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**RELEVANCE OF TRAINED TRADITIONAL BIRTH
ATTENDANTS IN MATERNAL HEALTH
CASE STUDY OF TEHRI GARHWAL DISTRICT,
UTTARANCHAL STATE**

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RELEVANCE OF TRAINED TRADITIONAL BIRTH ATTENDANTS IN MATERNAL HEALTH: CASE STUDY OF TEHRI GARHWAL DISTRICT, UTTARANCHAL STATE

Pratibha Esther Singh

INTRODUCTION

Child survival and safe motherhood have been issues of concern for the Indian policy makers and program managers since Independence. Within the Indian Family Planning Programme (subsequently called the Family Welfare Programme and then, following the ICPD mandate, changed to the Reproductive and Child Health Programme), maternal and child health have held centre stage.

With the Alma Alta Declaration of 1978, there was stress on primary health care and utilization of grass root level people such as village health workers and traditional birth attendants to provide care in the villages. The maternal and child health through the 1970s and 1980s focused on child health, and training of traditional birth attendants to provide maternal care.¹ The expanded programme of immunization, started in 1982, became the Universal Immunization Programme in 1988. (citation). In 1992, it became the Child Survival and Safe Motherhood Programme (CSSM) and was finally integrated into the Reproductive and Child Health Programme (RCH) in 1997.

Though these programmes had the mandate of included safe motherhood and child survival, they focused on child survival and contraception, as is evidenced by the achievements in reduction of IMR from 146 (per 1000 live births) in 1960 to 63 in 2003 and declines in the total fertility rates from 5.9 in 1960 to 3 in . The2003.² The maternal health component was ignorennot emphasizedd and so maternal mortality is even today a major avoidable cause of death for many young women in our country, as is evidenced by the achievements in reduction of IMR from 146 per 1000 live births in 1960 to 63 per 1000 live births in 2003. Infant mortality decreased by 14.73% between 1971 and 1981, 27.27% between 1981 and 1991 and by about 15% between 1991 and 2000. Total fertility rates declined from 5.9 in 1960 to 3 in 2003² Though estimates of maternal mortality ratios (MMR) are difficult to get, MMR in 1938 was estimated at 2,000 per 100,000. It declined to 1,000 by 1959, 753 in 1082, and to 572.3 in 1992-93.³ India's current RCH-II

Programme being aims at reducing maternal mortality to 200 by promoting skilled attendance of delivery and by increasing institutional deliveries to at least 50% by the year 2007.

Internationally, there has been concern about the high maternal mortality in developing countries. The World Health Day motto for 2005 was “*making every mother and child count*” because almost every maternal death is an event that could have been avoided, and should never have been allowed to happen.⁴ The sixth millennium development goal 6 is about improving maternal health.

Traditional Birth Attendants

The CSSM programme focused on the early detection and treatment of such complications as anaemia, pre-eclampsia, and obstructed labour. Traditional Birth Attendants (TBAs), who are women assisting the mother during childbirth, were taught the importance of clean delivery practices.^{5,6} It also endeavoured to provide referrals for hospital deliveries for women with high risk complications. TBAs may have acquired skills by delivering babies themselves or through apprenticeship of other TBAs.

Though TBAs were trained on a large scale, international evidence found that they do not make a difference in maternal mortality in the absence of good referral facilities, and well-equipped referral sites with skilled personnel¹.⁷ Hence, in the late 1990s, the WHO took account of this and shifted the focus of nature of the provider responsible for delivering safe motherhood by advocating for skilled birth attendants to bring down the MMR.

Geographical factors have implications for the provision of continuum of care, especially with regard to effective referral where infrastructure such as roads and transport, is poor or absent. Hence, geography has implications for access to appropriate care and there is a need to use available assistance while building for alternatives. Since TBAs already exist in many developing countries, they could perform the role of the skilled attendant with some training.⁷

¹ *Skilled person is one who has been educated and trained to proficiency in skills needed to manage normal pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns.*⁷

Maternal health in Uttarakhand

Uttarakhand (UA), a new state carved out of the erstwhile Uttar Pradesh (UP), comprises of 13 districts, eleven out of which 11 are in rough mountainous terrain of the middle and greater Himalayas. The state is predominantly rural with 74% of the population living in rural settlements, scattered widely over the mountainous terrain with poor road connectivity posing a major challenge to health service delivery. In spite of its geographical disadvantages terms of many of the development indicators for UA are somewhat better than UP (Table-1 and Table-2).

Table-1
Demographic and health indicators in UA, UP and India 2001

Indicator	Uttarakhand	Uttar Pradesh	India
Population (million)	8.49	166.22	1,028.61
Sex Ratio	962	898	933
Population density	159	689	324
Literacy (%)	71.6	56.3	65.4
CBR	18.5	32.1	25.4
Rural	21.1	33.2	27.1
Urban	16.6	27.0	20.2
CDR	7.8	10.1	8.4
Rural	10.0	10.6	9.0
Urban	6.1	7.8	6.3
TFR	2.6	4.1	3.0

Source: Census of India report 2001, NSSO 2002 survey report, and SRS 2002

Table-2
Delivery assistance at birth and ANC care in UA and UP, YEAR?1998-99

Indicator	UA	UP
Delivery assistance in rural areas by doctor	20	10
ANM	9.8	6.6
TBA	47.6	35.5
Urban areas by doctor	44.1	36.3
ANM	10	15.4
TBA	38.7	29.9
Place of delivery in rural areas - Public	8	6.2
Private	7.2	5.1
Own home	79.8	77.2
Urban - Public	9.7	14.4
Private	32	22
Own home	48.6	55.9
At least one ANC check up	44%	34%

Source: NFHS II

The health care infrastructure (public/private) is inadequate with shortage of manpower and lack of facilities. In rural areas, public health care services are poor and in most instances inaccessible due to difficult terrain, and unwillingness of the providers to go to remote areas. The doctors in the public health department to population ratio in UA is 1:10,545 (India 1:1,800).⁸ (Integrated databases India Ltd: March 15 2005). The private sector is by and large non-existent in these remote rural areas. Doctors are concentrated in two or three of the districts in the state.⁹ There is also a shortage of hospital beds.

