

# The Role of Traditional Birth Attendants in the Reduction of Maternal Mortality

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## Summary

*Throughout history traditional birth attendants (TBAs) have been the main human resource for women during childbirth. Their role varies across cultures and at different times, but even today, they attend the majority of deliveries in rural areas of developing countries. There is little doubt that they have a significant role when it comes to cultural competence, consolation, empathy and psychosocial support at birth with important benefits for the mother and also for the new-born child. In many countries, training TBAs has been an important component of strategies to improve maternal and neo-natal outcomes. However, recent analyses have come to the conclusion that the impact of training TBAs on maternal mortality is low. An emphasis on large scale TBA training efforts could also be counterproductive, by holding back the training of the necessary numbers of medium level providers, particularly midwives. The main benefits from training TBAs appear to be improved referral and links with the formal health care system, but only where essential obstetric services are available. Some studies have observed that formal training is not a requirement for this function. Meeting the needs for medium level obstetric care providers is a tremendous challenge that will be difficult over a limited period of time. Training TBAs should be given a lower priority than developing essential obstetric care services and referral systems. Where TBAs are an important source of delivery care, policy makers need to make the best use of TBAs while simultaneously planning for replacement with skilled attendants.*

## Introduction

Since the Safe Motherhood conference in Nairobi in 1987 increasing attention has been given to the problem of maternal mortality in low-income countries. Several major international meetings, including the International Conference on Population and Development (ICPD) in Cairo in 1994, have produced commitments to reduce maternal mortality (FCI 1994). The goal of reducing maternal mortality by 75% by 2015 has been adopted as an International Development Target (IDT) (OECD 2000). The challenge now is identifying and implementing effective and affordable interventions so that progress towards the goal becomes a reality. One intervention, of which there is now many years of experience in numerous countries is that of training traditional birth attendants (TBAs) in parts of the world where skilled professional attendants are scarce<sup>3</sup>.

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<sup>3</sup> The term 'skilled attendants' refers to people with midwifery skills who have been trained to proficiency in management of normal deliveries and diagnosis, management or referral of obstetric emergencies. The minimum training period required is generally considered to be six months. TBAs, trained or untrained, are not included (WHO 1999).

## The Rationale for TBA Training

Three quarters of maternal deaths in developing countries are attributable to direct obstetric causes such as postpartum haemorrhage, postpartum sepsis, eclampsia, obstructed labour, and complications of unsafe abortion (WHO 1996). For many years it has been recognised that the presence of an attendant with professional midwifery skills, who can either provide or ensure access to essential obstetric care, has an important role in preventing maternal deaths from these causes (IAG 2000).

Historical data from currently affluent countries support this view. The marked decline in maternal mortality in Sweden during the period 1750-1900 parallels the development of midwifery as a profession and the increasing use of professional midwives by women in childbirth (De Brouwere *et al.* 1998)<sup>4</sup>. Analysis of contemporary data from demographic health surveys (DHS) reinforces this observation. At national level there is a clear negative correlation between the proportion of deliveries attended by a skilled attendant (midwife, nurse or doctor) and the maternal mortality ratio (Stanton *et al.* 1997). There are a few exceptions, but almost all countries where skilled attendance is more than 80% have MMRs below 200 (World Bank 1999). It is in recognition of this relationship, as well as difficulties in measuring maternal mortality, that the proportion of birth with skilled attendance has been adopted as an additional IDT<sup>5</sup>.

