Relevance of Trained Traditional Birth Attendants in Maternal Health: Case study of Tehri Garhwal District, Uttaranchal State.

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Dissertation submitted in partial fulfillment of the requirement for the award of the degree of Masters of Public Health.

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Declaration

I hereby certify that the work in this dissertation titled "*Relevance of trained traditional birth attendants in maternal health: Case study of Tehri Garhwal district of Uttaranchal*", is the result of original research and has nor been submitted for the award of any degree in any other institution

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Date:

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Abstract

Training of traditional birth attendants has been the thrust for maternal care in India over the past decades. This strategy has proven unsuccessful with the MMR in India still estimated at 410 deaths per lakh population. Owing to the difficult terrain the Government of Uttranchal has made a policy to train TBAs and use them for safe delivery care at the community level.

Objective: To understand the role of trained traditional birth attendants in maternal well being in Tehri Garhwal district of Uttaranchal State.

Methodology: The study was designed in two parts. **Part I:** Analysis of secondary data for Tehri Garhwal from the RCH II survey 1998-1999, to look at pregnancy outcomes and morbidity experiences in relation to the nature of care. **Part II:** This had two phases. **Phase 1-**Two focus group discussions were conducted in the district, to understand the referral options, beliefs and knowledge of the TBAs regarding pregnancy and childbirth. **Phase 2-** A cross sectional survey among TBAs (N=120) to examine the knowledge and practices regarding antenatal delivery and post partum care.

Results: The options for health care in this hilly district are limited. Only 28.7% of the women received antenatal care. A majority of the deliveries (86.49%) occurred at home, 50.6% of which were conducted by untrained TBAs. Literacy emerged as an important predictor for receiving ANC (OR=3.343), place of delivery (OR=3.174), experience of fever post delivery (OR =2.366).

The training of The TBAs is from two sources. Indigenous training from apprenticeship with older TBAs, and formal training received from the NGOs or the government. The thrust of the training is on the five cleans and risk identification and timely referral. And yet the practices of the TBAs are shaped by cultural expectations and availability of options for care, mitigating the effects of the training.

Conclusion: TBAs seem to be the only source of delivery care in this region. However, inadequate training, lack of supervision and cultural expectations compromise the role of the TBAs in effective maternal care.

Recommendations: There is a need to develop a cadre of nurse mid-wives to cater to the needs of women in these geographically difficult regions and also to improve public infrastructure, both in the area of health as well as roads and transport to enable out-reach and referral practices. In the meanwhile, the trained skilled providers need to closely monitor the activities of the TBAs to ensure that harm during delivery is minimized so as to enhance maternal well being in Tehri Garhwal district, UA.

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Certificate

Certified that this dissertation titled '*Relevance of trained traditional birth attendants in maternal health: Case study of Tehri Garhwal district of Uttaranchal*', is a bonafide original research work undertaken by Dr Pratibha Esther Singh in partial fulfillment of the requirement for the award of the Master In Public Health degree under my guidance and supervision.

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Chapter 1
Introduction

1.1 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 that was 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 always held centre stage.

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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 seventies and eighties focused on child health, and training of traditional birth attendants to provide maternal care [1]. The expanded program of immunization started in 1982 and in 1988 it became the Universal Immunization Programme (UIP). ~~(citation).~~ In 1992 the program became the Child Survival and Safe Motherhood Programme (CSSM), which was finally integrated into the Reproductive and Child Health Programme (RCH) in 1997. Though these programs ~~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 per 1000 live births in 2003 and declines in the total fertility rates from 5.9 in 1960 to 3 in ~~. The~~2003 [2]. The maternal health component was ~~ignore~~not emphasized~~d~~ 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 2003[2] Though estimates of maternal mortality ratios are difficult to get, the MMR in 1938 was estimated at 2000 per 100,000. It declined to 1000 per 100,000 by 1959 [3]. Bhatt eEt al estimated the MMR in India at 753 per 100,000 in 1982 and that in 92-93 at 572.3 per 100,000 live births: a 25 percent decline in twelve years [3]. The MMR between 1985 and 2003 is at an unacceptable level of 540 per 1000 live births, this varies from 87 in Kerala to 739 in Orissa [2].

Internationally also there has been concern expressed about the high maternal mortality in developing countries. The World Health Day motto for the year 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 with indicators such as decrease in maternal mortality and number of births attended by a skilled attendant.

The RCH II Programme being currently being implemented for India in 2005 also aims at reducing maternal mortality to 200 per 100,000 live births by promoting skilled attendance at delivery and increasing institutional deliveries to 50 percent by the year 2007.

Issues of skilled attendance

The Child Survival and Safe Motherhood program has focused on the early detection and treatment of such complications as anaemia, pre-eclampsia, and obstructed labour. Traditional Birth Attendants (TBAs) were taught the importance of clean delivery practices. The program also endeavoured to provide referrals for hospital deliveries for women with a high risk for complications [5].

An exact definition for these women, who assist women during childbirth, has been provided by the WHO [6]. **Traditional birth attendants** are those women who assist the mother during childbirth. They may have acquired skills by delivering babies themselves or through apprenticeship of other TBAs.

Though TBAs were trained on a large scale the programme goals of reducing maternal mortality were not being met. Recent evidence internationally points out that TBAs do not really make a difference in maternal mortality in the absence of good referral facilities, and well-equipped referral sites with skilled personnel [7]. Therefore in the late nineties 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 Maternal Mortality Ratio (MMR).

A **skilled attendant** is an accredited health professional; such as a midwife, doctor or nurse, who has been educated and trained to proficiency in the 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].

However 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 in the context of geographical diversity infrastructural issues are paramount in the way care is organised. Therefore since geography has implications for access to appropriate care there is a need to use available assistance while building for alternatives.

Since TBAs already exist in many developing country communities, it has been suggested that they could perform the role of the skilled attendant with some training [7].

~~1.1~~1.2 Background

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Issues in Maternal health in Uttaranchal State, India

Uttaranchal (UA) is a new state, which was carved out of the erstwhile state of Uttar Pradesh (UP), because of issues of inequity and stark cultural and developmental differences from UP. It comprises of 13 districts~~, eleven out of which~~ of which 11 are in rough mountainous terrain of the middle and greater Himalayas. The state is predominantly rural with 74 percent of the population living in rural settlements. These settlements are scattered widely over the mountainous terrain with poor road connectivity, which poses a major challenge to health service delivery. ~~PRATIBHA PLEASE FILL THE DENSITY AND THE LITERACY COLUMNS FOR INDIA JUST IN THE INTERESTS OF COMPLETION.~~

And yet the indicators for UA are different from UP as can be seen in Tables 1 and 2.

The health care infrastructure both public and private is inadequate with shortage of manpower and lack of facilities (see table 4). In the rural areas the 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, the ratio for India is 1: 1800 [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]. As evidenced by table 4 there is a shortage of hospital beds in the district.