According to the NSSO survey (2002),¹⁰ only 7.4% of villages have a sub-centre/dispensary/PHC/CHC. For 34.0%, the distance is more than 10 km. About half the villages have a private hospital more than 10 Km away; 10 km in hilly terrain means hours of walking up/down in the mountains, and this has implications for transport of patients in an emergency. As a result, provision of health care in rural areas is left to a few NGOs and less than fully qualified practitioners.

About this paper

Home births are the norm in UA with TBAs assisting 38.7% of urban and about 60% of rural deliveries.¹¹ Poor community outreach by ANMs is evident by the fact that only 20% receive minimum ANC package, and 10% of the births assisted by ANMs.⁹ There is evidence to indicate that training of TBAs has not contributed to reduction of maternal mortality.¹²⁻¹⁴ Since the family welfare programme starting in 1978 to the RCH-I program, training of TBAs has been the thrust for safe motherhood in rural areas. In the interim there was no up-gradation of facilities, infrastructure such as roads for transport was not developed and the onus of safe motherhood fell on TBAs. Given this lack of infrastructural and health systems support, Reviews of TBA programmes thus showed that the training programmes for TBAs did not contribute much to reduction of maternal mortality was still very high.

Under the RCH-II mandate, the Government of India plans to phase out TBAs and use them only as social mobilisers. However, the programme recognised that for some women, TBAs are the only source of care available during pregnancy. As experienced by countries like Malaysia,¹⁵ TBAs can become an important element in a country's safe motherhood strategy and can serve as key partners for increasing the number of births at which a skilled attendant is present.

According to the primary census abstract of census 2001,¹⁶ 49.5% of villages in UA have a population of £ 200 and 31.1% have a population around 200-500. With scarcely populated widely scattered villages, the reach of health workers and ANMs is questionable especially in view of the fact that infrastructure in terms of roads is very poor. Hence, a key policy decision the UA government seems to have taken is to rely on TBAs in the rural areas and train them for providing delivery assistance and ANC.⁹ Since 2002, 900-1,400 TBAs have been trained with the objective of having at least one trained '*dai*' in every village.

It is imperative to know if this policy option exercised by the state has the potential to succeed. This paper examines maternal and birth outcomes with respect to the type of care that was available from the antenatal period to the intra natal and post partum care for women in rural UA.

INTERNATIONAL POLICY AND EXPERIENCE

With the Alma Alta Declaration in 1978, there was a thrust towards primary health care and special focus was given to mother and child care. The mainstay of the primary health programme was to utilise available local providers of care such as village health workers and traditional birth attendants. Over the years, programmes were conducted to train TBAs in maternal and childcare all over the world.^{17,18} The training of these TBAs was not standardised

and was conducted by government as well as NGOs at the local level. These TBAs then returned to the villages and were given the whole task of improving maternal and child health outcomes without the infrastructure, transport and backup of skilled personnel. Thus evaluation of TBAs after a number of years showed that they have not made a difference in maternal mortality.^{19,20}

With the training of TBAs it was assumed that the risk approach to maternal mortality would be successful with screening mothers in the antenatal period for high risk and provide adequate referral. Studies, however, showed that every pregnancy is potentially high-risk and therefore, screening and ANC are not effective for reducing maternal mortality, in the absence of a referral system, supervision and adequate facilities.²¹ Since the late 1990s, there has been a stress on “skilled attendants” at birth with encouragement of deliveries at a health facility with adequate supplies, infrastructure and presence of trained nurse or doctor 24 hours, and the slow phasing out of TBAs.⁷ It was recognized, where TBAs are culturally accepted and in remote geographic areas, till such a time as infrastructure and skilled attendants can be put in place TBAs can be trained to provide care till such a time that they are replaced.^{7,19}

Before the advent of modern medicine and therapeutics by the late 1800s, Sweden and certain other European countries were able to bring down their maternal mortality to 230 per 100,000 as a result of training highly competent locally available midwives.²² Strong government commitment was an important factor in the success of the programme.

A study by Koblinsky and Campbell, modelled the maternal care services worldwide into four models - home deliveries with non-professionals (China and Brazil), skilled birth attendant at home (Malaysia), skilled attendant delivery in basic EOC facility (Netherlands and Sri Lanka), and skilled attendant delivery in comprehensive EOC facility such as a hospital (USA and UK).²³ The experience from Malaysia and Sri Lanka shows that maternal mortality and morbidity can be reduced by the use of well-trained, low cost midwives who are adequately supplied and equipped.²⁴ Experiences of Honduras,²⁵ Pakistan,²⁶ Egypt,²⁷ Nigeria²⁸ and others²⁹ showed that TBAs had persistent achievement of curricular learning goals, improved ANC coverage, more referrals, and a greater ability to recognize danger signals. Yet, experience of Indonesia was mixed due to lack of practical training, acceptance, referral facilities, and decision making power.³⁰

THE INDIAN EXPERIENCE

India accounts for 20-24% of maternal deaths in the world.^{31,32} Over the last 2-3 decades, there have been major advances in child well-being through immunization and oral re-hydration

salts.^{33,34} In the absence of a policy for obstetric and emergency obstetric care, actions are guided by social situations. Studies have found that FRUs lacked obstetricians and since 'skilled attendants' such as ANM are not allowed to perform EOC procedures, most women either deliver at home or arrive at the facility too late.^{5,33,35-36} As a result, 35% of births are attended by TBAs in India as they share the cultural and ethno-medical orientations of the women whom they serve and are often the only affordable and accessible practitioners available to poor urban and rural women.³⁶⁻³⁸ Through the years, training of TBAs has been an integral component of the safe motherhood initiative, which envisaged use of available resources for maternal care while building for alternatives.

