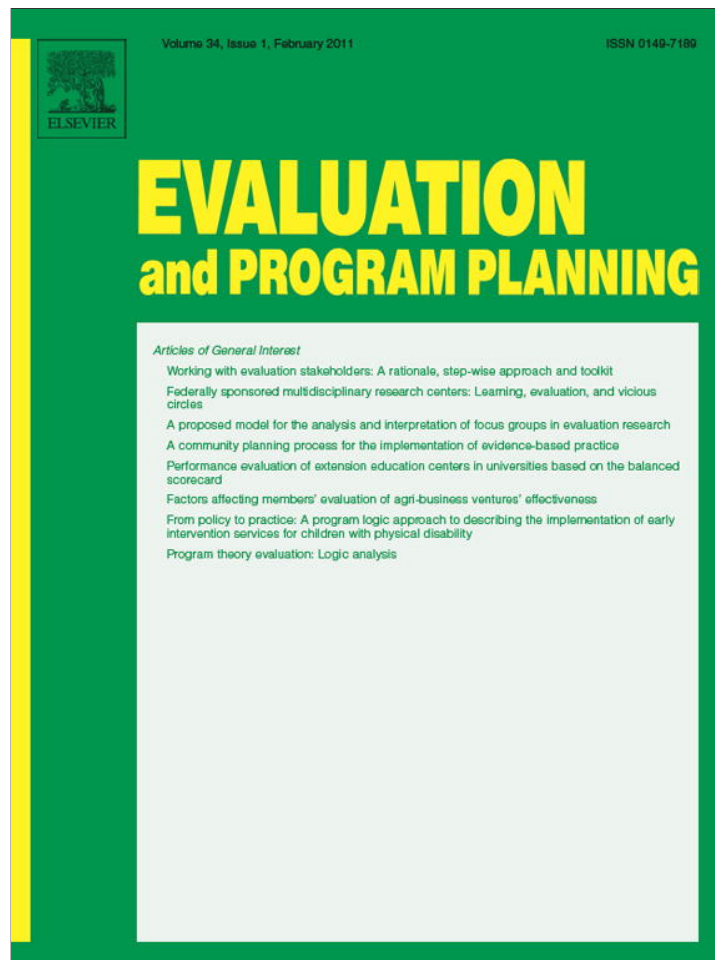


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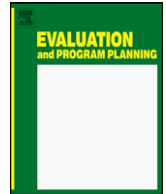
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## Traditional birth attendant training and local birthing practices in India

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## ABSTRACT

Training birth attendants (TBAs) provide essential maternal and infant health care services during delivery and ongoing community care in developing countries. Despite inadequate evidence of relevance and effectiveness of TBA training programmes, there has been a policy shift since the 1990s in that many donor agencies funding TBA training programmes redirected funds to providing skilled attendants during delivery. This study aimed to assess the ways in which a TBA training programme in India has been successful in disseminating evidence-based knowledge on birthing practices. TBAs practicing within 16 villages targeted by training programme initiatives were administered with structured questionnaires. The post training birthing practices of trained (24) and untrained (14) TBAs was compared and birthing practices adopted by women assisted by trained (16) and untrained (9) TBAs was analysed. Positive post training practices were hand washing, use of a clean blade for cutting the cord, immediate breastfeeding and weighing of babies. Nevertheless, the training could be further improved with up to date and evidence-based information and more comprehensive instructions. The findings suggest an integration of local and evidence-based knowledge is needed to improve the training. Raising community awareness of public health measures related to maternal and child health is also recommended.

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## 1. Introduction

Continuing substandard maternal and child health in developing countries, especially South Asia (Bangladesh, India and Pakistan) and Sub-Saharan Africa is of major public health concern among researchers and policy makers. Based on a demographic and health survey, the percentage of births assisted by Traditional birth attendants (TBAs) was ascertained to be highest in Asia (41%) (Berer, 2003). TBAs also provide on-going community health care services apart from assistance during delivery. There is evidence that certain practices adopted in home deliveries and delays in recognising and referral of complications can cause serious harm to

mothers and babies (Guha, 1998, 2005; OHCHR, 2006; WHO, 1999). Indeed throughout the 1970s and 1980s, the World Health Organisation (WHO) promoted the training of TBAs in Asia, Africa and Latin America to reduce the maternal mortality rate (MMR) (Kruske & Barclay, 2004, WHO, 2005). Traditional birth attendants training advocated safe and clean delivery through the “three cleans” programme (hand washing with soap, clean cord care, and clean surface), promoted awareness of the importance of breastfeeding and weighing babies, and addressed some of the unhygienic and harmful practices (WHO, 1993). Over time, training content changed and included various other aspects of reproductive health including family planning, HIV/AIDS prevention, oral rehydration, identification of risk, legal issues of female infanticide and referral. Since the 1990s TBA training has been increasingly seen as irrelevant and ineffective on the basis that the maternal mortality rate (MMR) in developing countries did not reduce. Hence, many donor agencies providing funding for TBA training withdrew funds, reallocating them to providing skilled attendants during delivery. But researchers have expressed concern that this shift in policy has taken place without adequate evidence on the relevance and effectiveness of the TBA training initiative (Kruske & Barclay, 2004; Walraven & Weeks, 1999).

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In India, one third of women in the reproductive age group (15–49) are acutely undernourished<sup>5</sup> and 58% of pregnant women in India have anaemia (IIPS, 2007). In such maternal health situation 61% of births take place at home and TBAs assist more than one third (37%) of these (IIPS, 2007). The extent of dependence on TBAs for assistance during delivery is higher in rural areas (42%) compared to urban areas (20%) and is higher in poor (53%) compared to affluent (9%) households (IIPS, 2007). A recent study in India highlighted the serious shortfalls in physical infrastructure, staff and supplies at public health institutions (IIPS, 2007). Therefore researchers have cautioned that TBAs will continue to exist despite policy changes (Kamal, 1998; Saravanan, Gavin, Helen, & Jenny, 2010). Any shift in policy hence needs to be supported by appropriate evidence of the effectiveness of TBA training programmes at the local level (Foster, Anderson, Houston, & Doe-Simkins, 2004), but more research is needed, particularly in India. This study aimed to assess the ways in which a TBA training programme in India has been successful in disseminating evidence-based knowledge on birthing practices. The objectives were to identify the relevance of TBA training by assessing their contribution in providing support during delivery, and to compare post-training birthing practices of trained TBAs<sup>6</sup> to those of untrained TBAs.<sup>7</sup>

## 2. A review of traditional birth attendants' training outcome

Traditional birth attendants have been blamed for causing maternal and infant deaths with their unhygienic and harmful practices (GOI, 2000, Guha, 2005, 1998; WHO, 1998a, 1998b). Poor knowledge and low literacy are assumed to be one of the barriers to the success of training (Bulterys et al., 2002; GOI, 2000; UNICEF, 2004) and for deterring and delaying referrals (WHO, 2005). However, recent studies have recognized TBAs as one of the key potential human resources in reducing neonatal mortality (Bang, Bang, Baitule, Reddy, & Deshmukh, 2005; Jokhio, Winter, & Cheng, 2005; Sibley & Sipe, 2006).