According to the NSSO [10] survey of 2002 in UA only 74 villages out of 1000 villages have a subcentre/dispensary/ PHC or CHC within the village. For 340 out of 1000 villages the distance is more than 10 kilometres. About half the villages (565/1000) have a private hospital more than 10 Kms. away and only 12 out of 1000 have a private hospital within the village. Ten kilometres hilly terrain can mean several hours of walking

up or down ~~the~~ mountains, and this has implications for transport of patients in an emergency.

Therefore the provision of health services in the rural areas is left to a few NGO's, less than qualified practitioners or whoever is locally available.

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Table 1: Demographic and health indicators in UA, UP and India 2001?;; A comparison

Indicator	UA	UP	INDIA
Population*			
Male	4325924	87565369	532156772
Female	4163425	78633552	496453556
Total	8489349	87565369	1028610328
Sex Ratio*	962	898	933
Population density$^{\alpha}$	159	689	324*
Literacy*			
Male	83.3%	68.8%	75.96%
Female	59.6%	42.3%	54.28%
Total	71.6%	56.3%	65.38%
CBR$^{\beta}$			
Rural	21.1	33.2	27.1
Urban	16.6	27	20.2
Total	18.5	32.1	25.4
CDR$^{\beta}$			
Rural	10	10.6	9.0
Urban	6.1	7.8	6.3
Total	7.8	10.1	8.4
TFR	2.6	4.1	3

* Source: Census of India report 2001, α Source: NSSO 2002 survey report
β Source: SRS 2002

TABLE 2$^{\Phi}$: delivery assistance at birth and ANC care in UA and UP, ~~YEAR?~~1998-99

Indicator		UA	UP
Delivery assistance			
Rural	Doctor	20	10
	ANM	9.8	6.6
	TBA	47.6	35.5
Urban	Doctor	44.1	36.3
	ANM	10.0	15.4
	TBA	38.7	29.9
Place of delivery			
Rural	Public	8.0	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%

Φ Source: NFHS II

Table 3: District comparison of Uttaranchal

District	Population density*	Sex ratio *	%Villages, Popln< 500 *	Literacy Male Female*	IMR *	CBR *	TFR *	Villages electrified (%)**	Vill NCPC π
Uttarkashi	37	941	88.3	84.5 47.5	98	28.5	3.6	NA$^{\alpha}$	58.27
Chamoli	48	1017	91.4	89.9 63	66	23.7	3	78.52	76.25
Rudraprayag	120	1117	NA	90.7 59.9	NA	24.9	3.2	NA	NA
Tehri Garhwal	148	1051	90.2	85.6 49.8	67	26	3.2	74.83	83.87
Dehradun	414	893	76.3	85.9 71.2	53	20.9	2.6	100	43.59
Garhwal	129	1104	95.2	91.5 66.1	48	21.6	2.8	50.14	84.5
Pithoragarh	65	1031	91.5	90.6 63.1	77	24.5	3.1	71.55	69.5
Champawat	126	1024	NA	88.1 54.8	NA	29.1	3.8	NA	NA
Almora	205	1147	89.7	90.2 61.4	63	23.5	3	83.93	68.23
Bageshwar	108	1110	NA	88.6 57.5	NA	25.7	3.3	NA	NA
Nainital	198	906	72.1	87.4 70.9	85	25	3.3	92.88	25.98
Udham Singh Nagar	424	902	NA	76.2 54.2	NA	29.6	3.9	NA	25.98
Hardwar	612	868	NA	75.1 52.6	73	29.6	4.1	NA	NA

*Source: census 2001 $^{\pi}$ Villages not connected by *pucca* road: source: population commission 2001

** Source: NSSO 2002 $^{\alpha}$ not available

Table 4: District level health infrastructure in Uttaranchal

District	CHC[α]	BPHC[α]	APHC[α]	SAD[α]	SC[α]	RH[α]	No. Of allopathic beds Govt Private[α]	ANM/ lakh pop-ulation[*]
Uttarkashi	1	4	8	22	66	3	286 10	99.7
Chamoli	2	7	7	23	91	3	410 -	111.24
Rudraprayag	1	3	6	23	62	2	186 -	-
Tehri Garhwal	-	9	16	32	128	5	306 65	43.26
Dehradun	3	4	18	25	129	3	1025 1165	59.9
Garhwal	2	15	16	67	203	10	943 44	67.25
Pithoragarh	1	8	13	32	145	4	518 102	99.75
Champawat	1	3	4	10	45	1	518 102	-
Almora	3	11	21	40	181	2	800 105	99.45
Bageshwar	1	3	6	13	59	1	118 -	-
Nainital	1	8	11	32	59	2	1257 75	84.86
Udham Singh Nagar	4	4	28	8	152	2	442 112	-
Hardwar	3	5	19	2	139	-	464 930	54.75

[*]Source: Srinivasan 1998. [α] Source: The policy project. The futures group international. New Delhi.Reproductive, child health and population policy issues in Uttaranchal, Workshop Proceedings: Dehradun, 2-3 May 2002

Glossary: CHC-community health Centre. BPHC- Block primary health Centre. APHC-Additional PHC. SAD- State allopathic dispensary. SC-Subcentre. RH- Rural hospital

1.3 Rationale: Role of TBAs in Uttaranchal

Home births are the norm in UA with TBAs providing assistance in 38.7 percent urban and almost 60 percent of rural deliveries [11]. The poor community outreach by ANMs in Uttaranchal is evident by the fact that only 20 percent women receive minimum ANC package, and only 10 percent of the births are assisted by ANMs in UA [9].

There is evidence to indicate that training of TBAs has not contributed to reduction of maternal mortality [12,13,14]. Since the family welfare program 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, ~~R~~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. They have the ambitious plan of providing skilled attendants for delivery assistance at all levels in the rural areas.

However, the programme recognised that for some women, TBAs are the only source of care available during pregnancy. As experiences from some countries such as Malaysia [15] has shown, 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.

The State of UA has its own geography specific problems, so a key policy decision the state government seems to have taken is to rely on TBAs in the rural areas and train them for providing delivery assistance and ANC [9].

In the first phase 900- 1400 TBAs have been trained since 2002, with the objective of having at least one trained *'dai'* in every village [9]. The arguments that has~~s~~ve been cited for this is the rough geographical terrain because of which not all the population will have at least one trained "skilled" attendant at the community level.

According to the primary census abstract of census 2001[16], 49.47 percent of villages in UA have a population of 200 or less, and 31.1 percent have a population between 200 and 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. While many things can be changed the terrain cannot, therefore a key policy decision the state has taken is to use TBAs as the link between the skilled providers and the scattered communities.