Clearly, universal skilled attendance at delivery is a worthy objective. However, in many countries, where professional birth attendants are simply not available to rural populations or the urban poor, this ideal remains a distant goal. DHS analysis has shown that, out of 22 countries surveyed in sub-Saharan Africa, only one (Botswana) had professional birth attendants attending delivery in more than three quarters of cases (Macro International Inc. 1994). It is estimated that, world-wide, two thirds of all births occur outside health facilities (WHO 1997). Of these, midwives, or other professionals, conduct only a small proportion. The majority, around 60 million deliveries per annum, are currently attended by a traditional birth attendant, a relative, or, in some settings, no one (Alto 1991). Achieving skilled attendance at delivery for all is going to be a huge challenge. It has been calculated that, with an assumed load of 150 deliveries annually per midwife, plus associated prenatal and postnatal care, *around 400,000 midwives will have to be trained* (Walraven & Weeks 1999). These estimates can be expected to increase as rising numbers of young women enter the reproductive age group. Significant costs, which include salaries, housing and rural posting allowances, are inevitable. In addition to these direct costs there may be additional costs related to supervision and support. It is against this background that training of traditional birth attendants has been promoted on the basis that they are available, are already engaged in maternity care and appear to present a lower cost alternative (Belsey 1985).

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<sup>4</sup> It is important to note that the development of midwifery in Sweden was not analogous with the development of programmes for training TBAs. In Sweden midwives were formally trained, in midwifery schools with textbooks, to use available technologies and acquired obstetric skills including forceps extraction (Högberg 1985).

<sup>5</sup> Increasing the proportion of births attended by a skilled attendant to 80% by 2005.

## **The Role of Traditional Birth Attendants**

TBAs are found in most communities of the world although their nature and function vary considerably. The World Health Organisation definition of a TBA is 'a person who assists the mother during childbirth and who initially acquired her skills by delivering babies herself or by working with other TBAs' (Leedam 1985). TBAs are often older women and are generally illiterate (UNFPA 1997). For families, TBAs are a cheaper option than domiciliary professional midwives and will often accept payment in kind. In many countries where home delivery is the norm, midwives are only available in health facilities. In many cultures TBAs are respected members of their community, perform important cultural rituals and provide essential social support to women during childbirth (Chalmers 1993, Chen 1981, Aletor 1981, Campero 1998, Carney 1996). However, in some cultures, for example in the Indian sub-continent, TBAs are low caste and lack influence. People believe that body fluids released at childbirth (liquor and blood) are polluting and employ a TBA to carry out polluting tasks on behalf of the rest of the family (Blanchet 1984, Rozario 1995, Bhatia 1981). In all cases their beliefs and practices are influenced by local customs and sometimes by religion (Bullough 2000).

The workload of TBAs varies considerably from place to place and among individuals. Some TBAs, may only attend family members and thus conduct only 2 or 3 deliveries a year while others have a wider clientele and a higher number of deliveries. It is unusual for TBAs to deliver more than 20 women in a year (WHO 1997).

## TBA Training

The stated goal of TBA training is to contribute to the reduction of maternal and child mortality and morbidity through improved delivery and child care practices by: a) improving the skills, understanding and stature of TBAs; b) increasing the number of births conducted by trained TBAs; and c) improving links between modern health services and the community through TBAs (Cabral *et al.* 1992). Core training generally focuses on teaching TBAs to perform deliveries in a more hygienic and safer fashion, discouraging harmful practices, recognising danger signs and referring women with complications to facilities where essential obstetric care is available. Health education for pregnant women and antenatal and postnatal care are usually included. In some programmes TBA training has assumed a much wider agenda and includes child health intervention, health promotion and family planning. It has even been proposed that training TBAs in anthropometry could help in identification and improved management of pregnant women with malnutrition (Krasovek & Anderson 1991). Training arrangements usually consist of short (about 5 days) basic course followed by regular meetings with mainstream health staff for supervision and on-going education. TBAs may be asked to keep simple records with the intention of allowing the health system to monitor their activities.

NGOs working at community level in resource poor countries frequently include TBA training in their activities. A number of governments, for example Bangladesh, have also adopted this approach, supported by massive donor funding. International agencies, including WHO, UNICEF and UNFPA have also supported TBA training. However, in recent years the value of TBA training has been increasingly questioned (Maine 1993) although there are still many groups who remain enthusiastic (Greene 1995). There often appears to be little common ground between the proponents and opponents of TBA training.

