded that it is a virtually unexplored subject. Some studies of the effect of incentives on the TBAs performance in family planning work have been carried out and will be mentioned later.

Evaluation

Surprisingly, another aspect of TBA training programmes which has been quite ignored is that of evaluation of the results. Neumann et al (1974)⁶⁰ mention the lack of information on this subject, and in a search of the literature I was unable to find any report giving meaningful results such as alteration of perinatal or maternal mortality rates, the number of deliveries conducted before or after training, or the number of referrals made by the TBAs.

Family planning.

In Asia, TBA training programmes have included instruction in the subject of family planning or child-spacing. Rogers and Solomon (1975)⁶¹ reviewed the family planning activities of trained TBAs in India, Pakistan, Indonesia, Malaysia, Phillipines and Thailand. The TBAs' only functions were to recruit women for the national health service programme and in some countries to follow up their clients to encourage continuation. The verdict on their potential in this field was one of guarded optimism. It is of interest though that cash incentives were reported⁶² as resulting in improved performance, although in one reported case only temporarily.

The role of TBAs in family planning in four of the countries just mentioned, namely, Indonesia, Malaysia, Phillipines and Thailand, was fully documented in a publication edited by Peng, Keovichit and MacIntyre (1974)⁶³, reporting on the proceedings of an international

seminar. Problems identified in more than one country were: quick waning of enthusiasm resulting in reduced recruiting within a short time of the training course; and the physical inability of older TBAs to carry out the village visiting required of them in this role. There may be a lesson to be learned from this that those TBAs doing domiciliary deliveries might find their energies easily exhausted if attendance at a training programme increased the amount of work they were called upon to do. It is of interest to note again on the subject of incentives, that in one place where no incentive was paid, there were better results than in another where there was a cash incentive.

In comparison with India there has been very little use made of TBAs in family planning work in Africa. Imoagene (1976)⁶⁴, in his survey of TBA training programmes in 18 African countries, mentions only Liberia and Ghana as using TBAs as family planning motivators. African TBAs may have useful potential for such work, however, Nicholas et al (1976)⁶⁵ finding that TBAs in Ghana had more interest in promoting family planning than one might have expected. Half of the TBAs interviewed had advised women to postpone pregnancy and a surprising number of them had knowledge of the standard contraceptive measures available.

1.2. Educational methods for illiterate people.

There is a general awareness these days that the task of teaching people of traditional societies, especially if they are also illiterate, is not easy. It is certain that teaching methods as used in schools and colleges is inefficient in this context if not totally ineffective.

Another fact generally recognised is that the acceptance of new practices in medical treatment does not as a rule involve a change of ideas about the causes of illness. Read (1966)⁶⁶ touches on this subject and quotes the opinion of a North Indian Health Education Bureau as follows :

"One can scarcely expect village people to change their whole cosmology simply to accord with the outlook of a modern doctor or public health worker We shall have to accept the inevitable fact that our techniques of cure and prevention will be accepted irrationally".

It was an awareness that we were likely to encounter this sort of difficulty in the TBA programme that stimulated me to make some study of communications and education appropriate to traditional peoples.

In this field the writings and thoughts of Paulo Friere are first to come to mind. But it was in an account of the use of his methods in nutrition education by Therese Drummond (1971)⁶⁷ that practical advice was best obtained. Friere sees a didactic form of education as almost immoral and has said⁶⁸ : "a situation in which some men prevent others from engaging in the process of enquiry is one of violence. The means used are not important: to alienate men from their own decisions-making is to change them into objects". From this it follows that he

advocates education by problem-posing, and by dialogue of a group with a teacher, so that the people themselves seek out the reality of the situation, and finally reach an awareness of what action they as a community should do to rectify the problem. Friere's methods includes the identification of what he calls limit situations in the community's life: that is, situations which they cannot resolve and hence have become fatalistic about. By facing them with an illustration of this and encouraging group interaction the people themselves can achieve a new awareness of their situation, and realise that they could do something about it. This had obvious applicability to our wish to make TBAs aware that the bad results of their methods of midwifery were not inevitable. It seemed clear that if they could by this method reach the conclusion that co-operation with us by referring difficult cases would be beneficial to their community, then we would indeed have been successful.

From Friere's point of view training of TBAs can be seen to be more than simply the act of teaching a few elderly women about techniques of midwifery. Carried out without due thought it could constitute a cultural invasion, which he points out is more likely to end in domination of the people rather than their liberation. In contrast, he recommends cultural synthesis which can be achieved by the use of dialogue and an attitude of sharing and learning with the people. These are concepts that are a little difficult to grasp and put into action but they did influence the approach taken to the training programme.

Despite having a commitment to the above approach it seemed inevitable that some of the TBAs' deeply held cultural beliefs would be challenged. In their book "Communication of Innovations", Rogers and

Shoemaker (1971)⁶⁹ describe other innovations attempted in developing countries, and make it plain that this would be so. They also show⁷⁰ that the rate of adoption of an innovation is related to its compatability with the cultural beliefs of the society, thus emphasising the need to examine the content of the programme carefully from this point of view. They describe some further factors which can influence the chances of success, one of which⁷¹ is the extent to which the client (in our case, the TBA) sees the change agent (the trainer) as being similar to, or homophilous with, themselves. The more their beliefs, values, education and social status are different, and the more heterophilous the trainer is, the less likely they are to accept the teaching they receive. The ideal TBA trainer would thus be a midwife who had had a village background, was at least as old as the TBAs themselves, and was herself a mother. Empathy, defined as the ability of an individual to project herself into the role of another, was clearly another valuable asset to be looked for in a potential trainer of TBAs. Rogers and Shoemaker make a generalisation⁷². "Change agent success is positively related to his client orientation, rather than to change agency orientation". Putting this into practice the trainer should see things from the TBA's point of view, regarding herself as a friend of the TBA's with the role of helping her overcome difficulties, rather than as a hospital worker intent on changing the TBA's practice.

The nature of our teaching and the way in which we handled our material was of relevance too. The degree to which the TBAs perceived the new ideas as being of relative advantage⁷³ to them would effect the extent to which they adopted them. Thus, for example, it was determined to project the idea of referring patients to hospital when difficulties

arose in labour, in a way which showed what advantages it would have to the TBA, and how she would thereafter always have a happy successful outcome, while we relieved her of the trauma and upset of failure.

The complexity⁷⁴ or the degree to which new ideas are perceived as difficult to understand and use also affects their rate of adoption, and it was necessary to ensure that unnecessary details were omitted from the teaching programme.

Andreas Fuglesang (1973)⁷⁵, another writer on this subject, stresses, like the others, the need for communication to be an exchange of information, conducted as a dialogue and on a basis of equality. In his book "Applied Communications in Developing Countries" he vividly portrays the nature of concrete thinking⁷⁶ which is common among illiterates, and the difficulties this poses for the field worker. He, more than the other writers, is able to offer some practical tools which help to solve the communication problem. He points out that the stage in the development of concepts that a person has reached will determine his ability to understand new teaching, and that certain basic concepts are often not developed in illiterate people. Thus they have difficulty over the concept of conservation of mass or quantity, so that if a particular object or quantity of fluid changes its shape, they are unable to see that its mass or volume has remained unchanged. They are likely to say that it has become either smaller or bigger. It can be seen that this would cause considerable difficulty when TBAs were taught about ante-partum or post-partum haemorrhage where the volume of blood lost has great significance. They have a similar problem in conceptualising area, which one can readily imagine might make the understanding of cephalo-pelvic disproportion difficult. Even the concept

of a straight line can be shown by simple testing to be something new to them, and it thus is not suprising that the significance of a line being either vertical or horizontal is beyond their comprehension. How then could TBAs be taught to measure the height of their ante-natal patients? That the illiterate has a limited ability to count is an observation easily made by anyone working with them, but Fuglesang makes the point that this is linked again to their failure to understand the concept of conservation of numbers, that is, that the number of the objects in a group remains the same regardless of how they are split up or moved about.

It is clear that the possession of such concepts is essential to the proper understanding of any form of extension programme be it in agriculture, nutrition or midwifery, and that the trainer or expert must allot some sessions in his programme to the **structuring** of concepts. The same tests with which the lack of these concepts can be demonstrated are one means of doing this, as the development of concepts tends to occur as a result of the brain being stimulated by exposure to related problems.

Yet another problem found amongst illiterate people, especially those hailing from a dull rural environment where there has been little stimulation, is pictorial illiteracy⁷⁷. It makes sense that the ability to learn to read pictures is not inherent in us, but learned through practice. The characteristics of drawings and even photographs that cause confusion need not be elaborated, but Fuglesang's conclusion is important. He shows that of all forms of illustration "block out" photographs⁷⁸, that is, photographs with all non-essential details eliminated, are the most easily understood, and that if visual aids are

found to be essential in a training programme, then they should be of this form.