A meta-analysis of 60 studies in developing countries revealed small significant decreases with TBA training in perinatal mortality and neonatal<sup>8</sup> mortality due to birth asphyxia and pneumonia (Sibley & Sipe, 2006). A recent study in Bangladesh revealed that there were significant improvements in knowledge of recognition and referral of women with heavy bleeding and convulsions and management of apneic newborns (Rowen, Prata, & Passano, in press). A study in Pakistan using TBA training as an intervention has demonstrated a reduction in perinatal mortality<sup>9</sup> as an influence of training (Jokhio et al., 2005). An intervention study in Maharashtra demonstrated a 62% reduction in neonatal mortality in rural India through a community-based approach to control asphyxia that included training of traditional birth attendants and village health workers (Bang et al., 2005). Similar intervention in Makwanpur district, Nepal, covering a population of 28,931 women illustrated positive outcomes, including training

of essential newborn care for all cadres of government health staff, female community health volunteers (CHVs) and TBAs (Manandhar et al., 2004). Also, a community study in Nigeria demonstrated a reduction of the MMR of 50% from 1983 to 1986 by training TBAs (Brennan, 1988). Furthermore, a literature review from Africa, Asia and Latin America of 15 maternal mortality interventions demonstrated a decline in MMR through training of midwives and TBAs (Ray & Salihu, 2004). In addition, fresh evidence has emerged in relation to the potential role of TBAs in reducing perinatal mortality; a systematic review concluded that “the potential of TBA training to reduce peri-neonatal mortality is promising when combined with improved health services” (Sibley et al., 2007, p. 1017).

Several other studies have demonstrated positive TBA training outcomes. Some have shown that training TBAs has resulted in an increase; in referral of immunization and complications (Rodgers, Malaika & Nelson, 2004; Smith et al., 2002; UNFPA and University of Aberdeen, 2004), antenatal attendance rates (ANC) (Sibley, Theresa, & Koblinsky, 2004), referral for family planning (UNFPA and University of Aberdeen, 2004), knowledge of risk factors and signs of danger in pregnancy and childbirth (Rodgers et al., 2004; Jahn, Carvalho, & Kalinga, 2001), and improvement in protection against postpartum fever and response to retained placenta (Smith et al., 2002). For example, a study in Guatemala showed that training resulted in positive changes during the postpartum period, especially in cases of haemorrhage or infection (Bailey, Szászdi, & Glover, 2002). Trained TBAs were found to be more than twice as likely to perform ‘clean’ deliveries (Goodburn, Chowdhury, Gazi, Marshall, & Graham, 2002), to wash their hands before touching the mother (PATH, 2002), and advise mothers on basic prenatal care, identifying risks and making referrals (UNFPA, 1996). Traditional birth attendants tended to manage certain complications of retained placenta and prolonged labor by themselves, however there was a perceived need for supervisory back-up along with training (Lartson, Sodipe, Ebrahim, & Abel, 1987).

In contrast, some studies have observed adverse outcomes of TBA training. For example, an increase in babies delivered in the supine position, increased vaginal examination and longer hours of labor (Goodburn et al., 2002; Jahn et al., 2001; Smith et al., 2002). Other studies have shown that training had no impact on the practices of trained TBAs compared to their untrained counterparts in the manipulation of the baby during delivery, and active removal of the placenta (Goodburn et al., 2002), clean management of the umbilical cord (Jahn et al., 2001), referrals (Smith et al., 2002) and symptoms of maternal infection (Goodburn et al., 2002).

Evidence of TBA training programmes in developing countries suggests there are beneficial practices introduced into local communities with training. However, undesirable practices are also introduced into local communities with training, while some studies have shown no impact of training TBAs. An appropriate understanding of useful and harmful practices from recent evidence based on clinical research and community birthing practices is therefore important background information required for effective incorporation into local TBA training programmes.

## 3. Methods

The TBA training programme in Shendi (Primary Health Center), in Maharashtra State was conducted by the Government of India (GoI) in the year 2002 in collaboration with the local non-governmental organizations (NGOs) Community Rural Health Project (CRHP) and Pravara Medical Trust (PMT). The study reported herein was conducted in the year 2005 between May and September. As the training had already been conducted, documentation and post training practices of trained TBAs was

<sup>5</sup> Acutely malnourished women are those having a body mass index below normal (<18.5). The body mass index is defined as weight in kilograms divided by height in metres squared.

<sup>6</sup> In this study, a TBA was defined as a person who practices midwifery (full-time or part-time) by assisting anyone who calls upon her service. TBAs who had received formal training through the modern health sector to upgrade her skills were defined as a ‘trained TBA’.

<sup>7</sup> TBAs who had not received any training or received training and not received any refresher course for the last ten years were defined here as ‘untrained TBAs’.

<sup>8</sup> Neonatal mortality: includes infant deaths occurring during the first four weeks after birth.

<sup>9</sup> Perinatal mortality: number of perinatal deaths per 1000 total births. The deaths include those occurring during pregnancy (at 22 completed weeks of gestation and over) during childbirth and up to seven completed days of life (WHO, 2006).

compared with the practices of untrained TBAs. Training documents were reviewed to make a broad assessment of the content covered during the training. To assess the ways in which the training programme had been successful in disseminating evidence-based knowledge on birthing practices, a survey was conducted of all trained and untrained TBAs practicing in the 16 villages covered under the Shendi Primary Health Centre (PHC) in India. Similar information was also collected from women assisted by the selected TBAs as a cross verification. Face-to-face interviews using structured questionnaires were conducted with both TBAs and mothers at their residence. TBAs described their role and the birthing practices they generally adopted during delivery, whereas the mothers shared the experience of their latest birth.