However, TBAs do not seem to have overriding control over the management of deliveries;³⁹⁻⁴² they do not visit the pregnant woman on their own but wait to be summoned. The Intensified Training of Dais Programme (ITDP) has shown that because of insufficient training, poor supervision, and pressure from older female household members, the '*Dais*' did not always utilize the procedures they had been taught.⁴⁰ Moreover, TBAs are illiterates, older than 45 years of age and of low caste.⁴³ Evaluation of TBA trainings indicates that they showed good acquisition of skills, improved ANC coverage, and reduction in post partum fevers.⁴⁴⁻⁴⁶ Nevertheless, the community is not educated for the role of trained midwives and there was no follow up by ANMs from the PHCs.⁴⁷

METHODOLOGY

The methodology had two parts - secondary data analysis and a descriptive cross sectional study. Secondary data analysis was carried out using a sample of 1,028 men and 1,028 women in the reproductive ages drawn from the phase-2 RCH survey. The RCH surveys consist of sample sizes adequate at the district level to obtain estimates of reproductive morbidity.

The primary data collection for this study was conducted in the Tehri Garhwal district of UA. The sampling frame consisted of all trained TBAs in six of nine blocks in the chosen district. Several NGOs have undertaken TBA training in Tehri Garhwal. However a count of the total number is not available at the district head quarters as these trainings are undertaken by various NGOs operating within the district. It is known that about four hundred and fifty TBAs have been trained by the three major NGOs in Tehri Garhwal. This group of TBAs constituted the sampling frame for this study. As the other NGOs are much smaller, the proportion of trained TBAs outside the list of TBAs from the three NGOs cannot be high. One hundred and twenty TBAs (25%) of these trained TBAs were selected using a two-phase sampling procedure.

It was a two-stage procedure starting with obtaining lists of trained TBAs from the three major NGOs in Tehri Garhwal. The three NGOs were treated as clusters and from each NGO as many TBAs were selected as the proportion of TBAs trained by the NGO. Using the list of TBAs from the three NGOs, circular systematic sampling was used to select individual TBAs. Selecting one TBA randomly from the list, with a sampling fraction equal to the proportion of TBAs to be selected, we obtained the required number of TBAs from the NGO cluster. The rule of replacement for missing TBA was that of including the immediate succeeding one, followed by the immediate preceding one, until the interview with the concerned TBA was obtained. First a list of all the trained TBAs in the three regions will be prepared and then a circular stratified systematic sample will be selected for the study.

Qualitative data collection was carried out through focused group discussions guided by appropriate guidelines. Two Focused group discussion FGDs were conducted in two different blocks will be conducted with 13 TBAs. A cross sectional survey using pre-tested structured interview schedule was also conducted to examine knowledge, practices and referral practices of TBAs with respect to antenatal delivery and post partum care. Information regarding birth outcomes in terms of neonatal, and maternal mortality and morbidity was elicited using this technique.

Data Analysis

The quantitative data was analysed using SPSS software version 11 using simple two-way tables and proportions to understand magnitudes. The FGDs were translated and transcribed from Hindi to English. They were then carefully read to develop codes for each selection of textual matter. In all forty-nine codes were developed. These codes were then grouped into meaningful themes. The linkages between the themes were developed into the conceptual framework of the TBAs knowledge beliefs and practices regarding pregnancy and childbirth and referral practices in Tehri Garhwal district of UA.

Variables

For the purpose of this paper, type of attendants at birth were classified into four - skilled attendant (assuming all deliveries in the hospital took place with the attendance of a doctor/ Nurse/ANM), trained TBAs, untrained TBAs, and others. For the purpose of logistic regression, however, there were only two groups - skilled and unskilled (trained and untrained TBAs and others) attendants.

Ethical considerations

Data was collected after obtaining informed consent and assurance of confidentiality to the individual participants in the study. The participants were informed about their freedom to not participate in the study without any harm to them. However, for TBAs who were not willing to sign consent forms even if they were willing to participate in the study oral informed consent was obtained in the presence of an un-interested observer.

Limitations

The temporal link in terms of TBA training and the consequences of such training is tenuous at the very least because the RCH program started in 1997 and the referral period for the data is 1998-99; not giving sufficient time for evaluation of the training of TBAs. However from unofficial sources it has been understood that TBA training formed the core of the MCH program in the state since late 1980's. There have been several kinds of TBA trainings of different durations from three days to nine months undertaken in the state. Details of course content were not available on date. Therefore while we accept the lack of theoretical temporal congruence, it is still possible to examine the combined effects of TBA trainings on maternal and child health outcomes.

RESULTS

Secondary data analysis

Only those women (448 out of 1,028), aged 18-42 years, who had a pregnancy in the four years preceding the survey were included in the analysis; over 38% of them were literate. Four hundred and fourteen (92.4%) pregnancies resulted in live birth, 8 (1.8%) were stillbirths, 6 (1.3%) had induced abortion and 21 (4.7%) had spontaneous abortion.

Over one-fourth (28.7%) of the full-term pregnancies (422) received antenatal check-ups (ANC); 16.4% received it from government institutions (14.4% from government hospitals alone). Literacy status and years of schooling were strongly ($P < 0.01$) associated with ANC. Many pregnant women suffered from anaemic conditions; 60.2% reported weakness/tiredness, 48.8% dizziness, 29.6% swelling of hands/feet, and 27.7% paleness. About 24%, experiencing one of these problems, actually sought health care. A vast majority of them sought care from CHC/PHC medical officers followed by government and private doctors including traditional healers (Table-3). Strong association ($P < 0.01$) was found between the type of the problem and the provider advice concerning the place of delivery indicating that

symptoms of high-risk pregnancy were recognised and providers tried to minimize the risk by advising their clients about the place of delivery.