In spite of its geographical disadvantages ~~terms of~~ many of the development indicators for UA are somewhat better than UP ~~in spite of its geographical disadvantages~~. Higher female literacy can contribute in part to this. Further, with respect to child survival and safe motherhood issues over the years TBAs have played a strong role.

What are the factors that are ~~is i~~ different about UA state that could serve to ~~have brought~~ bring down fertility and mortality? Of interest is the issue of child survival as most of the care is being provided by TBAs. It is possible that with many years of ongoing training and skills acquired through various programs the demand from the population and the lack of other options has made TBAs a strong component of the safe motherhood initiative.~~why yellow highlight?)~~

It is imperative to know if this policy option exercised by the state has the potential to succeed. For this we propose to examine 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.

It is hypothesised that if TBAs played a strong role then much of the requirement of skilled attendants at birth would already be imbibed. Therefore TBA knowledge and skills will be similar to or match those required by a skilled attendant. We therefore propose to list the knowledge and practice of TBAs to evaluate its contribution to child survival and safe motherhood. We can thus find out if the policy of the UA state has any chance of success or if it needs mid course correction.

1.4 Objectives

To understand the role of trained Traditional Birth Attendants in maternal well-being in a remote, inaccessible district of Uttaranchal State.

1.4.1 Specific objectives

The specific objectives of the study are:

1. to compare the outcomes of pregnancies attended by various categories of health providers in Tehri Garhwal.
2. to assess the knowledge and practice of Trained Traditional birth attendants in rural Uttaranchal in terms of antenatal, delivery, post partum care, and
3. to assess the knowledge of Trained Traditional birth attendants regarding referral, referral practices and beliefs and knowledge

1.5 Research Questions

1. What are the delivery care options available to women in UA?
2. What are the outcomes of maternal well being in relation to the various options of care available?
3. What is the potential for maternal morbidity related to these care options for delivery?
4. What is the nature and extent of training received by TBAs in UA?
5. What is the TBAs' understanding of the value attached to the training?

6. What are the sources of knowledge regarding making pregnancy safer for achieving this- end?~~end?~~
7. What are the levels of knowledge among TBAs about appropriate antenatal, delivery and post partum care?
8. What beliefs exist among the TBAs about the components of skilled birth attendant requirements, regarding appropriate antenatal, delivery and post partum care?
9. What are the practices of TBAs that have implications for appropriate antenatal, delivery and post partum care?
10. What are the available and accessible referral options available to the TBAs?
11. Under what circumstances and where do they refer patients during antenatal, delivery and post partum care?
12. When do the TBAs believe that they should refer patients to the upper level of care?
13. What were the TBAs' experiences during the past one/five years with respect to delivery and postnatal care in terms of number of women served and the outcomes?

1.5 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 be 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.

1.6 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.

1.7 Chapterisation plan:

This dissertation consists of 5 chapters of which the present chapter detailing the rationale for the study, the objectives and research questions and the limitations in the conceptualisation of the study. The second chapter provides a review of the available literature detailing the policy positions as well as empirical evidence regarding the role of TBAs. The methodology chapter that follows describes the study design, the sampling plan, the data collection processes and the analysis techniques used. The fourth chapter consists of the findings of the study and the last and final chapter synthesizes the findings from the study and the conclusions drawn thereof.

Chapter 2
Review of literature

2.1 International policy

With the Alma Alta Declaration in 1978, there was a thrust towards primary health care and special focus was given to mother and childcare. The mainstay of the primary health program 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]. Therefore since the late nineties 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].

All factors considered, in the absence of an enabling environment in terms of infrastructure and supplies, skilled attendant at birth is of little value.

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 [19,7].

2.2 International experiences with trained TBAs

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 b~~B~~y Koblinsky and Campbell, modelled the maternal care services available in various parts of the world into four models. Model I consisted of: home deliveries with non-professionals in China and Brazil. Model II is skilled birth attendant at home in Malaysia. Model III is Skilled attendant delivery in basic EOC facility e.g. Netherlands, Sri Lanka. Model IV is skilled attendant delivery in comprehensive EOC facility such as a hospital e.g. USA and United Kingdom. Model I existed in China and Brazil, where home deliveries by non-professionals was the norm. With excellent support from a well functioning health system they were able to bring down their maternal mortality to 100 per 100,000 population. Assistance by skilled birth attendant as in model II-IV can bring down MMR to less than 50 per 100,000[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]. With close supervision and support from nurse midwives and doctors and a well functioning public health system, training community midwives is a good model for maternity care in low-income countries.

In the Honduras [25], Pakistan [26], Egypt [27] and Nigeria [28] post training assessment of TBAs showed that they had persistent achievement of curricular learning goals, improved ANC coverage, more referrals, and a greater ability to recognize danger signals. Therefore it was recommended that training of TBAs could be effective in reducing infant

and maternal mortality and morbidity, in the presence of adequate referral and transport facilities for emergencies, and close supervision**.** Other studies found that training TBAs increased ANC attendance [29], dietary advise and new born and post partum care given by TBAs can help to reduce maternal mortality.

Training of community midwives in Indonesia met with a mixed response due to lack of practical training, lack of acceptance, poor referral facilities and lack of decision-making power. TBAs were widely accepted not only for delivery services but additional support they provided to mothers in the entire prenatal and postnatal period. Therefore training of TBAs was carried out sometimes secretly as they were outlawed and midwives supervised them [30].

2.3 The Indian Experience

Maternal mortality in India is a cause of concern. India accounts for 20 –24 percent of maternal deaths in the world [31]. In the period 1998-1991 MMR was estimated at 540 per 100,000 live births [32]. Various policies and programs have been aimed at maternal and child well being especially since the Alma Alta declaration and the MCH program of the late ‘80s. Over the last decades there have been major advances in child well being through immunization and oral re-hydration salts. Reduction in maternal mortality however requires tertiary level well equipped facilities and skilled personnel, which proves to be expensive and so maternal mortality in India is still unacceptably high. Primary health centres were to be the community level centres for maternal and childcare. Their focus however changed from MCH to family planning and training of TBAs [33].

The 1983 health policy stated that adequately trained personnel would conduct all deliveries [34]. The National Population Policy 2000 stated that TBAs would be the backbone of the safe motherhood initiative where they are the delivery caregivers at the community level. A study found that after even after extensive training the TBAs were

not taking on the broader role of maternal and child health envisaged for them. They had little follow up and support and did not have the support of the referral systems so essential for averting maternal deaths.

In the absence of a policy for obstetric and emergency obstetric care, actions are guided by social situations. One study in UP found that FRU's lack obstetricians and since 'skilled attendants' such as ANM and their supervisors at the community level are not allowed to perform EOC procedures therefore most women do not follow through for referral or arrive at the facility too late [33].