## Evaluation of TBA Training Programmes

Evaluation of TBA training could potentially take place at several stages in the implementation process. Possible components for evaluation include: inputs (e.g. expenditure, technical assistance; programme management); outputs (e.g. numbers trained; behaviour change; % deliveries with trained TBAs; % and nature of cases referred); and outcomes (i.e. maternal morbidity and mortality or perinatal mortality). Our view is that one of the reasons for continuing debate over TBA training is the haphazard way the programmes have been evaluated. Despite high expenditure on the programmes, there are surprisingly few methodologically sound evaluations, even of programme outputs. Among the many studies documented in the literature problems with sample size, study design, control or comparison groups, and statistical analysis are extremely frequent. The impression overall is that many of these evaluations were not planned as an integral part of the programme process, but initiated as an afterthought. Even evaluation of the TBA training process has not been as frequent or as rigorous as might be expected. Studies that have been done present a mixed picture. Several studies report that TBAs practice what they have learnt during their subsequent work in the community (Lartson *et al.* 1987, Akpala 1994). However, adoption of improved practices is not universal (Bemara *et al.* 1990) and the extra confidence gained from the training experience may lead to a higher incidence of dangerous procedures and sometimes delays in referral (Eades *et al.* 1993). There is also evidence that training does not substantially alter the belief systems of TBAs and will therefore have little impact on practices that are rooted in these beliefs (Goodburn *et al.* 1995).

TBA training as a package of interventions has rarely been submitted to any kind of rigorous assessment in terms of outcomes (Smith 1996). Cost-effectiveness studies, which should take account of impact in relation to limited resources and competing priorities, are even rarer. Many authors clearly assume that the value of TBA training is self evident (Semali 1992, Amin & Khan 1989, Islam *et al.* 1984, Bayoumi 1976, Mathur *et al.* 1983).

## Theoretical Considerations in Measuring the Outcome of Training TBAs

This review was asked to focus on maternal mortality as an outcome. However, studies of this nature are few. The main reason for this is that it is difficult and very expensive to prove significant reductions in maternal mortality in the absence of accurate vital events registration, which is absent in most developing countries. Maternal death is a comparatively rare event with an incidence of at most 0.5-1.5%, which implies a wide confidence interval. Huge sample sizes are required to prove any change in maternal mortality. For example, a household survey in Addis Ababa in 1984 estimated a maternal mortality ratio of 566 maternal deaths per 100,000 livebirths. The study was based on 45 maternal deaths identified in a survey of 32,000 households. Even such a huge undertaking has a wide 95% confidence interval, in this study calculated to range from 374 to 758 deaths per 100,000 live births (Kwast *et al.* 1986). It follows that it is impossible to state that a significant reduction has been observed unless the sample size, and the number of deaths, are presented. This is further illustrated in a study of maternal deaths in Kerian District, Malaysia which reported a maternal mortality decline of 41.8% based on a reduction in MMR from 189 maternal deaths per 100,000 livebirths in 1976 to 110 / 100,000 in 1980 (Yadav 1982). However, since the number of maternal deaths in the entire study period was only 35 with a total sample size of 22,977 deliveries, we can see immediately that even such a conspicuous percentage-wise decline hardly reaches statistical significance. This kind of statistical analysis is important for the interpretation of reports in which an alleged "reduction" of maternal mortality has taken place due to a programme effect, but is rarely performed.

Maternal morbidity is both an outcome in its own right and a pre-cursor for maternal death. However, the relationship between maternal morbidity and maternal death is not clear cut (Campbell & Graham 1990). Although some morbidity, e.g. infection and vaginal fistula, may be determined by service delivery practices, there is evidence that some acute maternal morbidity is physiologically inevitable. In these circumstances service availability prevents death but not the morbidity itself. There are also a number of methodological difficulties in measuring morbidity, particularly in community-based studies, which means that it can be difficult to use maternal morbidity generally to measure success of TBA training programmes (Graham *et al.* 1995).

Perinatal deaths are more frequent than maternal deaths. Smaller sample sizes are needed to detect change and this indicator is more often used in programme evaluations than measures of maternal mortality. However, perinatal outcomes are influenced by a number of factors in addition to obstetric care and the link between perinatal death and maternal death is not always clear cut (Akalin *et al.* 1997). In addition, it can be difficult to measure perinatal deaths in communities where stillbirths and early neonatal deaths are not recorded or reported.