Table- 3
Problems during pregnancy and care sought (1995-98)

Type of problem	Govt. doctors		Private doctors		Women who reported the problem (N = 422)
	Hospital	CHC/PHC	Qualified	Traditional	
Weak/tiredness	20 (7.9)	35 (13.8)	3 (1.1)	1 (0.4)	254
Dizziness	16 (7.8)	30 (14.6)	2 (1.0)	1 (0.5)	206
Swelling of hands/feet	9 (7.2)*	23 (18.4)	3 (2.4)	1 (0.8)	125
Paleness	9 (7.7)	23 (19.7)	2 (1.7)	1 (0.9)	117
Visual disturbances	2 (2.7)	3 (4.1)	1 (1.4)	-	73
Weak/no foetus movement	2 (22.2)	2 (22.2)	-	-	9
Abnormal presentation	-	2 (33.3)	-	1 (16.7)	6
Bleeding	3 (60.0)	1 (20.0)	-	-	5
Other	3 (13.6)	8 (36.4)	-	-	22

* (Row) Percentage of women out of those who reported the problem\

About 13% of deliveries occurred in government hospitals, 0.02% in private hospitals, and the rest (87%) occurred at home (0.3% attended by a doctor, 3.3% by nurse/ANM, 31.4% by trained TBAs, 50.5% by untrained TBAs, 13.7% by relatives/others, and 0.8% had no attendant. There was a strong association ($P < 0.01$) between the literacy status and ANC, and the type of attendance; those with relatively higher education and who received ANC had skilled attendants.

Results of the Chi-square test for the type of problem experienced during pregnancy and attendance during the delivery are given in Table-4. Experience of swollen hands/feet, and weakness/tiredness during pregnancy was associated ($P < 0.01$) with the type of attendance

at birth. 392 (92.89%) deliveries were normal. The type of delivery too depended on the type of the problems faced earlier. All the doctors, 83.3% of nurses/ANMs, 80.0% of trained TBAs, 58.9% untrained TBAs, and 44.0% relatives/others who attended the deliveries used the disposable delivery kits. A significant ($P<0.01$) association was found between the type of attendance and the use of disposable kits.

Of the 422 pregnancies, 28.7% experienced some problem during delivery; 9.5% had obstructed labour, 9.5% had prolonged labour, 7.1% had premature labour, 2.1% had breach presentation, and 0.5% had other problems. A strong association ($P<0.01$) was found between problems experienced during the pregnancy and the delivery.

Table-4
Problem experienced during pregnancy and attendance during delivery

Problem	Skilled attendance	Unskilled attendance	
		Trained TBA	Untrained TBAs/ others
Swelling of hands/feet	17 (13.6)*	47 (37.6)	61 (48.8)
Paleness	24 (20.5)	38 (32.5)	55 (47.0)
Weakness or tiredness	32 (12.6)	77 (30.3)	145 (58.1)
Dizziness	28 (13.6)	60 (29.1)	118 (57.3)
Visual disturbances	5 (16.1)	13 (41.9)	13 (41.9)
Bleeding	2 (40.0)	2 (40.0)	1 (20.0)
Weak/no foetus movement	3 (33.3)	2 (22.2)	4 (44.4)
Abnormal presentation	3 (50.0)	-	3 (50.0)
Other	7 (28.6)	6 (23.8)	9 (47.6)

* Row percentages in parentheses

About 50.0% of women who delivered during the last four years experienced a health problem one week after the delivery; 36.7% had lower abdominal pain, 25.8% had high fever, 25.8% had severe headache/dizziness, 14.7% had severe bleeding, 5.9% had foul smelling vaginal discharge, and 0.1% had other problems. There was a significant ($P<0.01$) association between the delivery attendance and problems faced one week after the delivery;

proportion of women experiencing problems was higher when delivery was attended by TBAs/others. Among 208 women who had problems, 28.8% sought medical care; 78.4% consulted a private/government doctor, 13.3% private/government nurse, and the rest consulted traditional practitioners. Chi-square test between the use of delivery kits and the experience of problems one week after the delivery did not show any significant association.

Regression analysis

Multivariate regression analysis was carried out to examine the simultaneous effect of variables found significant earlier. Since dependent variables were binary (experience/no experience; care/no care), logistic regression analysis was used to accommodate the deviations from normality conditions inherent to these binary variables. Model for the logistic regression analysis was developed based on the framework shown in Figure-1. Chi-square test showed that the literacy determined ANC, which in turn, determined the type of attendance during delivery. The experience of problems one week after the delivery was determined by both the literacy, pregnancy care, and the type of delivery attendance. It may be recalled that the problems experienced one week after delivery were associated with the type of delivery attendance at delivery and therefore, it was examined using the logistic regression. Other possible associations too were analysed. Results of the logistic regression are given in Table-5.