A study by Rama Rao [5] in UP found that most of the deliveries in the rural areas were at home, and a majority did not receive ANC. Survey of the facilities showed that the PHCs were not equipped to handle obstetric emergencies because of lack of proper equipment, supplies and knowledge of the health personnel. A study by Bhatt and Hazra [35] found that there was a lack of trained attendant in 50.8 percent of maternal deaths.

Home births are the norm in rural areas of ~~most~~ many of the states in India [36]. Traditional birth attendants trained or otherwise are the major source of maternal care during delivery and post partum period. According to the NFHS II, 35 percent of births are attended by TBAs in India [36]. "TBAs 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"[37]. 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.

According to a study in UP 'the health system has been largely insensitive to the reproductive health care needs of women and the constraints they face in expressing these needs and obtaining services', and that 'TBAs are preferred and perceived to be more supportive, accommodating and like family members' [38].

A study by Jeffery in 1989 found that TBAs do not have overriding control over the management of deliveries, and have modest perceptions about their capabilities. Studies from UP show that the TBAs do not visit the pregnant woman on their own but wait to be summoned, while village women consult the TBA only during labour. Therefore expectations from TBAs for antenatal care and high-risk screening seem unreasonable [39].

A World Bank report on Improving Women's Health in India (1996) states that 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. Greater emphasis should be placed on training *'Dais'* to identify women with problem pregnancies and obstetric complications and to refer those women to higher levels of the system where they can be effectively managed' [40].

Trollope-Kumar (1995) found that people who trained the TBAs had a biomedical background without an understanding of the socio cultural context in which they were placed. Therefore the cultural and social expectations continued to shape the practices of TBAs even if they have been trained to do otherwise [41].~~(NFHS-2 1988-89GIVE THE CITATION FOR THE NFHS-II REPORT – IS IT NOT IIPS AND ORC MACRO, 2002?). A rural study in 1990s found gaps between provision and utilization of care. The study showed that even though TBAs were trained and placed in villages still close to 90% deliveries were in the hands of untrained "dais"[29].~~

A rural study in 1990s found gaps between provision and utilisation of care. The study showed that even though TBAs were trained and placed in villages, still close to 90 percent deliveries were in the hands of untrained TBAs [42].

Another study showed that most of the TBAs were illiterate older than 45 years of age and of low caste, but were important not only for delivery care but also post delivery support they provide to the family [43]. Therefore it was suggested they be trained and provided infrastructural, logistical and supervisory support from the government.

Evaluation of TBA trainings indicates that they showed good acquisition of skills, improved ANC coverage, and reduction in post partum fevers [44,45,46]. A study in Tamil Nadu found that TBA training ranged from 10 days to six months. Non-availability of delivery kits post training resulted in the TBAs going back to traditional practices. The community was not educated for the role of trained midwives and there was no follow up by ANMs from the PHCs [47].

Chapter 3
Methodology

3.1 Study type

The study was designed in two parts:

1. To answer the first three research questions with respect outcomes of maternal care we used available secondary data from the RCH II rapid household surveys undertaken by the International Institute for Population Sciences, Mumbai in 1998-1999. The data for Tehri Garhwal was analysed to look at pregnancy outcomes in relation to the nature of care provided during the ante partum period. Maternal morbidity was also examined using the same data source consisting of sample of 1028 women and 1028 men in the reproductive ages, to provide a representative sample for studying reproductive health experiences in Tehri Garhwal district.

2. For addressing issues related to the knowledge and practices of the trained TBAs, a descriptive cross sectional study was conducted. The knowledge and practices of TBAs regarding appropriate antenatal, delivery and post partum care and their beliefs and practices regarding referral and the resultant outcomes for maternal well being were assessed using both qualitative and quantitative methods of data collection.

3.2 Study setting

The primary data collection for this study was conducted in the Tehri Garhwal district of UA.

3.3 Sample Size

3.3.1 Secondary data: Sample size for The RCH phase II survey consists of 1028 men and 1028 women in the reproductive age groups for the Tehri Garhwal District of UA.

3.3.2 Primary data: For active data collection the sampling frame consisted of all trained TBAs in six of nine blocks of Tehri Garhwal District of UA. 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~~three major NGOs in Tehri Garhwal ~~YOU HAVE MENTIONED ONLY TWO INSTEAD OF THREE PLEASE CORRECT AS NECESSARY~~. 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.

3.4 Sample selection procedure

3.4.1 Secondary data: A sample of 1028 men and 1028 women in the reproductive ages sampled for the RCH survey phase two. Secondary data from the survey was analysed to answer the first objective.

3.4.2 Primary data: 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 or the study.~~

~~7.~~1.

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3.5 Data collection techniques

3.5.1 Secondary Data from the RCH project, rapid household survey: Phase II (1998-99) for the Tehri Garhwal district was analysed. The RCH surveys completed by the IIPS consist of sample sizes adequate at the district level to obtain estimates of reproductive morbidity.

~~2.~~**3.5.2 Primary Data:** There were two Phases of data collection. Qualitative data was collected in the first phase and for this focus group discussion (FGD) among TBAs was used. Following this, the second phase of data collection consisted of interviews using a pre-tested structured interview schedule among trained TBAs.

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Phase I: Qualitative data collection with focused group discussions using an appropriate guideline for the discussion (included in the dissertation as Appendix IV). Two ~~Focused group discussion~~FGDs were conducted in two different blocks ~~will be~~ were conducted with 13 TBAs.

Phase II: A cross sectional survey using pre-tested structured interview schedule was 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. This schedule has been included in the dissertation as Appendix II.

3.6 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.

3.7 Variables in the Analysis

Secondary data

Birth attendants: for the purpose of this analysis type of attendants at birth were classified into four groups:

1. Skilled attendant- assuming all deliveries in the hospital took place with the attendance of a doctor or Nurse/ANM; these were classified as skilled attendants including the home deliveries attended to by a doctor and nurse/ANM.
2. Trained TBAs
3. Untrained TBAs
4. Relatives and Others

For the purpose of logistic regression we had two groups of birth attendants:

1. Skilled attendants
2. Unskilled attendants-trained and untrained TBAs and others

Chapter 4
Results

Presentation of findings

The findings of the study are presented in this chapter. The results will be presented in three sections.

Section 1 will consist of findings from the secondary data from the RCH project, rapid household survey Phase II (1998-99) conducted by the International ~~i~~Institute for Population Sciences, Mumbai for the Tehri Garhwal district of UA State. This data was analysed to examine pregnancy outcomes in relation to the nature of care provided during the ante partum period. Maternal morbidity was also examined using the same data source. For the purpose of this study only a section of the woman's questionnaire used in the survey was analysed (q201-q240).

Section 2 will present the findings from the cross sectional survey among trained TBAs, to look at knowledge, care giving and referral practices of TBAs with respect to antenatal delivery and post partum care. Also findings regarding birth outcomes in terms of neonatal, and maternal mortality and morbidity will be presented.