Birthing practices of trained TBAs ( $n = 24$ ) and untrained TBAs ( $n = 14$ ) were compared and cross verified with the latest birth experience of mothers assisted by the selected trained TBAs ( $n = 16$ ) and untrained TBAs ( $n = 9$ ). Given the small number of respondents (38 TBAs and 25 women), formal statistical analysis of the data was not appropriate. However, it needs to be noted that each TBA potentially represents several deliveries (refer Table 5). Therefore the practices (useful or harmful) adopted by one TBA can have implications on the health of many mothers and infants.

A list of the trained TBAs was acquired from the two organisations involved in the training programme CRHP and PMT. There were 32 TBAs trained by the local NGOs within the 16 villages of Shendi PHC and all were approached. Seven of them were not practicing as TBAs in the community despite training and were hence excluded from the study reducing the sample to 24 TBAs. No such list was available for untrained TBAs. Therefore, every village was visited and enquiries made to ANMs<sup>10</sup> and AWs<sup>11</sup> about the practicing untrained TBAs. A total of 14 untrained TBAs were approached and included in the study. The functions of an AW generally equip her with the knowledge of births in her area of work and the TBAs who assisted the birth. The ANMs and AWs were therefore asked whether they were aware of the women who had delivered with the assistance of the already listed trained and untrained TBAs in the last year. All the TBAs and mothers approached agreed to participate in the study.

#### 4. Study findings

As the study was a post training assessment, it is important to first critically review documents used by CRHP and PMT in the TBA training programme. This section is hence classified into: (1) review of training content, (2) socio demographic characteristics of TBAs, (3) birthing practices adopted by TBAs and mother assisted by them, and (4) response of TBAs to complications.

##### 4.1. Review of documents used in the traditional birth attendant training programme

The documents reviewed were; the GOI rationale for TBA training programme (GOI, 2002), the local training manual distributed to TBAs, the final training programme report submitted

by PMT (PMT, 2003), and training materials such as videos shown to TBAs during the training.

*a. Birthing position:* A review of the PMT training manual revealed that TBAs were instructed to ask women to take the supine position after rupture of the membranes. Beyond this point in the manual the woman was diagrammatically shown in the supine position. A video on safe delivery shown to TBAs during the training portrayed a woman lying on her back during the entire childbirth process. Moreover, the video shown is of a delivery conducted by a nurse in medical surroundings, largely unfamiliar to TBAs. In this video vaginal incision was made during delivery but there was no explanation of whether the incision needs to be treated. The video portrayed the birthing woman as a medical object rather than a human being who needs support and encouragement during childbirth.

*b. Instructions on hygienic practices:* The manual provided instructions on hand washing with soap and brush and to avoid wiping hands on a towel thereafter. However, they were not instructed to wash their hands again before cutting the cord or conducting an internal examination. It instructs to avoid using any blunt objects or a sickle to cut the cord however there was no mention of potential harm from materials commonly applied to the cord. A delivery kit was provided at the end of the local training programme and contained a plastic sheet, a pair of gloves, a clean blade to cut the cord, and clean threads. However there was no strategy for its replenishment in the community.

*c. Management of hypothermia:* World Health Organisation recommends drying and wrapping of new-born babies soon after birth, skin-to-skin contact, immediate breast-feeding and postponed bathing (WHO, 1997). Yet the local training manual instructed TBAs to leave the baby unwrapped on the floor between the mothers' legs until the pulse in the cord stops. The manual then suggested wrapping, cleaning, and placing the baby close to the mother. There is no mention of postponed bathing in the training manual or information to prevent, identify or address hypothermia. The training manual suggests breast feeding a few hours after birth.

*d. Weighing new born babies:* The manual suggested referral of infants to health centres for weighing but there was no emphasis on weighing babies soon after birth. According to the National Family Health Survey data, most (66%) of the babies in rural India were not weighed after birth (IIPS, 2007). Among children for whom birth weights were reported in rural areas of India, 22% were of low birth weight (less than 2.5 kg) (IIPS, 2007).

*e. Maternal complications:* Post-partum haemorrhage is the leading cause of maternal death in India, but its significance was minimised in the manual. Apart from excessive post-partum bleeding, there are several other potentially complicated situations that can lead to emergencies that have been left out of the local training manual such as fever (infections), prolonged unproductive labor, retained placenta, shock (convulsions or fits), and uterine inversion.

*f. Complications among new-born babies:* The manual instructs TBAs to watch for the following signs that require referral: breech or transverse presentation of fetus, twin pregnancy and absence of fetal pulse or movement. Other problems such as prematurity, premature rupture of membranes, meconium staining in the amniotic fluid, cord prolapse, shoulder dystocia, cord around the baby's neck, poor colour of the baby, jaundice, dehydration, lack of weight gain, infection, and birth defects were omitted.

In summary, information was generally outdated and some significant information was omitted or inadequately covered. Breastfeeding a few hours after birth and a preference for the supine position is outdated information. Other vital information was omitted such as: to delay bathing babies immediately after birth, to avoid applying oil on the baby and to wash hands again

<sup>10</sup> Auxiliary Nurse Midwives (ANMs) are employed at the Primary Health Sub-Centre and manage the sub-center, covering a population of 3000–5000 for rural areas (GoI, 2006). An ANM is expected to perform a large number of functions such as motivation for family planning, immunization, conducting deliveries, and treatment for childhood illnesses and remains available round the clock by residing in the sub-centre village (Mohan, Iyengar, Brahmawar, & Sen, 2003).

<sup>11</sup> Anganwadi is a kindergarden programme that also provides afternoon meals for children. Under the Integrated Child Development Scheme (ICDS), one *anganwadi* worker (AW) is allotted to a population of 1000. AWs are trained in various aspects of health, nutrition and child development and their duties include regular health check-up, immunization, health education, and non-formal pre-school education.

**Table 1**  
Socio-demographic characteristics of TBAs.

	Untrained (n = 14)		Trained (n = 24)		Total (n = 38)	
	N	%	N	%	N	%
<i>Marital status</i>						
Married	14	100.0	24	100.0	38	100.0
<i>Educational status</i>						
Has been to school	1	7.1	8	33.3	9	23.7
Never been to school	13	92.9	16	66.7	29	76.3
<i>Age-group</i>						
35–49	4	28.6	13	54.2	17	44.7
>49 years	10	71.4	11	45.8	21	55.2
Average Age	54	years	46	years	49	years
<i>Main occupation</i>						
Agriculture	11	78.6	20	83.3	31	81.6
Agricultural Labourer	1	7.1	0	0.0	1	2.6
Shop owner	1	7.1	0	0.0	1	2.6
Only work as TBAs	1	7.1	4	16.7	5	13.1

before directly handling mother or baby. Information on complication management and hypothermia was not adequately covered.