Figure-1

Analytical framework for health care seeking for health problems after delivery

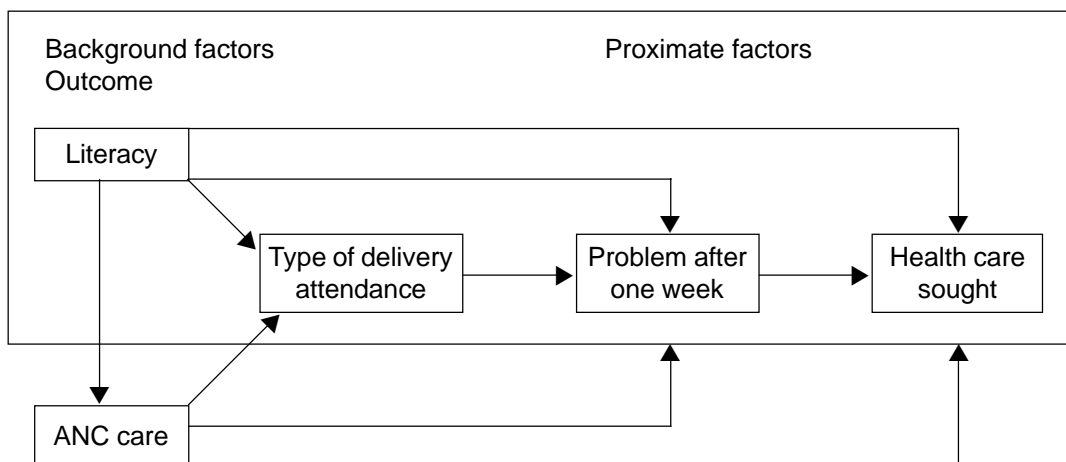


Table-5
Results of logistic regression

Variables		Reference category	P Value	Odds ratio	95% CI
Dependant	Independent				
ANC	Literacy	Illiterate	0	3.34	2.17 - 5.14
Type of delivery attendance	Literacy	Illiterate	0.15	1.56	0.85 - 2.86
	ANC	No ANC	0	14.77	7.56 - 28.88
Experience of	Literacy	Illiterate	0.24	1.28	0.85 - 1.94
Morbidity one	ANC	No ANC	0.31	0.78	0.48 - 1.29
week after delivery	Attendance at delivery	Unskilled attendance	0.87	0.95	0.53 - 1.72
Health care sought	Literacy	Illiterate	0.06	0.54	0.28 - 1.04
	ANC	No ANC	0.78	1.12	0.51 - 2.4
	Attendance at delivery	Unskilled attendance	0.04	0.41	0.17 - 0.97
	Morbidity one week after delivery	No morbidity	0.57	316664.32	0.00 - 1.1E+20
Experience of high fever	Literacy	Illiterate	0.001	2.37	1.42 - 3.95
	ANC	No ANC	0.77	0.92	0.52 - 1.64
	Attendance at birth	Unskilled attendance	0.99	1.01	0.49 - 2.07
Place of delivery	Literacy	Illiterate	0	3.17	1.77 - 5.68

The results of the analysis validate the model specifications used. ANC was strongly associated with literacy; literate women had more than three times chance of receiving ANC compared to illiterate women. Women with ANC were more likely to deliver under the care of a skilled attendant but literacy did not have any significant direct effect on the type of delivery care. However, as noted before, literacy mediated the use of ANC. Experience of morbidity

after delivery was not associated with any factor linked to the nature of care available at birth. However, literate women had less fever following the delivery. Literate women were three times more likely to deliver in an institutional setting and thus were likely to escape from the morbidity or the need to seek health care following the experience of morbidity one week after delivery.

Seeking care one week after delivery is not part of routine post-delivery follow up for most women. Only those experiencing health problem were likely to seek care. Further, literate women were more likely to seek such care when compared to the illiterate women. Literate women were more likely to deliver in institutions under skilled attendance and they were less likely to experience problems later.

Results of the cross sectional survey

A cross-sectional survey was undertaken among 120 TBAs aged 27-74 years and representing six of nine blocks in the district. All TBAs the respondents were married women and had own children; 65% were literate but 45% had less than 10 years of schooling. About 57% practiced birth attendance prior to undergoing any training; 29.2% had more than ten years of practice.

On an average, each TBA conducted 20.3 (range 0-80, SD 15.2) deliveries during the 5-year period preceding the date of survey; average per year was 6.2 (range 0-23, SD 5.4). Younger TBAs (< 50 years) conducted 4.6 deliveries (SD 4.2) last year, and 15.5 (SD 12.1) during the last five years. Older TBAs (\geq 51 years) conducted 10.3 deliveries (SD 6.1) last year and 32.9 (SD 15.4) in 5 years. The difference for one and five years was statistically significant ($P < 0.01$) indicating that older and experienced TBAs conducted more deliveries.

All the TBAs had received training ranging 1-270 days (mean 43.5, SD 69.9); 33.3% received 6 days' training. NGOs trained 45.0% TBAs, private 32.5%, government 21.7%, and other trained TBAs 4.2%. They received training on the method of cutting the cord (99.2%), nutritional counselling (99.2%), method of washing hands (98.3%), five cleans of delivery (96.7%), checking anaemia (78.3%), foetal heart rate (62.5%), temperature (40.8%), babies' height and weight (38.3%), and mothers' weight (33.3%). Only 3.3% received training on giving injections and examining blood pressure. A majority of them had been taught how to recognize danger signs, refer women to the hospital, newborn resuscitation, newborn care, and post partum care. Only 8.3% had received any additional training during the last one-year. The TBAs were practicing had been in practice for 8.3 years (range 1-13 years, SD 3.3) after training.

All the TBAs felt that ANC was essential; 73.4% said that three or more ANC were required and 42.5% said that the first ANC should be in the first trimester. Almost all (99.2%) TBAs said that they conducted ANC. According to them, ANC included iron and folic acid tablets (98.3%), tetanus toxoid injections (96.7%), and physical examination (86.7%); 33.3% knew about the requirement of two TT injections during the delivery. Even though only four women were trained for examining blood pressure, 25.8% knew about the need to have a BP exam during ANC. Below 5% reported that they could administer injections. Details of the TBAs training are presented in Table-6.