Section 3 will present the findings from the qualitative data analysis to look at knowledge regarding referral, referral practices, and knowledge and beliefs regarding pregnancy and childbirth.

Section 1: Results of the secondary data analysis

4.1.1 Profile of women age and literacy

The sample consisted of 1028 women in the reproductive age groups. Only those women who had a pregnancy in the four years preceding the survey were included in the analysis. Of the 1028 women, 449 had a pregnancy in the four years preceding the survey.

The ages of the respondents ranged from 18 to 42 years, with a mean age of 27.82(Standard deviation=5.082). More than a third 171(38.1%) of the respondents were literate.

A majority 414 (92.2%) of the 449 pregnancies resulted in live birth, 8 (1.8%) were stillbirths, 6 (1.3%) had induced abortion and 21(4.7%) had spontaneous abortion.

4.1.2 Antenatal care

More than a quarter (28.7%) of the 422 pregnancies, which were carried to full term, received an antenatal check up. A majority (14.4%)of the women received ANC at a government hospital and 12 percent received ANC at a private hospital. The place of the ANC is shown in table 5.

Table 5: Distribution of women by place of ANC Check-up, Tehri Garhwal; 1995-'98.

Place of antenatal check up	Number of women (%)
No ANC+ abortion	320 (71.3%)
Govt Hospital	64 (14.3%)
PHC/CHC	3 (0.7%)
Govt Dispensary	1 (0.2%)
Sub centre	5 (1.1%)
Private hospital	54 (12.0%)
Other	2 (0.4%)
Total	449 (100%)

Table 6: Distribution of women by literacy status and ANC care, Tehri Garhwal; 1995-'98

Literacy	Antenatal care		Total number of women
	ANC received	ANC not received	
Literate*	75(46.6%)	86(53.4%)	161(38.15%)
Illiterate*	54(20.7%)	207(79.3%)	261(61.84%)
Number of years of schooling			
0 years of schooling*	54(20.7%)	207(9.3%)	261(61.84%)
1-9 years of schooling*	49(42.2%)	67(57.8%)	116(27.48%)
10 or more years of schooling*	26(57.8%)	19(42.2%)	45(10.66%)
Total number of women	129(30.6%)	293(69.4%)	422(100%)

*P value significant at <0.01

A strong association was found between literacy status and whether the woman received an antenatal check up or not (P value <0.01). There was also a strong association between

number of years of schooling and receiving an antenatal check up (P value <0.01)(see table 6).

4.1.3: Problems during pregnancy and health care sought

Many women seem to suffer from anaemic conditions during pregnancy. Majority of women reported symptoms of anaemic conditions; 27.72 percent reported paleness, 60.18 percent reported weakness or tiredness, 29.62 percent also reported swelling of hands and feet and 48.81 percent reported dizziness.

Table 7: Distribution of women by type of health problems experienced during pregnancy, Tehri Garhwal; 1995-'98

Type of problem	Number who had the problem (%)*
Swelling of hands and feet	125 (29.62%)
Paleness	117 (27.72%)
Weakness or tiredness	254 (60.18%)
Dizziness	206 (48.81%)
Visual disturbances	3 (17.34%)
Bleeding	5 (0.01%)
Convulsions	2 (0.004%)
Weak or no movement of foetus	9 (2.13%)
Abnormal presentation	6 (1.41%)
Other	21 (4.97%)
Total number of women	422(100%)

* Multiple problems for the same woman are possible so total percentage will not add up to 100%

Only 24.01 percent (figure not shown in the table) of the 304 women who had experienced at least one of the above problems had sought health care. There was a strong association between health care seeking and experience of a specific problem (p value<0.000)(see table 8).

The public sector catered to the needs of women most often (government doctor- 34.2 percent and PHC/CHC doctor- 58.9 percent); whenever care was sought (see table 9). It is also evident that the use of traditional practitioners for any of these problems during pregnancy is minimal (see table 9).

Table 8: Distribution of the women by the type of health problem experienced during pregnancy and care sought, Tehri Garhwal; 1995-'97

Type of problem	Health care sought		Total no. of women with problem
	YES (%)	NO (%)	
Swelling of hands and feet*	36(28.8%)	89(71.2%)	125 (29.62%)
Paleness*	35(29.91%)	82(70.08%)	117 (27.72%)
Weakness or tiredness*	59(23.22%)	195(76.77%)	254 (60.18%)
Dizziness*	49(23.78%)	157(76.21%)	206 (48.81%)
Visual disturbances*	6(19.35%)	25(80.64%)	3 (17.34%)
Bleeding$^{\Phi}$	4(80%)	1(20%)	5 (0.01%)
Convulsions$^{\Phi}$	1(50%)	1(50%)	2 (0.004%)
Weak or no movement of foetus$^{\Phi}$	4(44.44%)	5(55.55%)	9 (2.13%)
Abnormal presentation$^{\Phi}$	3(50%)	3(50%)	6 (1.41%)
Other$^{\Phi}$	10(47.6%)	11(52.38%)	21 (4.97%)
Total	-**	--**	422(100%)

∗ Significant at P value <0.01 ** Multiple problems for the same woman so total does not tally
$^{\Phi}$ χ^2 not considered as cell values were below the required number

Table 9: Distribution of women by type of problem during pregnancy and type of health are sought, Tehri Garhwal, 1995-'98

Type of problem	Government doctor	Doctor PHC/CHC	Private doctor	Traditional practitioner	Total number of women with problem
Swelling of hands and feet∗	9 (25%)	23 (63.88%)	3(8.3%)	1(2.7%)	125 (29.62%)
Paleness∗	9 (25.71%)	23 (65.71%)	2(5.7%)	1(2.85%)	117 (27.72%)
Weakness or tiredness∗	20 (33.89%)	35 (59.32%)	3(5.08%)	1(1.69%)	254 (60.18%)
Dizziness∗	16 (32.65%)	30 (61.22%)	2(4.08%)	1(2.04%)	206 (48.81%)
Visual disturbances	2 (33.33%)	3 (50%)	1(16.66%)	-	3 (17.34%)
Bleeding	3 (75%)	1 (25%)	-	-	5 (0.01%)
Convulsions	-	1 (100%)	-	-	2 (0.004%)
Weak or no movement of foetus	2 (50%)	2 (50%)	-	-	9 (2.13%)
Abnormal presentation	-	2 (66.66%)	-	1(33.33%)	6 (1.41%)
Other	3 (30%)	7 (70%)	-	-	21 (4.97%)
Total number of women					422(100%)

∗Significant at P value<0.01

Just about one fifth of those who delivered had received any advise about a place for delivery (18.95%). Strong associations were found between experiences of certain types of problems such as swelling of hands and feet, paleness, weakness and tiredness and dizziness during pregnancy and the advise received regarding place of delivery (see table 10). This indicates that some of the symptoms of high risk pregnancy were indeed recognised and those providers did try to minimize the risk by appropriate advise for place of delivery.