Section 2 - Materials & Methods - Details of the pilot training programme.

Between January and May 1978, fifteen TBAs from Lilongwe District were given a course of training at the Kamuzu Central Hospital, Lilongwe. They were taught in four groups of three or four, and each course lasted two weeks. They were given free transport to and from the course and free board and lodgings during the course. No cash incentive was paid, but they were supplied with some equipment at the end of the course.

The teaching was held in a simple room close to, but isolated from, the hospital's maternity unit. Apart from chairs, the room was furnished only with the items that a TBA's delivery room usually contains - a bed and a simple cupboard. The equipment that the TBA was to be supplied with at the end of the course was kept in the room and frequently handled and used during the course so that they became familiar objects.

Following the residential course, each TBA was visited at home on three occasions during the next nine months by one or more of the people who had trained them. Further training was given at these visits. A fourth visit was made between eight and nine months after the residential course for the purpose of assessing the results.

Selection of TBAs for training.

The following criteria were used.

The TBA should have her own delivery unit, and not simply be doing domiciliary deliveries.

She should do at least six deliveries per month.

It was also arranged that those attending should be from locations fairly evenly distributed throughout the district.



ILLUSTRATION 11. TBAs AND TRAINERS AT PILOT PROGRAMME

Selection and preparation of trainers.

Four midwives were selected as trainers, two of whom were also public health nurses. The extent to which they were homophilous with TBAs was considered when making the choice, but motivation and availability for the whole project also played a part in the making of the final choice. I acted as co-ordinator and leader rather than a trainer.

Teaching methods.

To prepare the trainers for their task a series of meetings were held in the two months before the course. The background to the course was explained to them, and training methods based on the material in Chapter 5 Section 1.2 were devised. Our attitude to the TBA's practices and the ways of avoiding cultural conflict were discussed.

Teaching was carried out in a variety of ways including discussions, practical work and demonstrations in the wards and labour room of the hospital, play acting, story telling, and also some straightforward classroom teaching. Almost no visual aides were used. When black-board drawings were used they were used with care to ensure that they were understood.

Questionnaire.

A questionnaire was prepared to obtain information about the TBA's workload and results, her knowledge of midwifery and the herbal medicines she was in the habit of using.

This was very helpful in acquainting the trainers with the TBAs beliefs and knowledge, and influenced them in their teaching and use of the syllabus.

It was intended that this would also act as a test of both the TBA's capacity to learn and our ability to teach. Therefore the questions were ones to which we hoped that TBAs would know the answer at the end of their training. A trainer went through the questions with each TBA in private and in a friendly fashion in the first day or two of the course, before any teaching had been given. This was repeated nine months after the course, in the TBA's home, by the same trainer using the same words as on the first occasion. By giving the TBA a score for the answers it was possible to make an assessment of what knowledge she had retained.

The answers were marked in the following way :

0 was awarded for an answer that was totally wrong or dangerous.

1 was awarded for an answer that displayed some knowledge but was not as good as the "correct" answer

2 was awarded for answers that were as good as or better than the "correct" answer.

The questions, the "correct" answers, and some further guidance to scoring in particular questions, are shown below.

Question	Answer
What is the length of a normal labour?	From 6 to 18 hours. (A correct answer need not use the term hours at all but may be described by phases of the day)
How long is it safe to keep a patient in labour before sending her to hospital?	1 day, or 1 night, or 12 hours.
If your patient bleeds heavily after delivery in what way can you stop or slow down the bleeding?	Rub the uterus to keep it hard. Put the baby to the breast.
What types of patient do you consider difficult to manage in labour?	Any 3 good answers, for example, primigravidae, very young patients, small women, women who are bleeding etc.
What abnormalities in labour make you refer the patient to hospital?	Any three good answers, e.g. prolonged labour, arm presentation, transverse lie, cord presentation or prolapse, vaginal bleeding, inability to pass urine.
Do you help the patient to deliver the head of the baby? If yes, what do you do to help her? If no, no further question.	0. No, or a useless or dangerous procedure. 1. Useful procedure but not correct. 2. Put pressure on the head to prevent sudden delivery. Help the head to extend. Tell her not to push too hard.

Question	Answer
How can you tell that a woman is making good progress in labour?	Good contractions. Descent of the head.
What do you do if the placenta is not delivered quickly?	Keep the uterus firm and send the patient to hospital. Put the baby to the breast.
In your experience, what are the causes of stillbirths?	0. No good answer. 1. Less than three good answers. 2. Three good answers e.g. prolonged labour, breech delivery, shoulder presentation, cord presentation, bleeding from the vagina either ante-natally, or intra-partum.
What hygienic measures do you take at the beginning of labour?	Wash yourself and the patient Provide a clean bed or mat.
Why do you think it is important for the patient, and the midwife to be clean?	Dirt harbours germs which cause infections.
What causes conjunctivitis?	Germs carried by flies. Touching the eyes with dirty hands. Infrequent washing of the face.
How do you tell if a woman is short of blood?	0. No correct answer. 1. Oedema only. 2. Pallor of tongue or hands, or oedema.
What do you do for a woman who is short of blood, i.e. she is pale?	Any two of the following answers: send her to hospital or ante-natal clinic. Encourage her to take the medicine from the ante-natal clinic. Advise her to eat meat and green vegetables.

Question	Answer
Why do some women bleed from the vagina before they go into labour?	The placenta is in front of the head, or in the lower part of the uterus.
What do you think causes some women to spend a long time in labour?	Any two of these: baby's head too big. Pelvis too small. Poor contractions.
What illnesses may follow a very prolonged or difficult labour?	Any two of the following answers: Urinary incontinence (VVF) Difficulty in walking (obstetric paralysis). Puerperal sepsis.
Do you feel that you can tell sometimes even before labour that a woman is going to have difficult labour, from her history or appearance? If yes, how do you know this?	Any two good answers e.g. history of previous difficulty; having stillbirth; having to go to hospital after failing to deliver at home; small stature; leg or back deformity; very young girl; elderly primigravidae.
If you can tell before labour that a woman is going to have difficulty, what do you do?	Send her for hospital delivery.
How can you tell beforehand that when the mother goes into labour the hand or arm will come down first?	Fetus felt to be lying transversely across the uterus.

Question	Answer
What advice would be good to give to a woman to help her care for a very small (premature? baby?	Any two good answers e.g. keep it warm by clothing it and wrapping it up; feed it often; take it to hospital.
What is the cause of kwashiorkor?	0. Wrong answer 1. Mention of insufficient food only. 2. Mention of insufficient food like beans, ground-nuts, fish or meat.
What types of food would you give to a child of one year old?	0. Milk and phala (porridge) only. 1. 2. Any type of food properly prepared so that the child can swallow and digest it. Should mention fruit, vegetables and fish or meat.

Some of the conclusions drawn in this study are also based on the answers which the TBAs gave to the following questions at the beginning of their training.

How many deliveries do you conduct per month?

Is the number of deliveries you are carrying out increasing, decreasing, or staying the same?

How many patients did you refer to hospital last year?

B. Teaching Phase

1. Ante-natal:

- a. Recognition of pregnancy signs and symptoms. ✓✓.....
- b. Recognition of simple ailments of pregnancy,
treatment and advice. ✓
.....
- c. Expectation of events in 1st, 2nd, and 3rd
trimesters of pregnancy - growth of uterus ✓✓✓✓
- palpation of fetal parts ✓✓✓✓
- Value of iron tablets and anti-malarial tablets
which the mother can obtain by attendance at
health centre ante-natal clinic ✓✓✓✓
- d. Recognition and referral of high-risk women,
especially primigravidas, ✓✓✓
women under 17 or over 35 years of age, ✓✓
women with previous Caesarean section, ✓✓
grand multips (over 5), ✓
anteperitum bleeding. ✓

FIGURE 9. A METHOD OF RECORDING WORK CARRIED OUT IN A SYLLABUS
WHEN USING INFORMAL METHODS OF TEACHING

Syllabus.

A syllabus for TBAs was compiled before the first course and altered according to the experience gained during it and subsequent courses.

The final syllabus is shown in Appendix I. Despite having a syllabus no formal programme of lessons was prepared to ensure that it was covered. The informal method of teaching to be used, and the need to tailor training to the needs and understanding of the individual TBAs and to repeat lessons militated against the latter approach. However, in order to maintain a record of the subject covered, and to allow us to plan the programme day by day, a record card as shown in Figure 9 was used. At the end of a teaching session the trainer would tick the subjects mentioned or demonstrated practically so that the extent to which a subject had been covered at any time in the course could easily be seen.