**4.2. Socio-demographic and professional characteristics of TBAs and their role during delivery**

TBAs were enquired professional details (source of learning of their skills, reasons for joining the profession, recognition in the community, years of experience and payment received). A few questions had more than one response such as; source of and reasons for learning birthing skills, material on which the baby was delivered, and material applied to the umbilical cord. The percentage in Tables 2 and 11–13 in this paper are multiple responses and therefore do not add up to 100%.

*a. Socio-demographic characteristics of traditional birth attendants:* TBAs in Shendi PHC were married mothers. Over three quarters (76%) had not attended school (Table 1). Of the few (n = 9) who had received schooling, nearly all (n = 8) were trained TBAs. Untrained TBAs were older (>49 years). Most TBAs (82%) were employed in the agricultural sector as their main occupation and owned agricultural land.

On average untrained TBAs were older (54) than trained (46) TBAs. The percentage of trained TBAs who had attended school, was notably higher than untrained TBAs. However it needs to be noted that only a minority of TBAs (10/38) had attended school.

*b. Source of reasons for learning midwifery skills:* Trained TBAs learnt their midwifery skills mainly from the formal training programme conducted by the local NGO (Table 2a), whereas untrained TBAs mainly learnt from their mother or a relative (50%), or through their own experience (50%). Most of the TBAs (79%) had joined the profession out of their own motivation and more than one fourth (26%) started working as TBAs to continue their household tradition (Table 2b).

*c. Reason for acceptance in the community:* Most of the TBAs (68%) considered good birth outcome as an important reason for their professional acceptance in the community (Table 3). The other reason given by more than one third of the TBAs was their goodwill in the community. The responses given by trained and untrained TBAs were similar.

The mothers were asked why they chose home births and the question was structured to allow them multiple responses. Most of the mothers (88%) said they preferred home births as that they perceived better care at home. The second important reason for almost half the mothers (48%) to choose home birth was their trust on TBAs. There were no important differences between the mothers assisted by trained and untrained TBAs.

*d. Number of years of TBA experience:* All the TBAs had some experience assisting births (Table 4). More than 60% of the TBAs (23/38) had more than ten years of working experience. Trained TBAs had lesser years of experience compared to untrained TBAs. The data shows that untrained TBAs were more likely to have been practicing for eleven years or more. A possible explanation for this lies in the flawed criteria used by the local NGOs in selecting TBAs in the training programme (refer Section 5).

*e. Number of deliveries conducted in a year:* Most of the TBAs (76%) conducted 1–10 deliveries a year (Table 5). However, their caseload varied between less than 10–100 deliveries per year. There were four untrained TBAs and one trained TBA who conducted more than 40 deliveries in a year. Each of these untrained TBAs conducted 40, 50, 50 and 100 deliveries per year respectively, and the one trained TBA conducted 50 deliveries per year. Untrained TBAs had handled more deliveries in the last year compared to trained TBAs.

*f. Payment received for their services:* Only about half of the TBAs received cash payment for their services (Table 6). More than one third of the TBAs (34%) did not receive any cash payment. Some of

**Table 2**  
Source of and reasons for learning their midwifery skills.

Multiple responses	Untrained (n = 14)		Trained (n = 24)		Total (n = 38)	
	N	%	N	%	N	%
<i>a. Source of learning</i>						
Formal training by CRHP	0	0.0	24	100.0	24	63.2
Mother/relative	7	50.0	8	33.3	15	39.5
Own experience	7	50.0	6	25.0	13	34.2
Other TBAs	2	14.3	5	20.8	7	18.4
<i>b. Reasons for learning</i>						
To continue family tradition	5	35.7	5	20.8	10	26.3
With family advice	1	7.1	2	8.3	3	7.9
Own motivation	11	78.6	19	79.2	30	78.9
On facing a maternal problem themselves	0	0.0	1	4.2	1	2.6

**Table 3**  
Reasons why TBAs think they are acceptance in the community.

Reasons	Untrained (n=14)		Trained (n=24)		Total (n=38)	
	N	%	N	%	N	%
Goodwill	5	35.7	9	37.5	14	36.8
Good outcome	11	78.6	15	62.5	26	68.4

**Table 4**  
Number of years of TBAs' experience.

Number of years	Untrained (n=14)		Trained (n=24)		Total (n=38)	
	N	%	N	%	N	%
≤10 years	2	14.3	13	54.2	15	39.5
11–20 years	9	64.3	8	33.3	17	44.7
>20 years	3	21.4	3	12.5	6	15.8

**Table 5**  
Number of deliveries TBAs conducted in the last year.

Deliveries assisted in the last year	Untrained (n=14)		Trained (n=24)		Total (n=38)	
	N	%	N	%	N	%
≥10	8	57.1	21	87.5	29	76.3
11–20	2	14.3	2	8.3	4	10.5
>40	4	28.6	1	4.2	5	13.2

the TBAs (11%) provided their services voluntarily and did not receive any payment in cash or kind. A higher percentage of trained TBAs (67%) received cash for their services compared to untrained TBAs (34%).

*g. Role of TBAs during delivery and complication management:* All of the trained and untrained TBAs reported they were summoned only at the onset of labor pains. TBAs would return to their work after an initial examination of the mother, to be summoned again only when the labor pain increased. Similarly, most of the mothers (80%) said they called for the TBA when the labor pain had started (Table 7). The remaining 5 out of 25 mothers (20%) said they called for the TBA only when the baby was about to be delivered. All mothers who had summoned the TBA when the baby was about to be delivered were assisted by trained TBAs.

TBAs were asked if they would handle the following situations themselves: transverse lie, breech presentation, retained placenta and excessive post-partum bleeding. More than one third of the TBAs reported that they would manage breech presentation, transverse lie and retained placenta during delivery and very few (16%) reported they would handle excessive post-partum bleeding (Table 8). Untrained TBAs

showed more confidence in handling breech and transverse positions compared to trained TBAs.