Table 10: Distribution of women by their experience of specific problems and advice received regarding place of delivery, Tehri Garhwal; 1995-'98

Type of problem	Advise received	No advise received	Total number of women with the problem
Swelling of hands and feet	29(23.2%)*	96(76.8%)	125 (29.62%)
Paleness	29(24.78%)*	88(75.21%)	117 (27.72%)
Weakness or tiredness	49(19.29%)*	205(80.70%)	254 (60.18%)
Dizziness	41(19.0%)*	165(80.09%)	206 (48.81%)
Visual disturbances	12(38.70%)*	19(61.21%)	31 (17.34%)
Bleeding	2(40.00%)	3(60.00%)	5 (0.01%)
Convulsions	1(50.00%)	1(50.00%)	2 (0.004%)
Weak or no movement of foetus	3(33.33%)	6(66.66%)	9 (2.13%)
Abnormal presentation	3(50.00%)	3(50.00%)	6 (1.41%)
Other	9((42.85%)	12(57.14%)	21 (4.97%)
Total number of women	**	**	422(100%)

*Significant at P value <0.01 **Multiple problems for the same woman so the total does not tally

4.1.4 Delivery

Most of the deliveries occurred at home (86.49%). A few occurred in institutional settings (13.02 percent in the government hospitals and 0.02 percent in private hospitals). Of the home deliveries, only one were attended to by a doctor, 12(3.28%) by nurse/ANM, 115(31.50%) by trained TBAs, 185 (50.68%) by untrained TBAs, 50 (13.69%) by relatives and others and 3 (0.82%) had no attendent (see table 11).

Table 11: Distribution of women by place of delivery, Tehri Garhwal; 1995-'98

Place of delivery	Number of women (%)
Govt hospital	28(6.63%)
PHC/CHC	27(6.39%)
Private hospital	1(0.02%)
Home	365(86.49%)
Others	1(0.02%)
Total	422(100%)

There was a strong association between literacy status and type of attendance at birth and receiving an ANC and type of attendance at birth. The better-educated women were more likely to have skilled attendants at delivery and those who received ANC were more likely to have received skilled attendance at delivery (see table 12).

Table 12: Distribution of women by the type of attendance at birth and literacy and whether she received ANC or not, Tehri Garhwal; 1995-'98

	Skilled attendant (%)	Trained TBA (%)	Untrained TBA &others (%)	Total (%)
Literacy status*				
Literate	41 (59.42%)	36 (31.3%)	84 (35.29%)	161(38.15%)
Illiterate	28 (40.58%)	79 (68.7%)	154 (64.7%)	261(61.84%)
Total	69 (100.0%)	115 (100.0%)	238 (100.0%)	422(100%)
ANC*				
Received	56 (81.16%)	25 (21.74%)	48 (20.17%)	129(30.96%)
Not received	13 (18.84%)	90 (78.26%)	190 (79.83%)	293(69.43%)
Total	69 (100.0%)	115 (100.0%)	238 (100.0%)	422(100%)

*P value significant at <0.01

Results of the chi square test for the type of problem experienced during pregnancy and attendance at delivery are shown in table 13. Experience of swollen hands and feet, and weakness and tiredness during pregnancy was significantly associated with type of attendance at birth. 392 (92.89%) deliveries were normal. Whether or not a woman had a normal delivery was associated with the experience of problems during pregnancy (see table 14).

Table 13: Distribution of women by type of problem experienced during pregnancy and type of attendance at delivery, Tehri Garhwal; 1995-'98

Type of Problem	Skilled attendance	Trained TBA	Untrained TBAs and others	Total number of women with the problem
Swelling of hands and feet*	17(13.6%)	47(37.6%)	61(48.8%)	125 (29.62%)
Paleness	24(20.51%)	38(32.47%)	55 (47.01%)	117 (27.72%)
Weakness or tiredness**	32(12.59%)	77 (30.31%)	145(58.08%)	254 (60.18%)
Dizziness	28(13.59%)	60(29.12%)	118(57.28%)	206 (48.81%)
Visual disturbances	5(16.12%)	13(41.93%)	13(41.93%)	31 (17.34%)
Bleeding	2(40.00%)	2(40.00%)	1(20%)	5 (0.01%)
Convulsions	1(50.00%)	1(50%)	-	2 (0.004%)
Weak or no movement of foetus	3(33.33%)	2(22.22%)	4 (44.44%)	9 (2.13%)
Abnormal presentation	3(50%)	-	3 (50%)	6 (1.41%)
Other	6(28.57%)	5(23.80%)	10 (47.61%)	21 (4.97%)
Total number of women	Φ	Φ	Φ	422(100%)

∗ P value=0.008 ∗∗ P value=0.021 Φ Multiple problems for the same woman so the totals do not tally

Table 14: Distribution of women by the experience of problems during pregnancy and type of delivery, Tehri Garhwal; 1995-'98

Type of problem	Normal delivery	Not a normal delivery	Total number of women with the problem
Swelling of hands and feet*	115(92%)	10(8.00%)	125 (29.62%)
Paleness	107(91.45%)	10(8.54%)	117 (27.72%)
Weakness or tiredness*	238(93.70%)	16(6.29%)	254 (60.18%)
Dizziness	193(93.68%)	13(6.31%)	206 (48.81%)
Visual disturbances*	26(83.87%)	5(16.12%)	31 (17.34%)
Bleeding	5(100%)	-	5 (0.01%)
Convulsions	2(100%)	-	2 (0.004%)
Weak or no movement of foetus	8(88.88%)	19(11.22%)	9 (2.13%)
Abnormal presentation	5(83.33%)	19(16.77%)	6 (1.41%)
Other	17(80.95%)	4(19.04%)	21 (4.97%)
Total number of women			422(100%)

∗P value significant at <0.01

We have also examined the use of disposable delivery kits during home delivery by the type of attendant at delivery (see table 15). In 233 of the 366 deliveries disposable kit was used. A significant association was found between use of disposable kits and type of attendance at birth (P value <0.01), with skilled attendants more likely to use them than others. However it should be remembered that the use of these kits is also contingent upon the availability of kits.