Many of the aspects of midwifery were clearly beyond the ability of the TBAs to understand or utilise, and such subjects were carefully avoided so that they would not cause confusion. These included the following:

- Weighing the patient ante-natally
- Blood pressure and hypertension
- Pulse rate recording
- Fetal heart rate recording

A few points in connection with the teaching are mentioned below.

Main Aims.

The main aim of the teaching programme was to see that the TBA understood that her role is to deal with healthy women who can deliver healthy babies easily.

DELIVERY RECORD FOR TRADITIONAL BIRTH ATTENDANTS

Month.....

Date Patients Name

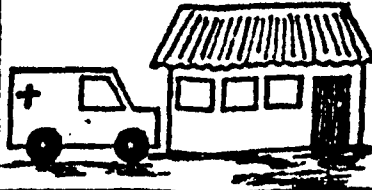
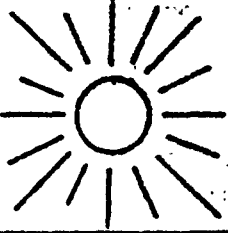
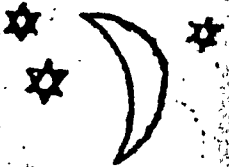
	Tried home delivery first	mother well	maternal death	baby well	perinatal death	went to hospital	days in labour	nights in labour
								

FIGURE 10. DELIVERY RECORD FOR TRADITIONAL BIRTH ATTENDANTS

During the ante-natal period, she has to be able to select unhealthy women, and the women who may have difficulty in delivering, and these should be referred for hospital treatment and delivery.

In labour she has to recognise when a labour is going to be difficult and again refer the patient quickly to hospital.

For those whom she delivers she has to understand the need for a clean environment and the safe way of conducting labour and delivery. She also has to know safe methods of caring for babies, and to be able to recognise again that when a baby is unwell it needs to be referred to hospital.

She should come to realise that if she conducts her practice in this way she should have excellent results and will be giving her patients excellent service.

This emphasis on referral of abnormal cases is possible because of the reasonably widespread health services that exist in Malawi. Although there are not yet enough facilities for the delivery of all women in hospital, there are adequate facilities for the treatment and delivery of women with problems.

A delivery record for traditional birth attendants.

TBAs were taught during the course to use a form to record the results of their deliveries, see Figure 10. The form was designed initially without columns for the date and patient's name as it was known that most of the TBAs were illiterate. However, all the TBAs were able to find some relative who could read and write to help keep their records, and so the columns were added. The TBAs had to be taught how to use a pen or pencil, most of them finding it difficult even to make a tick.

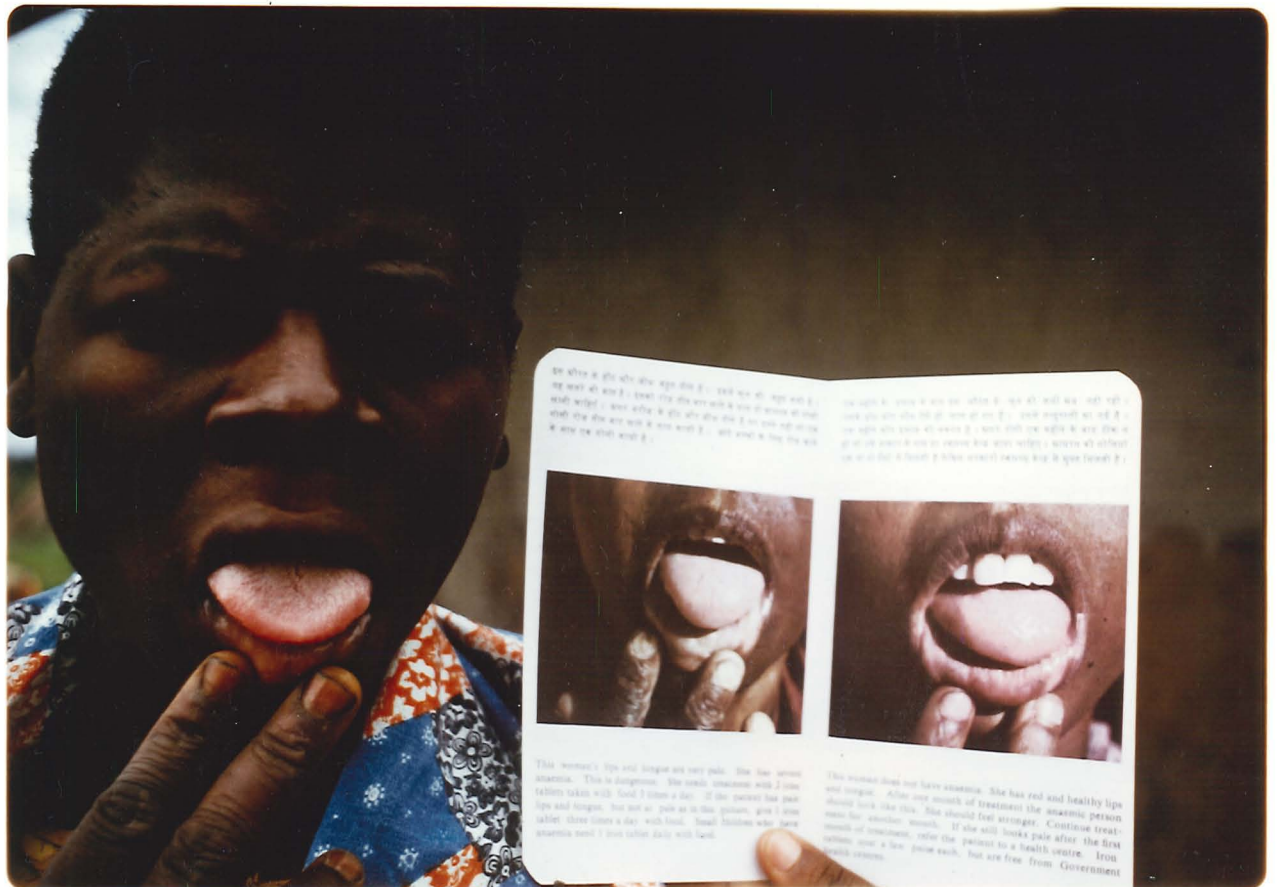


ILLUSTRATION 12. ANAEMIA RECOGNITION CHART IN USE

The column "tried home delivery first" was to be ticked when the patient had attended the TBA only when delivery in her own home attended by her relatives had failed. This was intended to emphasise to the TBA that she should not accept this patient for delivery, but that she should give her all possible assistance in travelling to hospital. The trainers looked for evidence of this on their follow-up visits. The next four columns record the results of the delivery, with stillbirths and deaths after delivery being recorded together as perinatal deaths. TBAs were taught to distinguish abortions from stillbirths but were taught to record any neonatal death in the perinatal column. As the TBAs' patients go home two or three days post-delivery it is believed that most of those recorded occurred within the first seven days of life. The trainers again enquired about this on their visits. The column "went to hospital" was ticked when the TBA referred the patient to hospital and did not conduct the delivery. Finally, two columns were used for recording the length of labour in days and nights, a tick standing for one whole day or whole night respectively. The TBAs were taught to refer a patient once she had spent either a whole day or a whole night labouring without success and that therefore as a rule only one of these columns would be ticked. This resulted in referral some time between 12 and 24 hours after the onset of labour.

Anaemia.

As an aid to the diagnosis of anaemia an "Anaemia Recognition Chart"* produced by the Voluntary Health Association of India was used, see Illustration 12. The pale mucosae of the anaemic patient are easily recognised by comparing the colour with the photographs. It was stressed

* Available from TALC, Foundation for Teaching Aids at Low Cost,
30 Guilford Street, London WC1N 1EH.



ILLUSTRATION 13. MEASURING ROD WITH FIXED HORIZONTAL BAR AT 150 cm.

that when a patient was referred for anaemia she should be accompanied by healthy relatives who could act as blood donors.

Height.

A wall ruler with a transverse bar at 150 cm. was supplied to the TBAs which could be fixed to the wall of their maternity unit, see Illustration 13. If a patient could stand under this without touching it with her head then she had to be sent to await labour in hospital.

Equipment.

At the end of the course the TBAs were each supplied with some basic equipment such as blankets, buckets and lamps, a Unicef midwifery kit (see Illustration 14), which they had practised using, a measuring rod, and record books. A full list of this equipment, slightly modified by the experience obtained in the course, is shown in Appendix II.

Registration.

According to the laws of Malawi, anyone may practice an African system of therapeutics provided he or she is recognised in Malawi to be duly trained in such practice. This is taken to mean that a TBA recognised in her community as having acquired skills in midwifery is free to practice without breaking the law.