All mothers were asked if they had faced any complication during their last delivery and two had faced such a situation. In the case of one mother who had the baby in a transverse position, the untrained TBA was able to turn the baby and the delivery was normal. Another mother faced excessive post-partum bleeding and was taken to the hospital by a trained TBA.

4.3. Birthing practices adopted by TBAs and mothers

The birthing practices include: the birthing position, clean hands, clean cord, clean material to deliver on, bathing babies soon after birth, colostrum feeding, weighing babies, and response to complications.

*a. Birthing position:* Many TBAs (45%) assisted births in the traditional sitting and squatting position (Table 9a). Untrained TBAs were more likely to encourage mothers to sit and squat during delivery.

The responses by mothers show that most (76%) adopted the sitting/squatting position for their latest delivery (Table 9b). This

**Table 6**  
Payment received by TBAs for their service.

Payment received for the service	Untrained (n=14)		Trained (n=24)		Total (n=38)	
	N	%	N	%	N	%
In cash	5	35.7	16	66.7	21	55.3
In kind	7	50.0	6	25.0	13	34.2
Receive nothing	2	14.3	2	8.3	4	10.5

**Table 7**  
Time during delivery when TBAs were summoned by mothers in their latest birth.

	Untrained (n=9)		Trained (n=16)		Total (n=25)	
	N	%	N	%	N	%
When the pain started	9	100.0	11	68.8	20	80.0
When the baby is about to be delivered	0	0.0	5	31.3	5	20.0

**Table 8**

Which complications would TBAs generally handle themselves?

Handles the situation themselves	Untrained (n = 14)		Trained (n = 24)		Total (n = 38)	
	N	%	N	%	N	%
Breech	8	57.1	9	37.5	17	44.7
Transverse lie	7	50.0	6	25.0	13	34.2
Retained placenta	5	35.7	10	41.7	15	39.5
Excessive post-partum bleeding	2	14.3	4	16.7	6	15.8

**Table 9**

Birthing position (encouraged by TBAs and adopted by mothers) during delivery.

a. Birthing position encouraged by TBAs	Untrained (n = 14)		Trained (n = 24)		Total (n = 38)	
	N	%	N	%	N	%
Sitting/squatting	8	57.1	9	37.5	17	44.7
Supine	6	42.8	6	25.0	12	31.6
Both	0	0.00	9	37.5	9	23.7
b. Position adopted by mothers in their previous delivery	n = 9	%	n = 16	%	n = 25	%
Sitting/squatting	6	66.7	13	81.3	19	76.0
Supine	3	33.3	3	18.8	6	24.0

implies personal preferences of individual families on the birthing position adopted during delivery. Almost one quarter of the mothers however adopted a supine position during delivery. Among the mothers adopting the supine positions, most were assisted by untrained TBAs.

*b. Washing hands:* Most of the TBAs (95%) generally washed their hands during delivery and most (87%) did so before starting their work (Table 10). Most (82%) TBAs said they washed their hands with soap and water before starting work. However, very few (16%) of the TBAs (6/38) said that they washed their hands before cutting the cord or before conducting an internal examination. A notably higher percentage of trained TBAs (21%) washed their hands with water and soap before cutting the cord and conducting an internal examination compared to untrained TBAs (7%).

*c. Cord management:* All TBAs generally use a clean blade to cut the cord during delivery. Similarly, most mothers said a clean blade was used for cutting the cord during their latest delivery. However, a few (2/25) mothers (8%), one assisted by a trained and one by an untrained TBA, reported that a sickle<sup>12</sup> was used to cut the cord during their delivery.

It is known that traditionally many local materials are applied to the cord. This study shows that more than half (58%) of the TBAs (22/38) applied oil to the cord after it was cut (Table 11). Untrained TBAs were more likely to apply oil to the cord. Untrained TBAs also applied ash and/or vermilion (*kumkum*), whereas trained TBAs said they would apply herbal medicine and/or face powder.

*d. Material on which delivery was conducted:* Both TBAs and mothers mentioned a mix of various materials that were used during delivery. More than half of the TBAs reported that they used cotton cloth (55%), jute cloth (50%) and/or a rubber sheet (55%) (Table 12). A rubber sheet was more likely to be used by trained (79%) than untrained TBAs (14%) whereas a cotton cloth was used more by untrained TBAs. Both trained and untrained TBAs equally used jute cloth.

Mothers (64%) confirmed use of jute cloth to deliver on (Table 13). More than one third (36%) used cotton cloth and almost one fourth (24%) used a rubber sheet. A rubber sheet was more likely to be used by mothers assisted by trained than untrained TBAs.

<sup>12</sup> Sickle: a short-handled tool with a curved blade used for cutting tall grass or grain.

*e. Bathing babies after birth:* All the TBAs responded that they bathed new born babies immediately after birth with warm water. Similarly all mothers said that their babies were bathed immediately after birth. Almost all (94%) also said that their babies were washed with warm water. Only one mother assisted by a trained TBA said cold water was used to bathe her baby. Almost all TBAs trained and untrained encouraged bathing babies immediately after birth.

*f. Feeding of colostrum:* Half of the TBAs reported that they advised mothers to breastfeed immediately after birth (Table 14) and about one third advised mothers to breastfeed their babies a few hours after birth. Some of the TBAs (16%) advised mothers to initiate breastfeeding a few days after birth.

Less than one third of the mothers (28%) said that they breastfed their babies immediately after birth (Table 15). Most of the mothers (60%) reported that they breastfed a few hours after birth. Some of the mothers (12%) said they started breastfeeding only after a few days. More mothers who were assisted by trained TBAs (38%) reported that they commenced breastfeeding immediately after the birth compared to those assisted by untrained TBAs (11%).

*g. Weighing of babies after birth:* More than half of the TBAs (55%) advised mothers to weigh their babies soon after birth (Table 16). More than one third TBAs advised mothers to weigh the babies after a while and some (10%) did not advise mothers to weigh babies. Trained TBAs were more likely to advise mothers to immediate weigh babies than untrained TBAs.

Few mothers (16%) said that their babies were actually weighed immediately after birth (Table 17). More than fourth quarter of the mothers (28%) did not weigh the babies at all after birth. Four of the mothers assisted by trained TBAs responded that they weighed the baby soon after birth: in contrast, none of the mothers assisted by untrained TBAs did so.

#### 4.4. Response of TBAs to selected complications during delivery

TBAs were asked about what they do when faced with situations such as transverse presentation, breech presentation, retained placenta and excessive post-partum bleeding. This section presents findings about how TBAs reacted to some of the complications, and made referrals.