## Evidence of Maternal Mortality Reduction from Programmes of TBA Training

Evidence from selected national programmes provides some indication of what can be achieved of village birth attendants. China is one of very few developing countries which have maintained reasonably accurate records of maternal mortality over a long period of time. From 1950 to 1980 delivery care in China was provided mainly by minimally trained village birth attendants backed up by a strong referral network for women with complications. Using this model China succeeded in reducing the national MMR from 1500 to 115 (Koblinsky *et al.* 1999). This can be contrasted with Bangladesh where, in the absence of accessible essential obstetric care, MMR has remained generally high despite decades of TBA training (Nessa 1995). Countries, such as Malaysia, Sri Lanka and Thailand, which have succeeded in lowering MMR below 100 have all adopted a strategy of progressive increase in coverage by professional attendants backed up by provision of essential obstetric care (Starrs 1998). Malaysia is particularly interesting because they adopted a deliberate policy of gradually replacing TBAs with domiciliary midwives moving eventually to a facility based service (Yadav 1987).

There is also evidence from a number of sub-national programmes. A primary health care programme in Farafenni, Gambia used a prospective pre and post intervention survey design with control areas to assess the impact of training TBAs on the outcome of pregnancy. In the intervention villages, deliveries with trained TBAs increased from 0 to 65%. Deliveries by trained midwives also increased probably as a result of referral by the TBAs. Maternal death rates fell in the intervention villages (from 2716 [11/405] to 1051 [13/1236]) ( $p < 0.05$ ), but falls (from 1498 [4/267] to 963 [7/727]) were also observed in the control villages (n.s.). Improvements in transport were thought to have contributed to the result.

Reports of the TBA training programme in Faisalabad City, Pakistan, attribute falls in MMR to the programme. Before the programme MMR was estimated at 10.1/1000 live births. This had fallen to 1.9/1000 by 1987 and to 0.64/1000 by 1993. However, many other improvements in obstetric services were implemented over the same time period, including an obstetric flying squad service and subsidies for obstetric care in hospital. No statistical analysis are reported (Bashir *et al.* 1995).

A prospective study in Nigeria studied changes in MMR following training of 75 TBAs within a 10 mile radius of a referral hospital. Maternal deaths dropped by 50% (30 to 15) in the 3 years following the training. Non-randomly selected comparison areas were more distant from the hospital. The maternal deaths in these sites dropped by 27%, (34 to 25) in the same time period. Statistical analysis was not performed (Brennan 1989).

A recent study in Senegal has attempted to compare the impact of training professional midwives with training TBAs. Maternal mortality was higher in areas where women gave birth mainly in health care centres assisted by TBAs, than in areas where women gave birth in health facilities assisted by midwives. The researchers postulate that midwives in health facilities detected more obstetric complications than TBAs leading to immediate care and lower case fatality rates (de Bernis *et al.* 2000).

Until recently there were no published reports of maternal morbidity as an outcome of TBA training programmes. However, two recent studies suggest that the impact is not likely to be important. One study in Bangladesh showed that although trained TBAs were significantly more likely to practice hygienic delivery than untrained TBAs (45% v 19.3%,  $p < 0.0001$ ), there was no significant difference in levels of postpartum infection when deliveries by trained TBAs and untrained TBAs were compared (Goodburn *et al.* 2000). In Brong-Ahafo, Ghana a study evaluating the impact of TBA training on the health of mothers and new-borns showed that mothers attended by a trained TBA were less likely to have experienced postpartum fever and

retained placenta, but more likely to have had a prolonged labour. No significant association was found between training and other morbidity symptoms or with referral rates (Smith *et al.* 2000).

None of these studies leads to a conclusion that TBA training as a single intervention can have a significant impact on maternal mortality. However, because of the methodological constraints involved in exploring this issue, it is helpful to briefly review the other possible health benefits from training TBAs, and the experiences of programmes.