Table-6
Training details of the TBAs (2005)

Aspect of training	TBAs trained (%) N = 120Frequency (%)
Cutting cord	119 (99.2)
Nutritional counselling	119 (99.2)
Hand wash	119 (98.3)
New born care	118 (98.3)
New born resuscitation	117 (97.5)
Post partum care	117 (97.5)
Five cleans of delivery	116 (96.7)
What to do when excess bleeding post delivery	107 (89.2)
What to do if a woman has high BP	106 (88.3)
What to do in case of bleeding during pregnancy	105 (87.5)
What to do if the mother is short	105 (87.5)
What to do if the woman has retained placenta	103 (85.8)
What to do in case of prolonged labour	97 (80.8)
What to do in case of fever during labour	97 (80.8)
Anaemia	94 (78.3)
Foetal heart rate	75 (62.5)
Temperature examination	49 (40.8)
Vaginal examination	49 (40.8)
Child weight and height	46 (38.3)
Check mothers weight and height	40 (33.3)
BP examination	4 (3.3)
Injection	4 (3.3)

Almost all TBAs (99.2%) said they could diagnose a pregnancy and 87.5% had the ability to fix the delivery date; all calculated the date based on the woman's last menstrual period. None determined delivery date using ultrasound scan. None had BP apparatus and could check blood pressure; 95% referred to a doctor in case of high BP, 13.3% advised salt-less diet, and 6.7% bed rest.

Although 96.7% received training, 78.3% had the knowledge about all the five cleans of delivery. Over two-third used soap and water to wash hands before conducting the delivery while 11.0% used Savlon/Betadine and 2.5% did not wash hands; 60.8% used gloves while 65.0% used a clean blade to cut the cord (6.7% used anything available, and 28.3% used a sterile blade).

TBAs stayed with the woman for 41.1 hours (range 1-240 hours) after delivery; all advised the women on family planning, 99.2% about personal hygiene and 92.5% colostrum feeding. Over 90% referred the women to hospitals for post partum complications like fever, haemorrhage etc.; 99.2% referred them for fits, 98.3% referred them for difficult labour, 93.3% for high BP, and 88.3% for severe bleeding. About 80.0% did not refer for prolonged labour and 84.2% for fever during labour or post partum. Over 85.0% referred them to government hospitals, 47.5% to private hospitals and 38.3% to NGO hospitals.

Determinants of the knowledge and practice of TBAs

Simple Chi-square analysis was done to examine the effect of duration of training on the knowledge, and delivery and referral practices. Duration of training had a strong effect on knowledge and practices of the respondents. When the training was extended, the TBAs were more likely to receive practical training in a site providing health care. There was a strong (negative) association between the duration of training and use of gloves during delivery; 68.5% of those with <5 days' training used gloves whereas only 38.7% with >46 days' training did so. This is contradictory and one possible explanation could be that those with lesser duration training probably received it more recently; 77.4% of TBAs with ≥ 46 days of training were trained more than 12 years ago. However, there was no association between knowledge and the duration of training. There was also no significant difference between the duration of training and referral for intra and post partum problems. A rapid test prior to administering the interview schedule to assess knowledge of the TBAs showed GO BACK TO THE METHODOLOGY SECTION AND MENTION THIS TEST AND ITS PURPOSE no significant difference between those who had more than 46 days of training and others who had lesser training. Literacy too had no effect on the knowledge and practices of the TBAs.

Number of years of practice before training seems to have affected the knowledge and practice of TBAs. There is a strong ($P=0.002$) negative correlation association between years of practice before training and knowledge about the timing of the first ANC check up; 51.8% of those who had practice of <10 years and 20.0% with >10 years prior to training said that the first ANC should be in the first trimester. Similar finding was reported from Delhi.⁴⁸

There was a significant ($P=0.001$) positive correlation association between years of practice before training and the ability to monitor foetal heart rate; 44.7% of those with practice <10 years and 77.1% with >10 years before the training reported the ability to monitor foetal heart rate. However, there was no significant association between the two groups in case of calculation of delivery date, knowledge about all five cleans of delivery, method of cutting the cord, and referral practices.

Those who had 1-9 years of practice after training (recent training) were less likely ($P<0.01$) to remember what they were taught about ANC components. This is contrary to known understanding that those trained recently would remember the training aspects better. The reason is that the training duration was short (45 days) for the recent trainees. Hence, the duration of training more important than the recentness of training. Nevertheless, those trained recently were more likely to refer women for fever during labour/post partum and also knew the correct number of TT injections to be administered to the pregnant women.

Results of Focus Group Discussions

Two focus group discussions were conducted among trained TBAs (aged 34-66 years) to assess their beliefs and knowledge concerning the referral practices. The participants received training from an NGO or government for 5-63 days. They had been practising for the last 3-40 years. Most of them said they started practice before training with senior TBAs from whom they learnt initially. One TBA reported that she went to government training on the day they delivered 'boxes' and 'certificates'. Another said,

'After 30 years of working, I knew everything. They also realised that, so I went only for one day'.

Everyone reiterated that a more experienced TBA does not need training. A majority of them mentioned that they were taught how to maintain the five cleans of delivery, identify risk cases, nutritional counselling and referral. Some had been taught how to administer an injection, check the temperature and cut the cord. A common complaint was,

“They taught us how to take temperature but we do not have instruments how do we measure that?”

When asked about the delivery care options available to the women, the TBAs had a fatalistic attitude and they replied with a sense of helplessness,

“It is only our hands and God’s Grace”.

Government facilities were available within 1-5 km. But, the role of the public care health care system, the TBAs said, was they only come to give injections. However, second group of TBAs most of the women from Thauldhar find a way to mask the name of the village referred cases to the government hospital or involved ANM.

They had been taught how to monitor the fetal heartbeat, some had foeto-scope and others did it by putting their ear on the abdomen. Cultural requirements often overcame the effects of these short-term trainings; most women still deliver in the room used to store fodder. Further, once the supply of delivery kits is over the TBAs said that they used whatever was available to cut and tie the cord, and use cow dung and cow urine to wash hands before conducting delivery in keeping with the requirements of ritual purity.