*a. Transverse presentation of baby:* Most of the TBAs (66%) responded that they would handle a transverse presentation

**Table 10**  
Traditional birth attendants' hand washing practices at different times during delivery.

TBAs wash hands	Untrained (n = 14)		Trained (n = 24)		Total (n = 38)	
	N	%	N	%	N	%
<i>Wash during delivery</i>						
Yes	13	92.9	23	95.8	36	94.7
No	1	7.1	1	4.2	2	5.3
<i>Wash before starting work</i>	13	92.9	20	83.3	33	86.8
With water	0	0.0	2	8.3	2	5.3
With water and soap	13	92.9	18	75.0	31	81.6
<i>Wash before cutting cord</i>	1	7.1	5	20.8	6	15.8
With water	0	0.0	1	4.2	1	2.6
With water and soap	1	7.1	4	16.7	5	13.2
<i>Wash before internal examination</i>	1	7.1	5	20.8	6	15.8
With water	0	0.0	0	0.0	0	0.0
With water and soap	1	7.1	5	20.8	6	15.8

**Table 11**  
Material applied to cord: responses of the TBAs.

Material used to apply on cord (multiple response)	Untrained (n = 14)		Trained (n = 24)		Total (n = 38)	
	N	%	N	%	N	%
Oil	10	71.4	12	50.0	22	57.9
Ash	1	7.1	0	0.0	1	2.6
Herbal medicine	0	0.0	1	4.2	1	2.6
Face powder	0	0.0	1	4.2	1	2.6
Kumkum (Vermillion)	1	7.1	0	0.0	1	2.6
Total	12	85.6	14	58.4	26	68.3

**Table 12**  
Material on which TBAs generally assist mothers to deliver.

Multiple responses	Untrained (n = 14)		Trained (n = 24)		Total (n = 38)	
	N	%	N	%	N	%
Jute cloth	7	50.0	12	50.0	19	50.0
Cotton cloth	10	71.4	11	45.8	21	55.3
Plastic sheet	2	14.3	19	79.2	21	55.3
Mattress	2	14.3	3	12.5	5	13.2
Mud floor	2	14.3	0	0.0	2	5.3

**Table 13**  
Material on which the mothers delivered their baby.

Multiple responses	Untrained (n = 9)		Trained (n = 16)		Total (n = 25)	
	N	%	N	%	N	%
Jute cloth	7	77.8	9	56.2	16	64.0
Cotton cloth	3	33.3	6	37.5	9	36.0
Rubber sheet	0	0.0	6	37.5	6	24.0
Mattress	2	22.2	2	12.5	4	16.0
Mud floor	0	0.0	1	6.3	1	4.0

**Table 14**  
Breastfeeding advice generally given by TBAs.

Advice given to mothers to breastfeed	Untrained (n = 14)		Trained (n = 24)		Total (n = 38)	
	N	%	N	%	N	%
Immediately on birth	6	42.9	13	54.2	19	50.0
Few hours after birth	5	35.7	8	33.3	13	34.2
Few days after birth	3	21.4	3	12.5	6	15.8

and about one third (34%, 13/38) said they would refer the mother to a health centre (Table 18). All the TBAs who said that they would handle a transverse lie by themselves also said they would try to turn the baby around when faced with this situation. Untrained TBAs showed confidence in handling transverse lie compared to trained TBAs.

The mothers were asked within the structured questionnaire if they had faced any complication. One mother had experienced transverse lie and the untrained TBA had changed the position of the baby delivering the baby normally.

*b. Breech presentation of baby:* More than half of the TBAs (57%) would handle a breech presentation themselves and all of those



**Table 15**  
Breastfeeding practice adopted by mothers.

Breastfeeding practice by mothers	Untrained (n=9)		Trained (n=16)		Total (n=25)	
	N	%	N	%	N	%
Immediately on birth	1	11.1	6	37.5	7	28.0
Few hours after birth	6	66.7	9	56.3	15	60.0
Few days after birth	2	22.2	1	6.3	3	12.0

**Table 16**  
Advice on weighing babies generally given by TBAs.

Advice generally given by TBAs on weighing babies	Untrained (n=14)		Trained (n=24)		Total (n=38)	
	N	%	N	%	N	%
Immediately on birth	6	42.9	15	62.5	21	55.3
After a while	6	42.9	7	29.2	13	34.2
Did not advise	2	14.3	2	8.3	4	10.5

**Table 17**  
Weighing of new born babies.

Weighing new-born babies	Untrained (n=14)		Trained (n=24)		Total (n=38)	
	N	%	N	%	N	%
Immediately on birth	0	0.0	4	25.0	4	16.0
After a while	6	66.7	8	50.0	14	56.0
Weight not checked	3	33.3	4	25.0	7	28.0

**Table 18**  
Action taken by TBAs in case of transverse lie.

Transverse lie	Untrained (n=14)		Trained (n=24)		Total (n=38)	
	N	%	N	%	N	%
Do not handle themselves/send to PHC	7	50.0	18	75.0	25	65.8
Handle the situation themselves	7	50.0	6	25.0	13	34.2
<i>Action taken</i>						
Try to turn the baby	7	50.0	6	25.0	13	34.2

said they would deliver the baby in the same position (Table 19). Fewer trained TBAs (37%) would handle a breech presentation themselves. Some of the trained TBAs (8%) said they would try and reverse the baby for delivery. Untrained TBAs showed confidence in handling breech presentation compared to trained TBAs.

*c. Retained placenta:* Out of 38 TBAs, 15 (40%) said they would handle the situation of retained placenta by themselves (Table 20). Some TBAs (11%, 4/38) reported that they would try to pull the placenta out and some (24%, 9/38) reported that they would press on the stomach. More of the trained TBAs (29%) would press on the stomach in a transverse situation than untrained TBAs (14%). Two trained TBAs reported that they would ask the mother to breastfeed so that the placenta falls by itself.

*d. Excessive post-partum bleeding:* Most of the TBAs (84%) stated they would not handle a case of excessive post-partum bleeding and would send the mothers to the PHC (Table 21). One trained TBA

stated she would ask for medicines from the PHC. However, some TBAs (3 trained and 1 untrained) responded that they would handle post-partum bleeding by asking the mothers to sleep with her legs crossed and one trained TBA said she would give hot water and tea to the mother. These five TBAs were applying inappropriate methods in managing a serious life threatening complication and data reveals that they assist several births per year and hence even a small number of TBAs (5) in this case are significant.