## **Additional Health Benefits from TBA Training Programmes**

In a rural health project in Dana, Ghana, TBAs have been trained and supervised since 1973. Evaluation of this programme has demonstrated that trained TBAs can provide patient education and encourage women to go to health centres for preventive care. However, it has also shown that many TBAs routinely perform high risk deliveries even though they have been taught to refer them to higher level care. When TBAs do refer, a significant proportion of their patients do not comply with the referral advice. Reasons for non-compliance with referral by TBAs included financial constraints, lack of transportation and fear of disrespectful or painful treatment from medical staff. The study concluded that in this rural environment it was important to establish or upgrade referral facilities before training TBAs and that the main contribution of TBAs was probably in health promotion, (Eades *et al.* 1993).

Studies in India have indicated that training TBAs in care and resuscitation can improve neo-natal outcomes (Kumar 1994, Bang *et al.* 1999) and that they can reduce neonatal mortality following training in management of neonatal pneumonia (Bang 1994). At one time it was argued that TBAs could reduce the incidence of neonatal tetanus (WHO 1983). However, vaccination with tetanus toxoid was shown to be overwhelmingly superior (Ross 1986) though there is evidence that TBAs can participate effectively in promoting vaccination (Mathur *et al.* 1979).

Several studies have focused upon the contribution that TBAs can make to fertility regulation activities (Begum 1984, Khan *et al.* 1986, Singh 1994) although it has been shown that TBAs can be quite negative to fertility regulation activity and thereby counteract access to contraceptives (Hitesh 1994, Singh & Kaur 1993).

A Bangladeshi NGO (Gonoshasto Kendra) has provided all maternal health services in one health District for over 20 years. A community-based approach is followed with TBAs and community health workers working as a team. The birth rate and the infant death rate of the district are lower than the national average and there is a higher contraceptive prevalence and immunisation rate. A recent evaluation report stresses the major contribution of the referral hospital, and of the continuing education programme to the effective functioning of the TBAs (Chowdhury 1998).

Awareness of the perils of overmedicalisation of childbirth (Jordan 1987) have led some authors to support the concept of childbirth with a TBA as a natural process and to question the 'Western' content of the training process (Jordan 1989, MacCormack 1989). It would be appropriate to attempt to model the risks and benefits of moves towards more medicalized care for normal childbirth in developing countries and to assess the extent to which training of TBAs might lead them to abandon desirable traditional practices such as an upright position during labour (Goodburn 1997, Chalmers 1993, Lefèber 1997).

## The Role of TBAs in Referral to Essential Obstetric Care Facilities

Access to essential obstetric care appears to be the crucial factor in reducing maternal mortality. In the Matlab region of Bangladesh, falls in maternal mortality in a MCH-FP intervention area were paralleled by falls in parts of the control area. The reductions in maternal mortality have been attributed to the presence of a referral hospital and transport links that were available to all areas (Ronsmans 1997, Maine 1996). A common finding in many studies of the effect of TBA training is the importance of referral to essential obstetric care facilities.

Many programmes have had a specific focus on training TBAs to refer emergency cases appropriately and some have also had major inputs into improving obstetric services, mechanisms for transport and the links between TBAs and professional health staff (Bullough 1989). In a peri-urban area in Brazil it has been shown that TBAs trained to recognise prenatal conditions and complications of pregnancy were successful in identifying them and in making referrals. TBAs were given a small maternity centre to work in and transport was available (Janovitz *et al.* 1988). TBAs in Burkina Faso have been successfully trained to refer seriously ill mothers (Wollast *et al.* 1993) and the MotherCare demonstration projects in Bolivia, Guatemala, Indonesia and Nigeria have shown that addressing issues of referral and emergency obstetric care improved quality of referrals and reduced perinatal mortality (Kwast 1996, Kwast 1995, Alisjahbana *et al.* 1995).