It was decided therefore that there was no need to provide a TBA who had undergone the course of training under discussion with any legal licence to practice. However, an open register was begun for recording the names of "trained" TBAs, this being maintained by the Chief Nursing Officer on behalf of the Secretary of Health. Also, a "Letter of Attendance" was printed for presentation to the TBA at the end of the course, see Illustration 15.



ILLUSTRATION 14. UNICEF MIDWIFERY KIT



MINISTRY OF HEALTH

SERIAL No. 1

LETTER OF ATTENDANCE
TRADITIONAL BIRTH
ATTENDANTS COURSE

NAME Mrs. Agnes Kachere
AGE
VILLAGE Kayabwa
T.A. Chadza
DISTRICT Lilongwe

DATE OF ATTENDANCE:

FROM 6th February, 1978
To 18th February, 1978
PLACE KAMUZU CENTRAL HOSPITAL

for: *Secretary for Health*

ILLUSTRATION 15. A LETTER OF ATTENDANCE

Cost Analysis

An account was kept of all expenditure during the programme. Items supplied from Government stock were costed and entered in the account book.

A record was kept of journeys made, and mileage recorded on some representative trips so that the approximate mileage covered in the programme could be calculated.

Section 3

Results - Assessment of the pilot training programme.

Some eight to nine months after the course its effects were assessed in the following ways:

oral questioning, using a set questionnaire;
analysis of the records kept by TBAs;
carrying out an inventory and checking the
condition of their equipment;
assessment of their skills at the follow-up
visits.

These assessments plus some more subjective impressions are reported.

The results of a cost analysis of the course are also reported.

Questionnaire - Results.

The scores achieved by the TBAs before their training and then nine months after the residential course are shown in Table 28.

	<u>Before training</u>		<u>Nine months after training course</u>	
	Number	Percentage	Number	Percentage
Correct answers	81	24.1%	178	53%
Intermediate answers	135	40.2%	110	32.7%
Wrong answers	120	35.7%	48	14.3%
(Not asked)	9	-	9	-

Table 28 - The results of 23 questions on midwifery asked of 15 TBAs.

The individual TBAs scores were examined to see whether her answers had improved or not. This showed that a better answer was given in

166 cases, an equivalent answer in 147 cases, and a worse answer in 23 cases. Every TBA had improved her personal total score. Two, however, had scored less than half of the possible total.

Of the five with the lowest scores when the questionnaire was first used, three were in the bottom five the second time, and similarly of the five with the highest scores the first time, three were still in the top five on the second occasion.

Obstetric figures and results.

This analysis is based on some questions which the TBAs answered of the beginning ~~at~~ their training, and on the records which they kept. A typical completed record chart is shown in Illustration 16. Twelve of the TBAs kept these record charts well. Three did not keep good records but by bringing them up to date at follow-up visits it was possible to obtain a fairly accurate record of the results of all 15 TBAs over an average period of eight months per TBA, from the completion of their residential courses.

At the beginning of the course eight said their work was increasing, six decreasing, and one said it was ~~stationary~~. At the end of the follow-up period only 11 were asked this question, but all said their work was increasing.

At the beginning they estimated their workload, and for all 15 together the estimate was 1,452 deliveries per year. 1,289 deliveries were recorded during the follow-up period after the course, from which it can be forecasted that they would deliver some 1,930 patients in the year.

There were no maternal deaths in the period under study. In the records kept by the TBAs, 1,289 deliveries were recorded with 22 peri-

DELIVERY RECORD FOR 4 FOR TRADITIONAL MIDWIVES

Name 15.6.78
Kamgidi

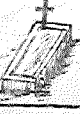
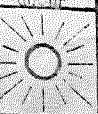
	tried home delivery first	mother well	mother a death	baby well	new baby death	went to hospital	days in labour	nights in labour
								
<u>mgukilizana 15.6.78</u>		✓		✓			✓	
<u>mamuchetsa 18.6.78</u>		✓		✓			✓	
<u>naseli 16.6.78</u>		✓		✓				
<u>Benita 21.6.78</u>	✓	✓		✓				✓
<u>Setina 20.6.78</u>	✓	✓		✓			✓	✓
<u>maile 21.6.78</u>		✓		✓			✓	
<u>nahenyo 23.6.78</u>		✓		✓			✓	
<u>lidia 21.6.78</u>		✓		✓			✓	
<u>napwaka 21.6.78</u>		✓		✓			✓	

ILLUSTRATION 16. A COMPLETED DELIVERY RECORD

natal deaths. This gives a rate of 17.1/1,000 deliveries. (Figures per live births cannot be given as the number of twins were not accurately recorded). At the follow-up visits, which were every 2 to 3 months, the TBAs were asked to give details of any perinatal death that had occurred. In almost every case they seemed to have acted correctly and most of the deaths were apparently due to prematurity, or were macerated stillbirths or were due to prolonged labour that had occurred before the TBAs help was sought. In view of the rather poor descriptions which the TBAs were able to give these deaths could not however be properly analysed. The perinatal death rate of the 5 maternity units closest to where the TBAs work, was 27.4/1000 deliveries (55 in 2,005 deliveries) over the same period.

In the year before the course the TBAs estimated that they had referred 16 patients to hospital. However, "referred" may be the wrong word to use as many made it plain that they simply refused to look after the patient(s) because she was already in bad condition and did not assist her to get to hospital. In the eight months after the course they recorded 59 referrals, or an average of 88.5 per year.

The 59 referrals made included ante-natal patients as well as those in labour. Most of these patients eventually came to the Kamuzu Central Hospital where I saw them, although I was unable to maintain a complete record of them. From what I saw the commonest reasons for referral were anaemia in ante-natal patients, a history of previous Caesarean section, labour complications and puerperal infections. It is known that none of these referred patients died in hospital, as all maternal deaths were the subject of enquiry at a regular staff meeting. Only one of the TBAs could write, but a short note, written by someone

Zikomo a Doctor
thandizeni matendawo
andibutapo ndithu
Ine mizana
Mrs
P Katalima
Cipala La Kwa Chimoka.

Translated into English, the letter reads as follows:

"Greetings, Doctor,

Please help, this labour is really
causing me trouble.

I am yours

Mrs. P. Katalima.

Chimoka Hospital."

ILLUSTRATION 17. REFERRAL LETTER SENT BY TBA

else on their behalf, always accompanied the patients. A typical referral note is shown in Illustration 17; the patient referred to arrived in hospital at 20.00 hours one evening having gone into labour at the TBA's during the preceding night. A compound presentation and a contracted pelvis were found; delivery^{was} by Caesarean section and mother and baby did well.

On some occasions the TBAs personally accompanied their patients to hospital, even in the middle of the night, and some visited their patients in the post-natal period. Excellent personal relationships were established between the TBAs and the hospital midwives.

Inventory, and condition and use of equipment.

All the non-expendable equipment that had been issued was present, when an inventory was carried out.

Cleanliness of the equipment and the delivery room and surroundings was satisfactory in 13 cases and unsatisfactory in two cases.

All the hurricane lamps were in use, although paraffin was often in short supply.

The delivery kits were being fully and properly used by 12 but three were making inadequate use of it.

In general, the equipment had been well looked after.

All the TBAs had been issued with 8" clamps for clamping the cord after birth, and seven of them had been issued with a cooking pot and a paraffin stove with which to sterilize the clamps by boiling. The others were to sterilise the clamps in their own pots on a wood fire. Follow-up left us uncertain as to how often the clamps were being sterilised and the cost of, and difficulty in obtaining, paraffin rather reduced the value of the stove.

Continuous assessment of skills.

At the follow-up visits any one or more of several methods of assessment were carried out. For example, post-natal mothers and babies were checked, deliveries were observed, and the TBAs ability to correctly palpate the uterus was checked. All but two of the TBAs appeared to be putting their training to good practical use. It was noticeable, however, that many were not using the measuring rod not referring patients to hospital whose height was below 150 cm. If they had done so, many more than 59 patients would have been referred.