Indigenous training

Most of the Dais TBAs said they had started practice out of interest. They initially started working with seniors dais who trained them, or they started when neighbours and relatives started calling them for deliveries after they had delivered their own children. One of them said she had trained two others to do the work after her. This training seems to have the maximum impact on the TBAs practices. They also said that older Dais TBAs were considered better and so people came to call the old lady from far off villages.

Cultural and social perceptions often mitigate the effects of short training, and education; and require prolonged interaction with the formal system for change to become evident. This is illustrated from the findings of the two FGDs. Practices of the trained TBAs are largely shaped by the training they receive, availability of delivery care options in their neighbourhood, education, and to some extent the need to meet meeting the expectations of the people so that they get paid. They all said they A majority of them mentioned that they were taught how to maintain the five cleans of delivery, identify risk cases, nutritional counseling and referral. Some had been taught how to administer an injection, check the temperature and cut the cord. A common complaint was, “ they

taught us how to take temperature but we do not have instruments how do we measure that?" They had been taught how to monitor the fetal heartbeat, some had fetoscope and others did it by putting their ear on the abdomen. Cultural requirements often overcome the effects of these short-term trainings, most women still deliver in the room used to store fodder. Further,, once the supply of delivery kits is over the TBAs said that they used whatever is was available to cut and tie the cord, and use cow dung and cow urine to wash hands before conducting delivery in keeping with the requirements of ritual purity.

Practices

All the Dais TBAs said they conducted ANC usually in the last month to examine the position of the foetus. They said they referred women who had bleeding during pregnancy. Some of them knew how to check for anaemia by examining the eyes and nails and they also said a woman might have less blood if she is weak and tired. They also said they gave iron tablets to the women, which were supplied to them by the NGO. For pre-eclampsia (swelling of hands and feet), they soaked the feet in hot water with 'phitkari' (unrefined rock salt)DEFINE I, and if the condition did not improve, the women were referred to hospitals. Some of them Dai massaged the hands and feet with 'Bhais ka ghee' (butter from buffalo's milk). When asked about the components of ANC, the dais TBAs were aware of iron tablets and injections, which they said the ANM came to administer.

Nutritional advise

The group of TBAs in the first village in Barkot said that they fed the mother everything pre and post partum. They did not advise against eating any vegetables or grains. However, post delivery they said precaution had to be kept so they avoided salt for 7-10 days. They also gave the woman ghee, meat, fish, and porridge. The other group said they did not give brinjal as it is 'rogila' (causes disease), rice which is cold and salt. Some also advised against eating green vegetables or 'arbi' (yam). Bananas, potatoes, curd and "kadhi" (curry made with curd) were also to be avoided. After delivery, porridge, milk without cream was preferred.

Delivery Care

All the TBAs had been taught the five cleans of delivery and risk identification; yet their practices were shaped a lot by the indigenous training, cultural and social factors. Most of them said they conducted delivery in the room where fodder was stored and the mother

and child were confined there for 21 days. They, however, reported that now women were educated and demanded better. One lady said her daughter-in-law had delivered in the main room where they slept; another said that her daughter-in-law was a graduate and hailed from city so she had gone back to the city hospital for delivery.

When asked if they had been taught how to wash their hands, they said they had been taught. Most of them used soap and water for washing their hands after cutting their nails and cleaning them with a brush. When probed further they said that since they considered the cow “bhal” (good) so they initially put their hands in cow dung then washed them with cow urine, after which some of them washed with soap and water. Ritual cleansing with cow urine is part of the customs of both high and low caste Hindus even in Nepal.⁴⁸

The TBAs were aware of the safe delivery kit and received this from government/NGO. However, there was a problem of sustained supply; once the project was over, supply of kits stopped and women were left to use the left-over, if any. Similar conditions prevailed in Nepal too.⁴⁸ situationsThe TBAs most often used a clean blade provided by the NGO or government in the delivery kits or get it from the market to cut the cord. However, some of them some said used a ‘daranti’ (tool used to cut grass) after sharpening it on a stone.

Some TBAs bathed the baby in cow urine; they too have a bath in cow urine and by evening give the mother also a bath with cow urine. Others said they bathed the child and mother with soap and water. They advised breastfeeding the baby immediately after washing the mouth with warm water. They fed the child cow or buffalo milk if the mother does not have milk. TBAs knew about newborn resuscitation and artificial respiration by breathing into the child’s mouth, the other group said

“We don’t know what to do sometimes the child just dies”.

Post partum care

Mother and child are confined to the ‘delivery room’ from till 11th to or 21st days. She cooks for herself and bathes there. On 5th day, they are ‘shown’ the sun; this is called ‘Panchola’. On 11th day, and in some cases 21st day, there is a ‘havan’ (sacred purifying ritual involving fire ceremony); only after that can the mother enter the kitchen and cook. The TBA stays with the woman for 1-2 hours after delivery and visits her everyday for 4-5 days to help her bathe and cook.

Payment for service

The TBAs said they conducted 30-100 deliveries a year. Some of them maintained records of maternal and child health. They received a payment of Rs. 60-100/- per month from the NGO in addition to the payment received from the families. Some TBAs did not receive any fee for service during the recent times. they used to get 60 Rs per month earlier from the NGO but now didn't receive anything. They received no financial remuneration from the government. They received delivery kits from the government/NGO when they went for training but never after that. did not get them any more

Referral

TBAs in one group Barkot said that prolonged labour was normal and some women could be in labour for up to a week. But, the other group Thauldhar said they gave the women ghee and 'gur' but if it failed, they called the ANM didi or refer them to a hospital. They referred the cases with severe post delivery bleeding to the district hospital. Such women were carried on a cot to the main road to take a jeep. Of course, it costs money. Fever was seen as normal and good.