The untrained TBA giving hot water and tea to mothers with excessive post-partum bleeding had a very high caseload (100 per year) and the other four who would ask the mother to sleep with legs crossed conduct between 10 and 15 deliveries per year (Table 22).

Mothers were asked in the structured questionnaire if they had faced any complication in their latest birth. One mother assisted by a trained TBA had experienced excessive post-partum bleeding and was advised by her TBA to go to the health centre immediately.

**Table 19**  
Action taken by TBAs in case of breech presentation.

Breech presentation	Untrained (n=14)		Trained (n=24)		Total (n=38)	
	N	%	N	%	N	%
Do not handle themselves/send to PHC	6	42.9	15	62.5	21	55.3
Handle the situation themselves	8	57.1	9	37.5	17	44.7
<i>Action taken</i>						
Try to deliver the baby	8	57.1	7	29.2	15	39.5
Try to reverse the baby	0	0.0	2	8.3	2	5.3

**Table 20**

Action taken by TBAs in case of retained placenta.

Retained placenta	Untrained (n = 14)		Trained (n = 24)		Total (n = 38)	
	N	%	N	%	N	%
Do not handle themselves/send to PHC	9	64.3	14	58.3	23	60.5
Handle the situation themselves	5	35.7	10	41.7	15	39.5
<i>Action taken</i>						
Press the stomach	2	14.3	7	29.2	9	23.7
Try to pull it out	3	21.4	1	4.2	4	10.5
Breastfeed and the placenta falls	0	0.0	2	8.3	2	5.3

**Table 21**

Action taken by TBAs in case of excessive post-partum bleeding.

Excessive post partum bleeding	Untrained (n = 14)		Trained (n = 24)		Total (n = 38)	
	N	%	N	%	N	%
Do not handle themselves/send to PHC	12	85.7	20	83.3	32	84.2
Handle the situation themselves	2	14.3	4	16.7	6	15.8
<i>Action taken</i>						
Send somebody to PHC for medicine	0	0.0	1	4.2	1	2.63
Ask the mothers to sleep cross-legged	1	7.1	3	12.5	4	10.5
Give hot water and tea to mothers	1	7.1	0	0.0	1	2.63

**Table 22**

Action taken by TBAs for excessive post-partum bleeding by number of deliveries conducted in 2004–2005 and training status.

	Action generally taken in case of excessive post-partum bleeding	Number of deliveries conducted in 2004–2005	Trained (T)/untrained (UT)
1	Give hot water and tea	100	UT
2	Sleep with legs crossed	11	UT
3	Sleep with legs crossed	15	UT
4	Sleep with legs crossed	10	T
5	Sleep with legs crossed	10	T

## 5. Discussion

Most TBAs (trained and untrained) were married and had never been to school. Most TBAs had joined this profession of their own motivation, conducted one to ten deliveries per year, and perceived good outcomes as the main reason for their acceptance in the community. Trained TBAs however were younger, had less experience, and were more likely to have been to school. However, more of the trained TBAs were receiving cash payment in return for their services compared to untrained TBAs. On the other hand, untrained TBAs had more years of experience and conducted many more deliveries per year compared to trained TBAs. The local NGO selected any women from the villages who showed interest in learning midwifery skills for the TBA training programme rather than selecting the women functioning as TBAs in the community. Almost half (47%) the women selected for the TBA training were already involved as village health workers (VHWs) in an ongoing health and hygiene programme conducted by CRHP. The difference in the characteristics between trained and untrained TBAs (untrained TBAs were older and had more years of experience as compared to trained TBAs) was possibly a consequence of the faulty selection criteria.

### 5.1. Training manual

Some TBAs in Shendi PHC continue to handle complications such as excessive post-partum bleeding and do so ineffectively despite WHO recommendations for immediate medical attention on recognising excessive post-partum bleeding (WHO, 2003). Some TBAs reported they generally manage excessive post-partum bleeding by making the woman sleep with her legs crossed or

giving her tea. This was one of the most alarming findings of this descriptive study and is worthy of more in-depth understanding.

The training manual identified excessive post-partum bleeding as being a situation that requires immediate attention. However, they did not provide information about what immediate action needs to be taken by TBAs when faced with such a situation and what can be the best alternatives in villages far away from health centres. There is urgent need to systematically include such vital information in the training that will facilitate referrals. The training manual identified a range of situations that need to be referred to the PHC; short-heighted mothers, feet and hands swollen, severe headache, breech-transverse lie, twin babies in the womb, the mother having her first baby, the mother being very young, older or already having given birth to three or more children, the baby not moving in the womb, the heartbeat of the baby not being heard, and bleeding during pregnancy. Unfortunately situations that need immediate medical attention are mixed with those that may require further antenatal monitoring.

### 5.2. Outcome of the TBA training programme

Most TBAs (trained and untrained) washed their hands before starting work, very few washed their hands before cutting the cord and internal examination, all used a clean blade to cut the cord, all bathed the baby immediately after birth, and most referred cases with excessive post-partum bleeding to the PHC. Certain traditional practices such as; applying oil on the cord and use of jute cloth for delivery was adopted more by untrained TBAs. More trained TBAs advised mothers to breastfeed immediately on birth and weigh babies compared to untrained TBAs suggesting a positive outcome of the training programme. Accordingly, more

mothers assisted by trained TBAs weighed and breastfed their babies immediately after birth compared to those assisted by untrained TBAs. Another positive impact of the training was that among the few TBAs who washed their hands with soap and water before cutting the cord and vaginal examination, trained TBAs were more likely to do so than untrained TBAs. Breastfeeding soon after birth causes uterine contractions so that the placenta is expelled. This information can be helpful to TBAs and other people in the community assisting women in childbirth. Two trained TBAs in this study said they would breastfeed in case of retained placenta suggesting their knowledge about its advantages.

### 5.3. Community involvement

The TBA training material distributed to TBAs during the training programme was prepared by medical professionals and the information clearly portrays mothers delivering in the supine position. Nevertheless, more than one third of the trained TBAs encouraged birthing in the appropriate sitting/squatting positions. Most mothers in this study birthed in the traditional upright positions. All TBAs bathed new-born babies with water immediately after birth. The prevalent practice of bathing babies soon after birth is most likely linked with the perception of birth as a polluted process which requires a cleansing procedure but there are no studies that examine this linkage. Few mothers (less than one third) fed colostrum to their babies despite advice from TBAs. While the training instructs TBAs to avoid using a sickle, a few TBAs had used a sickle as some families insisted on using this to cut the cord. This shows the influence of cultural factors on decision-making and community birthing practices.