One TBA, whose performance was in many ways good, presented an interesting problem. She was the only one of the 15 TBAs who acted also as a traditional doctor (sing'anga) for the treatment of all diseases. Her husband was also a traditional doctor and between them they ran a 'hospital' consisting of four huts in which 20 or more patients would stay while receiving treatment. Many of these patients appeared quite seriously ill as, for example, the boy shown in Illustration 18 who was suffering from severe anaemia. Only very occasionally was I able to succeed in having such a patient taken to hospital for proper treatment, and it became obvious that co-operation with traditional doctors would be more difficult than with TBAs. She and her husband were not only herbalists, but also acted as diviners of the cause of disease believing that disease could be caused by witchcraft and magic. She was said to be very successful in the treatment of infertility and during the training course had to be allowed home to run her infertility clinic which she held on Sundays. Despite her training, her belief in the supernatural still affected her maternity work, in that instead of carrying out abdominal palpation as she had been taught she continued to divine the



ILLUSTRATION 18. ANAEMIC BOY AT THE HOME OF A TBA WHO WAS ALSO
A TRADITIONAL DOCTOR

position and state of the fetus. This she did by having her patient lie with her head towards the only window in her small hut. Then, holding a mirror under her arm, she reflected the light from the window onto the patient's bare abdomen, meanwhile sprinkling some watery 'medicine' around the umbilicus and palpating in that region with the tip of her fingers. Illustration 19 shows her in the process of doing this. Because of her faith in this method she had not developed her skills in palpation and was worse at this than other TBAs. While seeing ante-natal patients with her I compared my findings with her magical methods, and was able to prove the superiority of normal methods of palpation! On that occasion approximately 30 patients had come for ante-natal examination, among whom were some noteworthy patients. Two patients with a history of previous delivery by Caesarean section attended but both were attending ante-natal clinics elsewhere and claimed that they fully intended to deliver in hospital. Another patient was one who was attending a paying clinic that I ran at the Central Hospital, and in fact she attended me at that clinic in the afternoon of the same day. She eventually delivered in the paying maternity unit. These patients, it seemed, had come only for the protection which they believed the TBAs methods afforded them even if they delivered elsewhere. Of more concern were two other patients, one of whom had clinically obvious pulmonary tuberculosis, and another who came as an emergency with a very severe attack of bronchial asthma. The patient who had tuberculosis refused to let me arrange investigation and treatment, and the asthmatic also preferred to stay with the TBA for treatment. The TBA herself had full confidence that she had medicine which would relieve the asthma, as she had treated the same patient successfully many times before.



ILLUSTRATION 19. TEA DIVINING ABNORMALITIES OF PREGNANCY USING
THE REFLECTED LIGHT OF A MIRROR AND FINGER TIP
PALPATION

There was one case only which compensated for these worrying ones, this being a woman whom the TBA presented as someone she wished to refer for hospital delivery because her baby was too big. The woman was 142 cm. tall, with a contracted pelvis and undoubted cephalo-pelvic disproportion, and she was willing to return with me to hospital there and then.

General impressions of the effect of the course.

There was clear evidence that the course stimulated most of the TBAs to improve their work and conditions. Before the course, all but one of the TBAs delivered their patients on the ground, but after it, six of them had labour beds constructed although no mention had been made of this being necessary or desirable. Also much building activity was stimulated by the course, many of the participants having since extended or improved their premises.

One very important point is that the TBAs were uniformly very happy to know that their work was recognised and legal and that they were not in danger of being imprisoned for carrying it out. This was made very clear by two TBAs at the National Seminar on Primary Health Care held in Lilongwe from 30.10.78 to 3.11.78. In reply to questions, they explained how, beforehand, they had believed themselves to be working illegally and that they had been very reluctant ever to send a patient to hospital however bad her condition. If eventually a patient had to be taken to hospital they would enjoin the patient and her relatives not to mention their name. Training and recognition had made an enormous difference and greatly relieved them of their fears.

Cost analysis of the pilot training programme.

The 15 TBAs trained in the pilot programme were responsible for

about 2,000 deliveries per year, which is equivalent to the workload of five rural maternity units each staffed by one midwife. Table 29 compares the actual costs of training and equipping these 15 TBAs in the pilot programme, and the estimated follow-up cost, with the capital cost of building and equipping five rural maternity units, and training the enrolled nurse midwives to run them, plus the yearly running cost for such a unit.

<u>15 traditional birth attendants carrying out 2,000 deliveries/year</u>			<u>5 maternity units carrying out 2,000 deliveries/year</u>		
<u>Capital costs</u>		K.	<u>Capital costs</u>		K.
For training & equipping TBAs	Transport (7 visits)	1,487.50	For building maternity units & training midwives.	Maternity unit K30,000 x 5	150,000.00
	Equipment	700.00		Equipment: K5,000 x 5	25,000.00
	Food	105.00		Training: K1,800 x 5	9,000.00
	Staff-time	798.00			
		<u>K 3,090.50</u>			<u>K184,000.00</u>
<u>Running costs</u>		K.	<u>Running costs</u>		K.
Follow-up visits	Transport	850.00	Drugs: K2,000 x 5		10,000.00
	Refresher course-staff	70.00	Equipment & maintenance: K100 x 5		500.00
	Food	20.00	Staff-time 1 midwife per unit: K800 x 5		4,000.00
		<u>K 940.00</u>			<u>K14,500.00</u>

1 Kwacha = £0.6

Table 29 - Comparison of costs between TBAs and Standard Maternity Units.

Transport costs were based on an estimated average journey (going and return) of 25.75 miles to visit one TBA, at a rate of K.0.55 per mile. Lilongwe District is fairly typical of other districts and transport costs elsewhere could be expected to be comparable.

Seven visits are included in the capital costs as follows:

One each for identification; invitation to attend course; collection for course; returning from course; plus three follow-up visits.

Staff-time for capital costs are based on the approximate amount of time spent by various members on the training programme, as follows:

Public health nurse	12 weeks
Enrolled nurse/midwife	14 weeks
Obstetrician	2 weeks

Staff-time for follow-up is based on the estimates:

Enrolled nurse	3 weeks
Public health nurse	1 week

No allowance is made for the obstetrician's time, that is my time, in the follow-up because, although it was considerable, it was for reasons of assessment of the programme which would not be needed in future programmes.

No cost for equipment for TBAs has been included in their recurrent costs as by present plans this would be minimal.

No accurate figure was available for the cost of training of midwives.

The figure shown was arrived at by a computation using the cost of their allowance as a base, this apparently being a recognised method of calculating training costs.

Section 4. Discussion & Conclusions.

The assessment of this pilot project has been more thorough than any previously reported assessment of a TBA programme. It would however have been desirable if a longer period of follow-up could have been carried out, and continued assessment should be part of future programmes.

It will have been seen that the subject of family planning received little attention in the syllabus. There were two reasons for this. Malawian society is very pronatalist in its views and TBAs are no exception. Although they do on request provide "medicine" for contraceptive purposes, they do this seldom, and would have no interest in promoting family planning. Secondly, senior civil servants in the Ministry of Health believed that it was not the wish of the Life President that family planning facilities should be promoted, and it was most unlikely that a syllabus including much about family planning would have met with approval.

The TBAs that took part in the programme were not completely representative of all TBAs having been selected because they worked from a static unit and carried out a certain minimum number of deliveries. For a really objective assessment of the prospects of success in a national programme it would have been better to have picked the participants in a random fashion. Nevertheless training those with a large number of deliveries may have made it easier to show whether or not training was likely to be a successful venture.

The questionnaire method of assessment was only used after much thought because it was realised that the method has the drawback that it cannot be directly related to the results as actually experienced by the

patient. It does however have the advantage of being an objective method, and in the case of the TBA programme it provided valuable information for the trainers. It may be thought that some of the questions were phrased in such a way that the TBA could easily answer what she knew we wanted to hear, while in fact her practice would be different. This may be so but it was difficult otherwise to find out if they actually knew what we wanted. The first two questions in the questionnaire which are open to such criticism, were in fact used to obtain information on how the TBAs talked and thought about time.

Nevertheless, experience with the questionnaire led me to believe that it could be improved, and a suggested questionnaire for future programmes is shown in Appendix III. As the TBAs did not score 100% in the questionnaire at the end of their training, it can be seen that we were not totally successful in our teaching. Nevertheless, the results suggest that the TBAs as a group had passed their exam.

It is interesting that the lowest score at the beginning and second lowest at the end was that of a young woman who was still doing her apprenticeship as a TBA working with her mother. The mother had been the one selected for attendance at the course but had sent her daughter instead.

This instance, and the tendency for an individual TBA's results to remain either low or high, might be thought to show that previous experience is a significant factor in the results, and that this would therefore be something to look for in selecting TBAs for training. However, the results could just be a reflection of basic intelligence. Selection based on either factor could well be mistaken in that training

inexperienced or less intelligent TBAs may be more important in that their natural practices may be more harmful.

Analysis of the answers to each question were of interest as it showed where teaching had been successful and where unsuccessful. The two subjects least successfully taught were the treatment of anaemia* and management of retained placenta. Such a system of self-trainers appraisal would clearly benefit, carrying out a succession of courses.

It was not intended that the perinatal mortality rate achieved by the TBAs be actually compared with that quoted for the local maternity units, as the two groups of patients involved are selected differently, and indeed the maternity units figures would include problem cases referred by the TBAs. But it does show that the general trend is at least correct, with the TBA lower down on the referral chain achieving better results. I believe their results can be considered to be satisfactory.