"Everyone should get fever after delivery"

If the fever lasted for more than three days, they referred her to a hospital. If requested by the relatives, the TBAs accompanied her to the hospital. In case of any anticipation that there might be problems during the delivery, they asked the relatives to take the women to a hospital. Sometimes, the relatives just requested the TBAs to do 'the best' they could. The practice was followed in difficult terrains. The TBAs ridiculed the idea of any role for men in delivery related care.

Family planning advise

The preferred method of contraception was female sterilisation as the knowledge about oral contraceptives was poor. Those TBAs who knew about them felt that they were ineffective. TBAs, however, advised women to go for family planning. Son preference was common and people kept 'trying' till they had a son.

CONCLUSIONS AND RECOMMENDATIONS

Synthesis and Discussion

There are certain inherent limitations while attempting to synthesise the results because the reference periods were different for different sets of data – 1998-99 in case of secondary data and 2005 in case of primary data. The synthesis, however, is being carried out assuming that there were no changes in availability of and access to delivery care. This assumption is justified in the light of the remarkable congruence between the results of three independent processes.

The delivery care options available to the women in this hilly district were limited and mainly from the public sector as found in the RCH survey and reiterated by the survey among TBAs. The public health care system was the major source of ANC; yet, only 1.1% received ANC from sub-centres and <1% received it CHC/PHC indicating the poor reach/availability of primary care in the community.

Vast majority (92.9%) of the problems during pregnancy was addressed by the public sector. However, for problems faced beyond one week after delivery, 46.6% sought care from private doctors (34.9% consulted government doctors); the rest went to traditional practitioners. Only 28.7% received ANC (state average is 43.4%³⁵). The terrain probably limited the reach of the ANMs.

Anaemic symptoms were commonly (>50.0%) reported during pregnancy. Swelling of hands and feet were also reported by 29.6% of women. Yet, only 24.0% sought care (RCH survey). This could be because many of these problems were regarded as 'normal'. Other reason was the lack of neighbourhood options for care. According to the NSSO survey (2002),¹⁰ only 7.4% villages had a sub-centre/PHC/CHC and for 34.0% villages, the distance to travel was >10 km (Over 80% villages were not connected by 'pucca' road).

Home deliveries were seen to the extent of 86.5%, which is quite high. This is higher than even the reported NFHS-2 figure (60%) for rural Uttaranchal.¹¹ Over 50.0% of home deliveries were conducted by untrained TBAs and 31.5% by trained TBAs; the rest were attended by relatives and others. This finding is reflected in the FGD when the TBAs said, "we are the only ones here, and it is only our hands and God's grace". TBAs are preferred because they are present in the villages and accessible at all times, payment to them is not fixed and also for the support they provide to the mother post delivery.⁴⁹ A majority (50%) of institutional deliveries happened in government hospitals followed by CHCs/PHCs (48.2%); very few

went to private hospitals. Literate women were more likely to receive ANC, and therefore, to have a skilled attendant at birth, less likely to experience problems post delivery and more likely to seek health care if they have a problem.⁵⁰

Training of TBAs occurs in two settings - indigenous received from experienced TBAs, and formal training from NGOs/government. Indigenous training had a strong influence on the practices of TBAs. However, training by itself does not enable the TBA to insist on sterilized instruments to cut cords or hot water to wash herself and labouring women, to play a more prominent role in managing labour or to be summoned before deliveries start.⁵¹ TBA might be reluctant to break a particular norm even if her training taught her otherwise, since flouting the norm might cause misfortune to the entire community as childbirth is considered a period of ritual impurity. A World Bank report on Improving Women's Health in India (1996) stated that the Intensified Training of Dais Programme (ITDP) had shown that because of insufficient training, poor supervision, and pressure from older female household members, the Dais did not always utilize the procedures they had been taught.³⁹ Moreover, since Dais are already middle-aged when they start work, benefits of training might be short-lived.⁵² At the same time, the training of the TBAs usually does not impart skills and knowledge required by a skilled attendant.

Knowledge regarding antenatal care was limited to TT injections, iron, folic acid tablets, and physical examination. TBAs conducted physical examination in the last month of pregnancy. Over 75.0% had the knowledge of all the five cleans of delivery. TBAs used cow dung and urine to wash their hands, prior to conducting a delivery after which they might not wash hands with soap. They also revealed that they used whatever was available to cut the cord after the supply of delivery was exhausted. Studies reveal that there has been inconsistency in the supply of delivery kits.^{47,53} Delivery takes place in the room used to store fodder, where the woman is confined for 21 days post delivery. Similar results were found in Nepal too.⁵³ Majority of TBAs referred the women to a hospital for pre-eclampsia, bleeding during pregnancy, or if the mother was short. However, they considered prolonged labour as normal and fever as an essential and good phenomenon post delivery. TBAs advised families regarding referral; 86.7% referred them to government hospitals and 47.5% to private hospitals. But, some families asked TBAs to do what they could due to difficulty in reaching a city hospital. One suggestion to over come this problem could be to establish referral facilities before training the TBAs.⁵⁴ Also, in circumstances when medical treatment is least available, TBA training is proposed as a solution.⁵⁵

CONCLUSION

At the community level, TBAs are the only source of delivery care in view of the difficult terrain, and a less-than-fully satisfactory government system. However, due to cultural/social norms and the influence of the indigenous training, TBAs (trained or otherwise) are not able to meet the needs for maternal and child health care. As a result, the onus of providing maternal and child care rests with the inadequately trained TBAs at the community level. Hence, there is a need for adequate training of women who can serve as skilled birth attendants at the community level along with infrastructure for referral and transport in place. Considering that this is one issue that has both global and national impetus from NGOs as well as the RCH program there is an urgent need to address this problem by tackling the need for better trained professionals and attention paid to building up infrastructure in the health and transport sector.

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