Table 15: Distribution of attendants at birth by their use of disposable kits, Tehri Garhwal; 1995-'98

Birth attendant	Disposable kit used	Disposable kit not used	Don't know	Total
Doctor		1(100%)		1
ANM/Nurse*	10(83.3%)	2(16.7%)		12
Trained TBA*	92(80.00%)	5(4.3%)	18(15.7%)	115
Untrained TBA*	109(58.9%)	46(24.9%)	30(16.2%)	185
Relatives and others	22(44.00%)	21(42.00%)	7(14.00%)	50
None		3(100%)		3(100%)
Total	233	78	55	366(100%)

*P value significant at < 0.01

Of the 422 pregnancies 121 (28.67%) experienced some problem during delivery. 30(7.1%) had premature labour, 40(9.47%) had obstructed labour, 40 (9.47%)had prolonged labour, 9(2.13%) had breach presentation, and 2(0.47%) had other problems.
A strong association was found between experience of a problem during pregnancy and experience of a problem during delivery (P value<0.0000; table not shown).

4.1.5 Health problems one week after delivery

The problems described here refer to those experienced one week after delivery. On the whole; of the 422 women who delivered during the preceding four years, close to half (49.3%) experienced at least one health problem one week after delivery. 109(25.82%) women had high fever, 155(36.72%) had lower abdominal pain, 25(5.92%) had foul smelling vaginal discharge, 62(14.69%)had severe bleeding, 109(25.82%) had severe headache and dizziness and four (0.09%) had other problems (see table 16).

A significant association was found between attendance at birth and experience of a problem related to high fever, lower abdominal pain, foul smelling vaginal discharge, excess bleeding, and dizziness and head ache one week after delivery. The proportion of women experiencing problems was higher when delivery was attended by TBAs trained or otherwise.

Table 16: Distribution of women by experience of problem one week after delivery and type of attendant at birth, Tehri Garhwal; 1995-'98

	Skilled Attendant	**Trained TBA**	**Untrained TBA**	**Relatives and others**	**Total number of women with the problem**
High fever*	15(13.76%)	41(37.61%)	39(35.77%)	14(12.84%)	109(25.83%)
Lower abdominal pain*	24(15.48%)	44(28.38%)	73(47.09%)	14(9.03%)	155(36.72%)
Foul smelling vaginal discharge*	2(8.00%)	8(32.00%)	14(56.00%)	1(4.00%)	25(5.92%)
Excess bleeding	9(14.51%)	26(41.93%)	22(35.48%)	5(8.06%)	62(14.69%)
Dizziness/severe headache*	23(21.10%)	27(24.77%)	41(37.61%)	18(4.26%)	109(25.83%)
Other	0	1(25.00%)	3(75.00%)	0	4(0.9%)
Total number of women	69	115	185	53	422(100%)

*Significant at P value <0.01

Of the 208 women who had problems one week after delivery less than a third (28.8%) sought medical care (see table 17). There was a significant relationship between type of problem experienced and health care sought. The most frequently occurring problems were; fevers, dizziness/headache, and excessive bleeding, in that order. Seeking of follow up care for problems one week after delivery was not likely to be routine practice but was more related to the experience of these problems.

Table 17: Distribution of women by type of health problem one week after delivery and health care sought, Tehri Garhwal; 1995-'98

Type of problem	Health Care sought	No health care sought	Total number of women with problem
High fever	42(38.53%)	67(61.48%)	109(25.83%)
Lower abdominal pain	46(29.67%)	109(70.32%)	155(36.72%)
Foul smelling vaginal discharge	10(40.00%)	15(60.00%)	25(5.92%)
Excess bleeding	19(30.64%)	43(69.35%)	62(14.69%)
Dizziness/severe headache	35((32.11%)	74(67.88%)	109(25.83%)
Other	1(25.00%)	3(75.00%)	4(0.9%)
Total number of women			422(100%)

Of those who sought health care 18(30%) consulted a government doctor, 28(46.66%) consulted a private doctor, 8(13.33%) consulted a private or government nurse, 1 (1.66%) consulted a government doctor and PHC/CHC doctor, 29(33.33%) consulted a PHC/CHC doctor and a traditional practitioner and one (1.66%) consulted only a traditional practitioner (table not shown).

Chi square tests for use of home delivery kits and experience of problems one week after delivery did not show a significant association (see table 18).

Table 18: distribution of women by their experience of problems one week after delivery by their experience of problems during pregnancy, use of disposable kits and health care sought for these problems, Tehri Garhwal; 1995-'98

Experience of health problem one week after delivery	Health problem during pregnancy		Disposable kit used		Sought health care for health problem one week after delivery	
	Yes	No	Yes	No	Yes	No
Yes	168(55.3%)	40(27.6%)	102(43.8%)	38(48.7%)	60(28.8%)	148(71.2%)
No	136(44.7%)	105(72.4%)	131(56.2%0	40(51.3%)	-	214((59.1%)
Total	304	145	233	78	60	362
P value	0.000		0.448		0.000	

4.1.6 Regression analysis

To examine the simultaneous effect of all the variables that were significantly associated with the experience of morbidity after delivery and seeking of health care for the problem, multivariate regression analysis was considered. Since the dependent variables were binary (experienced/did not experience; sought health care/did not seek health care), we used logistic regression analysis to accommodate the deviations from normality conditions inherent to these binary variables.

The models for logistic regression analysis were developed based on the framework shown in figure 1. From the simple chi square analysis it is clear that literacy determines whether a woman receives ANC or not (model I in table 19), this in turn determines the type of attendance she has at birth whether skilled or TBAs and others (Model II in table 19). The experience of problems one week after delivery is determined by both the woman's literacy status, the care received during pregnancy and the type of attendance she had at delivery (Model III in Table 19).

It is important to remember that of all the problems experienced one week after delivery, the experience of fever was strongly associated with the type of attendance at delivery and therefore this was also examined using logistic regression (see table 16) (model V in Table 20).

Seeking of any follow up care one week after delivery was related to the experience of problems one week after delivery (See table 17); and this was in turn determined by the type of attendance during delivery, care during pregnancy and the woman's literacy status (Model IV in table 20). In addition literacy status also strongly determined the place of delivery for women (Model VI in table 20).

Each of these models was used to build the model at the next higher level after checking for significance of potential interaction effects.