The follow-up study of the use made of equipment did not convince me that the correct use was being made of the paraffin stove, and cooking pot for sterilising the 8 inch clamps. It was therefore decided that all three of these pieces of equipment should not be issued in future, and that instead the TBAs should be taught to tie the cord directly with tape. Training to cut the cord with a new razor blade, instead of scissors also seemed sensible.

The legal status of the TBA which seemed at first to be a source of difficulty and one that might hinder the development of the programme was in fact not a problem. In my opinion the government of a country where TBAs exist has three basic options, assuming that it wishes to do more than just ignore the issue of TBAs and their work.

* The anaemia recognition chart shown in Illustration 12 was introduced late in the programme and seemed to be an improvement in our teaching methods.

1. It can make the practice of midwifery by TBAs illegal.
2. It can formally recognise their existence by legalising their activities, and this can include licensing them, or leaving them unlicensed.
3. It can recognise the existence of TBAs by engaging in co-operative efforts, such as training, but without formally legalising their work.

This latter option would also enable a government to register TBAs if desired, at a later date. This last approach, including registration is what has been adopted in Malawi. Registering, unlike licensing does not mean that they have actual legal recognition and the letter of attendance issued to the TBAs also does not imply this. It was considered however that some record of this type had to be offered. It was also hoped that it might act as an incentive for other TBAs to come for training.

In view of the difficulties we had in changing the practices of the one TBA who was also a traditional doctor, it has to be concluded that where TBAs are practising traditional doctors more difficulty may be expected in teaching them. However, in view of the large number of patients dealt with by this particular woman and the grave responsibilities that she accepts, it seems especially valuable that there is now some contact between her and the hospital services. I do not think that such women should be excluded from TBA training courses in the future.

As the quality of the service given by a TBA cannot be as good as that of a trained midwife, it was necessary to compare the costs of providing both services. A TBA programme is only a logical choice if it is more readily available by virtue of being cheap. Neumann *et al* (1974)⁷⁹ mention the need for cost analysis of pilot studies of this

nature, and this analysis is similar to what they recommended.

As capital costs are usually met by direct grants, the actual cost to the country is best calculated from the recurrent costs.

From the figures obtained and assuming that a group of 15 TBAs and 5 maternity units each carries out 2,000 deliveries per year, the cost of one delivery by a TBA can be calculated as 0.47t, whilst the cost of a conventional maternity unit delivery is K7.25*. However, since each maternity patient pays K1.00 for her delivery at a small maternity unit, this latter cost can be reduced to K6.25. This still means that for the cost of one maternity unit delivery 13.3 deliveries can be performed by a TBA.

The true figure may be even more in favour of the TBA as the cost of transport and supervision in the recurrent costs for maternity units could not be calculated and was omitted. As a result of the pilot study it can be concluded that TBAs welcome training, are capable of learning and applying new skills, and that this results in an acceptable standard of primary maternity care where the alternative is no care at all. It has also been shown that it is cheap enough to be readily available.

My own work and that contributed by others in this chapter is as follows.

The training was mainly done by four nurse midwives, under my supervision. I welcomed the TBAs and spent several sessions in discussion with them (partly via an interpreter) trying to emphasise important points. I visited each TBA at least once, in most cases twice, during the follow-up to the course.

*K1.00 = £0.6 and 100t = K1.00

The delivery record form was designed by me but drawn by an artist from the health extension department.

I drew up the questionnaire but discussed the wording and content with a medical statistician. The questionning was carried out by the trainers but I checked the answers and marked them myself.

A committee of the Ministry of Health, of which I was a member, was formed on my instigation to deliberate and approve the plans for the pilot programme. The committee discussed the criteria for selection of the TBAs, the contents of the syllabus, and the equipment to be supplied but made little alteration to my recommendations. The decision about registration and the letter of attendance was made by the committee.

In the cost analysis I obtained help from an economist working in the Malawi Ministry of Health, who provided the figures for the capital and running costs of maternity units. Otherwise, the work and calculations were my own.

CHAPTER 6PLANS FOR A NATIONAL PROGRAMME FOR
TRAINING TBAs IN MALAWI.

The aim of the pilot training programme was to calculate the suitability of training TBAs, and to gain experience that could be used in planning a national programme. The plans that were drawn up are presented below.

The plans had to conform to the existing structure of the health service in that the personnel involved had to be staff already in established posts, and work in each district had to be co-ordinated with the district medical officer who is in overall charge of all health activities in his district. It had to be assumed that no personnel would be recruited especially for the programme.

The plans outlined in this chapter were sent in the form of a proposal to the Secretary for Health in Malawi in February 1979. They were later accepted and are to be implemented with financial assistance from WHO and Unicef.

Section 1 - General Aims.

A national training programme should aim to give a course of training to every practising TBA, except to those unsuitable because of extreme age or other factors.

Completion of a course of training would not give the TBA the right to be employed by the government or to receive any pay. She would receive benefits from the course only in as much as she was supplied with certain items of equipment. Successful completion of the course would be recognised by issuing a Letter of Attendance, and by the entering of the TBAs name on an open register maintained by the Secretary of Health.

There is one subject which will require further study before a decision can be made, and this is in connection with the TBAs who only attend labour in the patient's home, and do not have 'maternity units' of their own.

It seems likely that such TBAs will be unable to reach a high standard of hygiene in the management of their cases and the trainer will find it more difficult to tell what quality of service they are rendering to their patients. This is, however, the way in which trained TBAs work in other countries and so it should not be regarded as totally unsuitable. Nevertheless, a pilot project could be run in which TBAs working in this way are encouraged to set up a delivery room at home. They could be taken to visit the 'maternity units' of other TBAs to give them some ideas. If the project were successful the method could be adopted widely.

It should be possible to train the relatively small number of TBAs in Malawi within about three years. Follow-up, and refresher courses

would have to be maintained for an unlimited period of time. Having trained all the TBAs it would be possible to consider the training of family birth attendants, particularly those women with a large number of daughters. The feasibility of this could be assessed by a pilot training programme.

Section 2. Personnel and job descriptions.

The personnel necessary for the implementation of the programme would be:

	<u>Number</u>	<u>Grade of staff</u> <u>suitable</u>
National co-ordinator	1	Community obstetrician or M.C.H. medical officer
Regional co-ordinator	3	Public health nurse
District co-ordinator	26	Public health nurse State registered nurse/ midwife
District supervisors	about 2 or 3 per district	Public health nurse Community nurse Enrolled nurse/midwife *PHAM M.C.H. supervisor
Local midwives	Not known	Enrolled or state certified midwives

The job descriptions of these personnel follow:

National co-ordinator.

This post ought to be held by a doctor with a background of clinical experience in obstetrics, but it would be preferable that he be working at the Ministry of Health headquarters. His work as national co-ordinator for training TBAs would not be his full-time occupation. His tasks would include controlling the vote for the programme, making policy decisions about the syllabus and other matters; guiding and supporting the regional co-ordinators; and arranging nationwide health education about TBAs.

Regional co-ordinator.

This post could be held by the district M.C.H. co-ordinator provided she was a midwife, and was completely free from nursing duties

* PHAM is the recognised abbreviation for Private Hospitals Association of Malawi, which is an organisation that co-ordinates the activities of the medical missions.

within the district hospital. Her initial job would be to organise the identification of TBAs in her district and maintain a register of these. By visiting the TBAs at home she would be able to interest them in the training programme and make the necessary arrangements. She would play a major role in the teaching and in running the course. Follow-up of the TBAs would also be her primary responsibility, but as one person is unlikely to be able to establish a proper relationship with more than about 20 TBAs she will have to be assisted by one or two other district supervisors.

District supervisor.

This is the term given to midwives carrying out the long term supervision of the TBAs. As the TBAs often ask for technical help on problems of midwifery, the supervisor has to be a midwife herself and this job could not be done effectively by lower grade staff like home-craft workers. The district TBA co-ordinator will herself be a supervisor of about 20 TBAs, and she would allocate the responsibility of visiting other TBAs to the other supervisors. The type of staff suitable to be TBA supervisors would be the district M.C.H. co-ordinator or midwives involved in mobile work. The responsibility of appointing staff to this role is that of the district medical officer, working in co-operation with the regional TBA co-ordinator. The supervisor should aim to visit each TBA every three months to evaluate the TBA's work, give further teaching and maintain her supplies.

Local midwives.

The midwife working at the maternity unit in closest proximity to a TBA also has a role to play in her supervision. First of all, it is often difficult to find the way to TBAs' villages and if a

particular supervisor was to leave her post it could be a matter of some difficulty for the replacement supervisor to locate the TBAs under her care. If the local midwives are in contact with the TBAs this would not be a problem. Where possible then, the supervisor should take the local midwife with her on her supervisory visits and involve her in the work as much as possible. The midwife herself will probably be involved in handling the cases referred by the TBA and should always treat her with respect and kindness. As an alternative to the district supervisor maintaining the TBA's supplies of expendable items, the local midwife could do this. In this case the TBA could be given the responsibility of calling to collect these herself.