TBAs were provided with plastic sheets along with the delivery kit during the training programme to maintain a clean environment during delivery. However, the response by mothers clearly reveals that jute was a preferred material on which they delivered. Jute is a bio-degradable material (GoI, 2007), is easily available in every household in India, is absorbent and has the capacity to provide warmth to the birthing mothers. Further research is needed to know the use and applicability of jute during birth in other areas of India. This finding indicates the need for appropriate implementation of a needs assessment of local practices prior to implementation of materials such as plastic sheeting which may not be used by a community.

## 6. Conclusions

TBAs are likely to continue to exist because the trust placed in TBAs by the community was the second most important reason for mothers choosing home births. According to TBAs, good delivery outcomes were an important reason for their acceptance in the community, mothers continue to have concerns about the sex of the birth assistants in health institutions, and mothers were networked within kin and family considerations that often prefer to choose home births with the assistance of TBAs. The implication of these findings is that TBAs continue to be an important medium to convey vital information about maternal and infant care to their community.

At the local level, traditional approaches were evident in the practices adopted by the TBAs and mothers. Most of the mothers adopted the traditional sitting/squatting position during childbirth, applied oil to the cord, bathed their babies immediately after birth and did not feed colostrum to their new-born babies. The TBA training programmes should be inclined towards incorporating beneficial traditional practices such as the upright birthing position and use of jute cloth that are also preferred by the community. TBAs are excellent at manoeuvring and they change their practices according to circumstances; they adopt certain

practices taught to them during their training and reject others depending on their community's needs and preferences. TBAs need to be convinced to use beneficial biomedical practices via examples from their local context. They are then more likely to be able to convey such information to their community.

The study reveals that community perception is important in the appropriate implementation of certain beneficial practices and thereby may affect the outcome of the training programme. The study shows that despite advice from TBAs, some people continue to use a sickle to cut the cord. Other practices such as refraining from feeding colostrum to babies continue due to community perceptions. And, the practice of bathing of babies immediately after birth is widespread. Although there are no studies that are directed at understanding the reasons for this practice, it is most likely due to beliefs about pollution and the perception of the birth process being 'dirty'. The study shows that other than TBAs, the community also plays a role in decision-making, which highlights the importance of awareness generation and community acceptance of the beneficial practices that can occur as a result of effective TBA training. The study also suggests that TBA training evaluations cannot be done in isolation of training content and community perception.

## 7. Recommendations

The two main recommendations of this study to enhance the TBA training programme and its outcomes are; to integrate local and evidence-based knowledge into the training programme and to interlink community awareness along with TBA training.

### 7.1. Integration of local and evidence-based knowledge into the TBA training programme

The training manual needs to portray mothers in various positions and to suggest that mothers can choose a preferred position during childbirth. The material provided to TBAs needs to be sensitive in its portrayal of childbirth assistance as a humane service provided to birthing mothers. TBA training may well include baseline study data from which to understand the local practices that are prevalent within communities and to incorporate them into the training. An effective outcome of training also depends on the appropriate initial selection of TBAs for training.

The following suggestions are recommended to improve the clarity of meaning in the training manual. The training manual can include the following information: wash hands before directly handling the mother and baby at different times during delivery; the 'warm chain' information with diagrams such as immediate drying and wrapping of babies, skin-to-skin contact, immediate breast-feeding and postponed bathing; simple technique of detecting hypothermia by touching method; emphasise on weighing babies immediately after birth, referral of different types of maternal and infant complications and information on action to be taken during complications. Situations that need immediate medical attention may be separated from those that require antenatal monitoring. There is a need for updated evidence-based information to be included into the training content. The GOI has the required resources and access to latest developments in maternal and infant health care that can be provided to the local NGOs conducting the training. In-depth qualitative analysis is required to better understand the practice of managing postpartum haemorrhage. Results from this study revealed that despite training, practices that can save the lives of mothers' and babies following birth are not followed.

## 7.2. Interlink community awareness with TBA training

Conceptualisation and planning of the TBA training programme can incorporate the 'traditional' knowledge of women at the local community level where the knowledge is beneficial and appropriate to longer term health outcomes. Birthing practices that may be specific to a particular area can be known only through baseline and needs assessment studies. Activities that can be conducted before training can well include a baseline study and needs assessment in order to gather information about the preferred birthing practices in the local community that is targeted for training. TBAs do not work in isolation and have to adhere to the requirements and perceptions of the community. Community awareness on maternal and infant health alongside TBA training can enhance the capacity of the TBAs to apply the practices learnt during the training.

At the national level some of the harmful practices can be addressed through popular media such as television. Television is an important source of health information for people in India, for example advertisements are known to increase awareness of immunization in India. Popular women film stars or political leaders who have recently delivered babies could spread awareness through television about the need for tetanus injections and the 'warm chain' infant care procedure suggested by the WHO which includes immediate drying and wrapping, skin-to-skin contact, immediate breast-feeding, and postponed bathing. Among the different types of mass media, television has the greatest reach, with 55% of women watching it at least once a week (IIPS, 2007). Television was the main source of health information for every married woman who had heard of HIV/AIDS (79%), and family planning (50%) (IIPS, 2007). A recent television (TV) serial India is one of the few that address issues like child marriage. 'BalikaVadhu' telecasted every day on the Colours Channel in India conveys vital messages on the adverse effects of child marriage and broader gender issues. Such TV programmes can also be an important medium for spreading maternal and infant health information. The government may channel some of its awareness funding into such popular TV serials although they are rare and far apart.

In recent times, the role of grandmothers has been recognised as vital contributors alongside TBAs in giving advice and herbal remedies (Prendiville, 1998). TBAs themselves may play the role of grandmothers within the families and in the community (CORE, 2004). Some studies have identified grandmothers in the community as greatly trusted and often first to be consulted about health problems, especially regarding babies and children (CORE, 2004). Multilateral funding agencies such as USAID have commenced attempts in developing countries to optimise the resources by including grandmothers to improve the maternal and child health situation in Tanzania and Ghana. Such initiatives need to be tested to understand their applicability in India. It is known that mothers-in-law and other older women in the community also play a role in adopting birthing practices and therefore it would be useful if such trial interventions were initiated in Southern Asia.

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