It is important to recognise that improvements in referrals may occur independently of TBA training. Hostility between TBAs and health staff has been found to act as a barrier to referrals (Okafor 1994). A study from Guatemala has demonstrated that hospital staff training can increase referrals from TBAs regardless of whether the TBAs are trained or untrained. Hospital staff were instructed in standards of care for managing obstetrical and neonatal patients and in the importance of being supportive and understanding of TBAs and of mothers referred by TBAs. Referrals increased by over 200%. (O'Rourke 1995).

These findings and those from similar studies suggest that the crucial intervention for all domiciliary birth attendants is a reliable support system for emergencies with sufficient transport facilities available (Kwast 1992), and skilled, equipped and available support from professional midwives and other staff with life-saving skills (Fleming 1994).

## The Costs of TBA Training

Few attempts have been made to analyse the cost-effectiveness of TBA training programmes (Koblinsky *et al.* 1994). Following the 1987 Nairobi conference, Maine assessed the relative cost-effectiveness of seven hypothetical models of maternity care: conventionally trained TBAs; TBAs with further training; prenatal care for all women; family planning to prevent 20% of pregnancies; health centres with transport to an urban hospital; health centres without transport to an urban hospital; and, finally, health centres with transport to several rural hospitals. In a high maternal mortality situation, where direct obstetric causes account for most maternal deaths, investment in health centres and rural hospitals proved to be the most cost-effective option in terms of deaths averted per dollar spent (Maine 1993) while TBA training was one of the more expensive. It should be noted however that lives saved by TBA referrals and the costs of midwifery training were not included in the model (Bullough 2000).

Apart from the initial costs of TBA training, which can be considerable as so many need to be trained, there are considerable ongoing investments required in refresher training, and supervision. TBA training programmes are almost all supported by donors or NGOs and most governments in less developed countries cannot in fact afford them or manage them. In contrast, investments in health facilities and trained staff such as nurse-midwives are not only more attainable within their limited budgets, but also have tangible benefits for a wide range of health problems.

## The Debate Continues

In the international fora the debate has been and is still hot regarding the value and justification of training TBAs despite the lack of evidence as to their contribution to reduced maternal mortality (Sai & Measham 1992). TBAs have had many different roles in different cultures but they remain, even today, an important asset for a majority of the world's rural pregnant women. It is beyond doubt that their impact is significant when it comes to empathy, cultural competence, and psychosocial support at birth although many women certainly seem willing to trade this for medical care once it is available (Jordan 1987).

There seems to be consensus that TBAs are generally not able to handle most potentially fatal complications and that many other factors are important, in particular the accessibility and quality of obstetric services. Some sources argue that any attention to less effective strategies diverts attention from development of professional midwifery and hospital delivery care (Maine 1993, De Brouwere *et al.* 1998). Others argue that a switch to the model of "professional midwifery for all" would not be immediately fruitful. They question whether an abandonment of traditional birth attendants is wise and they fear that "we are in danger of a wiping out the useful work along with the weaknesses, rather than building on strength and correcting shortcomings" (Walraven & Weeks 1999).

In an attempt to accommodate the conviction of need of training professional midwives and involving TBAs, Sibley and Armbruster have tried to develop an innovative, community-oriented strategy designed to reduce maternal mortality (Sibley & Armbruster 1997). This strategy targets women, families and TBAs and uses two mutually complementary training interventions, reflecting the idea that training of professional and paraprofessional health workers in emergency obstetric care is essential and that the education and mobilisation of families, communities and TBAs must complement it. It certainly seems to be the case that "the challenge for policy makers is to make the best use of this available human resource (TBAs) but simultaneously plan and implement a definite replacement strategy" (Kamal 1998).

## **Conclusion**

In many countries, TBAs are an important source of social and cultural support to women during childbirth and because of economic constraints, and the difficulty in posting trained professionals to rural areas, many women will continue to deliver with TBAs. However, there is no conclusive evidence that trained TBAs can prevent maternal deaths unless they are closely linked with the health services, and are supported to refer women to functioning hospitals providing essential obstetric care. The role of TBAs should not be ignored but TBA training should be given low priority and precedence given to other programme options that are based on stronger evidence of effectiveness including the provision of essential obstetric care and of a skilled attendant at delivery.

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