Section 3. Sequence of implementation.

The following is a list of the various stages and activities that are required in implementing a national training programme. It assumes that the finance is available.

1. Collaboration between Ministry of Health and PHAM officials on the proposed programme.
2. Appointment of national co-ordinator and regional co-ordinator.
3. Familiarisation visit of the co-ordinators to TBA work in progress in Lilongwe district.
4. Notification of interested bodies about the programme:
 - e.g. Ministry of Local Government
 - Ministry of Community Development and Social Welfare
 - Malawi Nurses' and Midwives Council
 - Malawi Red Cross
5. Appointment of district co-ordinators.
6. National Seminar on TBA work. This could be run by the International Confederation of Midwives, who can provide personnel for such a seminar. This should be attended by regional and district TBA co-ordinators, obstetricians, PHAM officials, district medical officers, PHAM medical officers, selected senior nursing staff, selected health inspectors.
7. Selection of district supervisors.
8. Regional seminars on TBA work, run by national co-ordinator and regional co-ordinators. These should be attended by

district TBA co-ordinators, district TBA supervisors, selected nursing and midwifery staff, selected health assistants, district medical officers and PHAM medical officers who had not attended the National Seminar.

9. Identification of TBAs by district co-ordinators. This could be made easy by arranging national publicity and enlisting the co-operation of village chiefs, headmen and Congress Party officials. It will remain a continuous activity.
10. Meeting of regional co-ordinator and district co-ordinator with district medical officer to plan a district programme.
11. Selection of venue(s) for training courses by district medical officer.
12. Meeting of district medical officer and district co-ordinator with local officials (e.g. district commissioner, officials of League of Malawi Women, officials of Malawi Congress Party) to explain the aims of the programme.
13. Initial training courses. Trainers to be chosen from regional co-ordinator, district co-ordinator, district supervisors and local midwives.
14. Meeting with local leaders (e.g. chiefs, church leaders, local Malawi Congress Party officials) to explain the purpose of TBA training.
15. Further training courses.
16. Supervision of trained TBAs.
17. Refresher courses for TBAs at intervals of 2 years.
18. Inclusion of work carried out by TBAs in National Health Statistics.
19. Evaluation of the National Training Programme organised at national level.
20. Pilot training programme for Family Birth Attendants.

CHAPTER 7CONCLUSION

The TBA training carried out in Malawi is the first of its kind in South, Central, or East Africa. Although Gelfand (1956)¹⁸ and others had written about TBAs, their training was not considered. Stevenson (1964)⁸⁰ described the existing health services of Malawi and proposed a way in which they should be developed but did not make recommendations about the use of TBAs or traditional practitioners. Now, as a result of the work described, the Government of Malawi has committed itself to develop a programme to include all the TBAs that can be identified throughout the country.

It has been shown in this thesis that this should be possible at reasonable cost and that it should lead to improved obstetric results. The two main aspects of the programme which I believe need further investigation are: firstly, the question of whether TBAs who at present carry out deliveries in the patient's own home should continue to do so, or whether they should be encouraged to build special maternity units in their own homes; and, secondly, the advisability of the TBA being issued with a limited range of medicines.

A number of countries in West Africa also have TBA training programmes. However, to my knowledge only that in Sierra Leone, where Williams (1979)⁸¹ has carried out a study of TBAs similar to mine in Malawi, is the programme planned on a national scale. A group in the Danfa Rural Health Project in Ghana (Ampofo et al, 1977)⁸² are also running a comprehensive programme for TBAs, but it is limited to the project area. These two training programmes are recently established, but Liberia has been training TBAs since 1962, and in June 1979 I was

able, by means of a travelling scholarship, to visit Liberia to study the programme there. It still covers only part of Liberia, and its results have not been evaluated but it was possible to learn some lessons from the experience gained there. A few of these will be mentioned.

The length of the course in Liberia is longer than that in Malawi, lasting for four months. The extra cost of this is met by asking the TBA's community to support her financially during the course, and by leaving the TBA to arrange her own accommodation in the village or town where the training is held. It is thought that morale remains higher when the TBA lives in lodgings rather than in hospital accommodation, and that the course being more leisurely proves less exhausting for these middle-aged or elderly women unused to the teaching situation. This could be tried in Malawi, although it is possible that Malawian TBAs would be unwilling to leave their practice for this length of time. TBAs in Liberia who live reasonably close to maternity clinics are utilised by providing assistance on a voluntary basis during ante-natal clinics. This not only helps the trained staff but provides an opportunity for the TBA's education to be continued, and also demonstrates to the public that the TBA and the clinic staff work in cooperation with each other. To ensure good attendance at the yearly refresher courses TBAs have their maternity kits replenished on attendance at that course and at no other time. This has resulted in a 70 - 80% attendance rate. Two problems encountered in Liberia in the past are worthy of note. At one time young women who had not been in practice as TBAs were taken for training in view of the apparent greater length of service that they could offer. However, when they returned

to their villages they were not accepted in the role of a TBA and the training was in vain. Also, at some point in the past some TBAs were taken into paid employment by government and mission hospitals, either because of acute staff shortages, or because of pressure by a person of high standing in politics. This has resulted in repeated requests by TBAs, village chiefs and politicians for other TBAs to be placed in paid employment, which the government has been unable to do. The policy now is that TBAs should never be given paid employment but must remain in private practice.

The training of TBAs is a good example of primary health care which is now being recommended as the most suitable approach to the health problems of developing countries. It is worth considering how a TBA programme, particularly that which is planned in Malawi, would fit with a primary health care programme. Primary health care is a fairly new concept. It was only in 1975 that the 28th World Health Assembly (WHO 1976)⁸³ adopted a resolution to "urge member states to take the necessary steps to develop and implement plans of action in the area of primary health care, leading to the provision of a comprehensive health care system to the total population". In Africa, primary health care has a different meaning than it has in the developed countries. It is a new health approach intended to be implemented at the community level. Any of a variety of measures may be taken, depending on what is actually needed in that community, but the measures should be simple and effective in terms of costs, technique and organisation. They should also be acceptable to the people in need and should help to improve their living conditions (WHO 1978)⁸⁴.

The basic unit of such a programme is the primary health care worker, a man or woman selected by the local community authorities to deal with the health problems of individual people and the community.

A national seminar on primary health care was held in Malawi in 1978, and one of the final recommendations of the participants was that primary health care workers should work in any of the following fields - education, nutrition, food production, water supplies, sanitation, disease control, maternal and child health, basic curative medicine and other related fields (Malawi Government 1978)⁸⁵. The trained TBA can be regarded as a primary health care worker, and this was recognised by the participants of the seminar who recommended that the role of the TBA should be recognised in primary health care work.

However, while supporting the concept of primary health care, I do not believe that the TBA should be integrated too closely with the proposed programme in Malawi. TBAs already have a defined role which keeps most of them busy enough and further tasks might overburden them. Also, many of the problems that still remain to be overcome with the development of the primary health care worker programme are not a problem, or have already been overcome, in the case of TBAs. For example:

- there is no problem in selection as TBAs already exist;
- there is no need to explain their role to the community as the community already understand it;
- there is no problem in remuneration as a system is already functioning;
- and there is little need for further trials or pilot programmes as one has already been run.

Finally, TBAs need follow-up and support by midwives who can answer the technical questions they ask, while primary health care workers require the support of specially trained community development assistants.

Therefore, while a TBA training programme is a form of primary health care, I believe that it can be run independently and that its introduction does not need to await a full primary health care programme.

It seems appropriate to finish by repeating the sentiments of the two TBAs who attended a session of the national seminar on primary health care in Malawi, which has already been mentioned. These women each gave a vivid account of what it had meant to them to realise that their work was recognised by the authorities and that they were not working illegally. They described how in the past they had lived with a constant fear of being discovered, and how they kept their problem patients in labour for days before daring to let them go to hospital for delivery. Now they were proud of their new skills and position, and relieved to know that the hospitals were there ready to help them in case of difficulty. It may be that the main value of a TBA training programme is the healing of this breach between TBAs and the medical and nursing professions, rather than any technical skills which the TBA acquires. In any case, it is hoped that the findings of this thesis will encourage others elsewhere to undertake the training of TBAs and that this will result in increased safety for the pregnant women of the developing countries.

APPENDIX I

SYLLABUS FOR A TBA COURSE

Introductory sections

Anatomy: uterus, cervix, placenta, membranes, liquor.

Physiology: function of placenta and cord; uterine contractions; cervical dilation; moulding of the fetal head.

Hygiene: the theory of bacteria and bacterial infections including refuse and flies as a source of disease; necessity for clean house, clean bed, clean sheets, clean hands and fingernails, clean patient; sunlight as a disinfectant.

Infectious conditions: infected wounds; abscesses; sore throats; diarrhoea.

Bacterial infections likely to be acquired by mother and baby:

intrauterine infections giving neonatal pneumonia; puerperal infection; infection of perineal tear; cord stump infection; neonatal conjunctivitis.

Basic amenities for a maternity unit

Clean water; bathing room for patients; lighting when delivering at night; hurricane lamp as part of midwifery kit; pit latrine for avoidance of worm infection and for sanitary disposal of placenta.

Ante-natal

Recognition of pregnancy symptoms and signs.

Recognition of simple ailments of pregnancy, treatment and advice.

Events in the first, second and third trimesters of pregnancy:

growth of the uterus; palpation of fetal parts; recognition of multiple pregnancy; recognition of breech presentation.

Value of iron tablets and anti-malarial tablets which the mother can obtain by attendance at health centre ante-natal clinic.

Nutrition in pregnancy.

Preparation for the arrival of the baby: breast care; cleanliness; clothes for the baby.

Abortion: need to refer for bleeding or sepsis.

Referral: the following types of high-risk patients should be recognised and referred for hospital deliveries:

women under 17 or over 35 years of age; women with previous history of stillbirth, caesarean section, recurrent toxæmia, difficult or prolonged labour; grand multipara (over 5); multiple pregnancy; breech presentation; ante-partum hæmorrhage; women of short stature, under 150 cm. (well measure to be provided); women who appear ill or anaemic; women with deformed pelvis, as suggested by spinal deformity or lameness.

Labour

Delivery equipment to be kept in state of readiness.

Necessity for prompt attendance when called to make diagnosis of labour.

Significance of show, ruptured membranes, frequency of contractions.

Progress of labour as recognised by contractions, head descent.

Management of labour: hygiene; enema; resting on side; breathing control; nourishment.

Recognition of signs of second stage: restlessness; shivering; involuntary urge to push.

Patient to be encouraged to push only when head visible without parting the labiae.

Delivery: as little interference as possible; protection for the perineum; delivery of shoulders.

Cutting the cord: sterility and use of instruments.

Routine care of healthy baby: dry and place on mother's abdomen.

Third stage: delivery of placenta only when baby dealt with.

Emergency treatment of third stage or post-partum haemorrhage.

Resuscitation of asphyxiated infant: head low; mucus extraction; mouth to mouth respiration.

Post-natal check of mother: check fundus; check for bleeding and tears.

Referrals: the TBA should be able to recognise and refer patients with the following problems: patients who have already failed to deliver in their own home and who are calling on the services of the TBA for help with this problem; cephalo-pelvic disproportion - explain mechanism, means of recognition, and impossibility of TBA being able to help in this situation; all bleeding cases in pregnancy and labour-abortion, ante-partum haemorrhage, post-partum haemorrhage; delay in 1st or 2nd stage of labour, with a known cause or not - refer after 1st stage of 12 hours i.e. 1 day-time or 1 night-time; refer if 2nd stage lasts more than 1 hour; retained placenta with or without bleeding; transverse lie, shoulder presentation; breech, brow or face presentation; eclampsia; intra-uterine death; third degree perineal tear.

Puerperium

Recognition of the normal puerperal changes, lochia and involution of the uterus.

Complications of puerperium, sepsis, fistulae, haemorrhage.

Breast feeding: prevention and treatment of cracked nipples;
recognition of, and need for, referral of mastitis and breast
abscess.

Recognition of mothers who need advice about contraception:

high parity; ill health; too frequent pregnancies; too young
a mother; past history of retained placenta; recurrent post-
partum haemorrhage; after twin pregnancy; or with malnourished
children.

Description of contraceptive measures available.

Care of the newborn plus child care

Common congenital abnormalities.

Requirements of baby concerning warmth and clothing.

Care of the cord.

Breast feeding and feeding problems.

Conjunctivitis: prevention and referral.

Conditions that require referral of the neonate: respiratory distress;
cyanosis; convulsions; severe jaundice; failure to pass urine
or meconium.

Nutrition of the infant under one: introduction of mixed feeding.

Nutrition of the child: under-5 weight chart and reasons for going
to the under-5 clinic.

Recognition of malnutrition in children.

Immunisations: diseases prevented by immunisation.

Diarrhoea in infants and children.

Supplementary /

Supplementary

Use and care of midwifery kit.

Recording deliveries on record chart.

How to refer patients.

APPENDIX II

EQUIPMENT FOR TBAs

Most TBAs have very little equipment with which to carry out their work, and also lack many basic amenities. After they have completed a course of training it is therefore necessary to supply them with a midwifery kit and some ordinary household items.

The TBA herself should be expected to provide the basic furnishings, namely:

Matting for ante-natal and post-natal mothers to sleep on.

A delivery bed, couch or mat.

A cupboard or table for storing equipment.

The items that it is recommended she be provided with are best listed under four headings:

1. Maternity unit furnishings: Blankets - 2; baby blankets - 2; turkish towels - 2; large metal bucket; large bowl; hurricane lamp; paraffin can.
2. Midwifery kit: the Unicef Midwifery Kit Type 2 which is contained in a waterproof canvas bag (see Illustration 14), and is therefore suitable for domiciliary deliveries also, contains almost all that is required.

Its contents are: kidney basin, 825 ml. volume; sponge bowls - 2; plastic apron; plastic pouch; large pieces of plastic sheeting - 2; apparatus for administration of enema- enema can, rectal tube, latex rubber tubing, straight nylon connector, tubing clamp;

glass dropping bottle; screw cap glass bottles - 2 (for cord ligature kept in methylated spirits); nailbrush; absorbent cotton-wool- 113 gram; sterile gauze pads - 20; plastic soap box; bar toilet soap; hand towel; sterilizer forceps; straight scissors.

The Unicef kit does not contain cord ligature. A suitable locally available tape should be provided, and the TBAs taught to keep this soaked in methylated spirits.

3. Ancillary equipment: measuring rod with a bar fixed at 150 cm; anaemia recognition chart; record charts for deliveries; record book for ante-natal visits.
4. Expendable items: paraffin - 4 gallons; methylated spirits - 1 litre; soap - 5 bars; ballpoint pens - 3.

The aim should be to make the TBA responsible for renewing the supplies of these items herself. The only items the trainer should have to re-issue at follow-up visits are record charts and books.

APPENDIX III

A Questionnaire for TBAs undergoing training

The first session of training should be regarded as an opportunity for the trainer to learn about the attitudes, practices and knowledge of the particular TBAs she is training. This can be done by conversation, but may also be done using a formal list of questions. If the answers are recorded and the questionnaire repeated some time after the completion of training it will give the trainer some idea of how effective the training has been. A simple way of marking the results is 0 for a wrong answer; 1 for a partially correct answer; and 2 for a correct answer.

Some suggested questions are listed:

Ante-natal Section

1. How can you tell that a woman is pregnant?
2. How can you tell if a woman is short of blood?
3. What do you do for a woman who is short of blood?
4. Why do some women bleed from the vagina before they go into labour?
5. Can you sometimes tell even before labour that a woman is going to have a difficult labour, from her history or appearance?
If you can, how do you know this?
What do you do for such a woman?
6. Can you tell beforehand that when the mother goes into labour the hand or arm will come down first?
If yes, how do you know?
7. What medicines do you give to your patients in the ante-natal period?
When do you give it?
Why do you give it?

Labour Section

1. What causes some women to spend a long time in labour?
2. How long would you keep a patient in labour before sending her to hospital?
3. How can you tell that a woman is making good progress in labour?
4. What are the causes of stillbirths?
5. What preparations do you make when a woman first arrives in labour?
6. What abnormalities of labour have you met that made it necessary to send the patient to hospital?
7. Why does delivery sometimes cause a tear of the perineum?
What do you do about it?
8. Do you help the patient to deliver the head of the baby?
If yes, what do you do to help her?
9. How do you deal with the cord?
10. How do you deliver the placenta?
11. What do you do if the placenta is not delivered quickly?
12. If your patient bleeds heavily after delivery do you know of any way to stop the bleeding?

Post-Natal Section

1. What illnesses may the mother suffer after a very prolonged or difficult labour?
2. For how long does a woman bleed vaginally after delivery?
3. What do you do if the bleeding continues for longer than usual?
4. What types of medicine do you give to your patients after delivery?
When do you give it?
Why do you give it?

Child Care Section

1. When do your patients first feed their babies?
2. What problems can occur with the baby in the first few days after birth?
3. How would you help a woman to look after a very small (premature) baby?
4. What types of food would you give to a child of one year old?
5. What is the cause of kwashiorkor?

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