Figure 1: Analytical framework for health care seeking for health problems after delivery

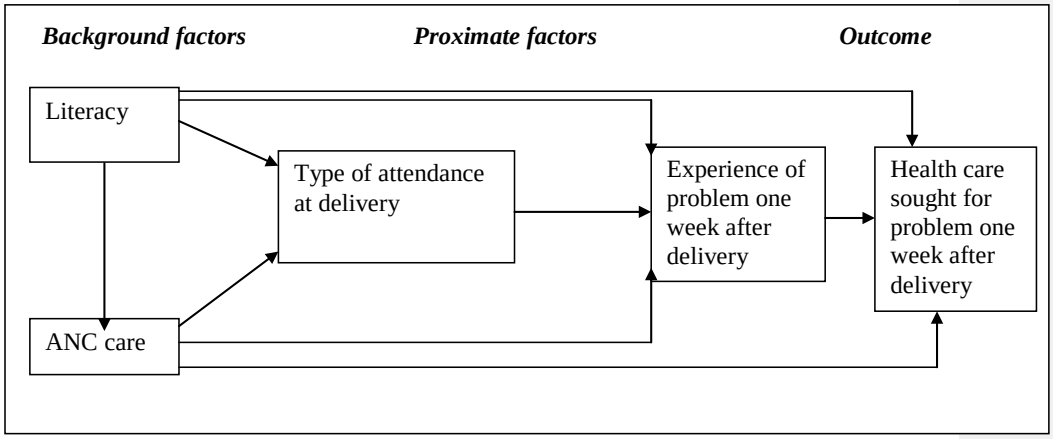


Table 19: Results of logistic regression analysis, various models

Model specification	Dependant variable	Independent variable/s	Reference category	P Value	Odds ratio	95% CI
I literacy with ANC	ANC	Literacy	Illiterate	0.000	3.343	2.173-5.143
*II -type of attendance at delivery with Literacy and ANC	Type of attendance at delivery	Literacy	Illiterate	0.150	1.560	0.851-2.859
		ANC	Did not receive ANC	0.000	14.774	7.557-28.881
*The model was initially specified with the interaction effect of literacy and ANC but as the interaction effect was not significant (P value-0.975); it was eliminated in the final model specification.						
*III- post delivery morbidity with literacy, ANC, Attendance at delivery	Experience of Morbidity one week after delivery	Literacy	Illiterate	0.237	1.282	0.849-1.935
		ANC	Did not receive ANC	0.314	0.779	0.479-1.267
		Attendance at delivery	Unskilled attendance	0.867	0.951	0.525-1.721
*The model was initially specified with the interaction effect of ANC and attendance at delivery but as the interaction effect was not significant (P value-0.843); it was eliminated in the final model specification						

Table 19: continued

Model specification	Dependant variable	Independent variable/s	Reference category	P Value	Odds ratio	95% CI
IV-health care sought for the above problems, by literacy, ANC, attendance at delivery, reproductive morbidity	Health care sought	Literary	Illiterate	0.064	0.541	0.282-1.037
		ANC	Did not receive ANC	0.782	1.115	0.514-2.421
		Attendance at delivery	Unskilled attendance	0.044	0.405	0.168-0.974
		Morbidity one week after delivery	No morbidity	0.570	316664.32	0.00-1.1E+20

Table 20. Logistic regression analysis for experience of high fever and place of delivery

Model specification	Dependant variable	Independent variable/s	Reference category	P Value	Odds ratio	95% CI
V-Experience of high fever post delivery with literacy, ANC, Attendance at delivery	Experience of high fever	Literacy	Illiterate	0.001	2.366	1.418-3.948
		ANC	Did not receive ANC	0.773	0.918	0.518-1.636
		Type of attendance at birth	Unskilled attendance	0.994	1.008	0.492-2.065
VI- Place of delivery with ANC	Place of delivery	Literacy	Illiterate	0.000	3.174	1.773-5.684

The results of the analysis validate the model specifications used.

Model I: Use of ANC was strongly associated with literacy status with literate women having more that three times the chance of using ANC when compared to illiterate women.

Model II: Women who used ANC were more likely to deliver under the care of a skilled attendent but literacy did not have any significant direct effect on the type of delivery care the woman had. However, it should be remembered that the use of ANC is mediated by literacy (see model I).

Model III: Experience of morbidity after delivery was not associated with any of the factors linked to the nature of care available at birth, neither the woman's access to care during her pregnancy (ANC) nor her literacy status. However, one specific morbidity condition fever following delivery was strongly determined by literacy (Model V).

Model IV: Women who were literate and had skilled attendance at delivery had half the chance of seeking health care for problems one week after delivery when compared to illiterate women or women who had unskilled attendance at delivery.

Model VI: Literate women were three times more likely to deliver in an institutional setting and thus escape entirely from the morbidity following delivery or the need to seek health care following the experience of morbidity one week after delivery.

Seeking of care one week after delivery is not part of routine follow up post delivery for most of the women. Only women who experienced any health problem one week after delivery were likely to seek such care. Further, literate women were more likely to seek such care when compared to the illiterate women. It is also clear that literate women were more likely to deliver in institutions with skilled attendants available at delivery when compared to illiterate women and that such women were less likely to experience any problem after delivery (see table 20).

Section 2: Results of the cross sectional survey

This section describes the results of the analysis of the survey among a cross section of selected TBAs in Tehri Garhwal District of UA. The TBAs were located across six blocks of the total nine blocks in the district. We aim to describe the knowledge and practices of the 120 TBAs who were interviewed.

4.2.1 Characteristics of the study population

All the TBAs ~~the respondants~~ were women, and their ages ranged from 27 to 74 (mean 45.6 years, Standard. Deviation =10.801). Close to two thirds of them (65%) were literate

and of these 54(45%) had less than 10 years of schooling. All the respondents were married and had children of their own. More than half (56.7%) had practiced birth attendance prior to undergoing training. Of those who had practiced even prior to training, close to a third (29.2%) had more than ten years of practice (see table 21).

Table 21: Distribution of TBAs by years of practice before training, Tehri Garhwal, 2005

Years of practice before training	Frequency (%)
0 years of practice	52 (43.3%)
1-9 years of practice	33 (27.5%)
10-19 years of practice	20 (16.7%)
20 or more years of practice	15 (12.5%)
Total	120 (100.0%)

On an average the TBAs conducted 20.26 deliveries during the five-year period preceding the date of survey (range 0-80; Standard deviation 15.193). The average number of deliveries per year was 6.19 (range0-23; standard deviation 5.4). Younger TBAs (< 50 years of age) conducted an average of 4.63 deliveries (standard deviation=4.191) in the last one-year, and had an average of 15.46 deliveries (standard deviation 12.083) in the last five years. Older TBAs (>= 51 years of age) conducted an average of 10.30 deliveries (standard deviation=6.101) in the last one-year, and averaged 32.91deliveries (standard deviation=15.440) in the last five years.

The difference in the average number of deliveries for both the one and five-year period was statistically significant; indicating that the older and more experienced TBAs did conduct more deliveries.

4.2.2 Training Received

All the TBAs had received training. The training ranged from one day to 270 days, with a mean of 43.53 days (standard deviation 69.855). The median and mode for number of days of training was six, with 40 (33.3%) of the TBAs having received 6 days of training. A sample of the training curriculum translated into English has been included as appendix

III. The TBAs ~~were practicing~~ had been in practice for an average of 8.29 years after training (standard deviation=3.247), with a range of one to thirteen years.

Ninety percent of the women had received practical training and the sources for practical training were varied, including, 21.7 percent in the govt sector, 32.5 percent in the private and a majority with the NGO sector (45%). Some mentioned receiving training from other trained TBAs (4.2%).

A majority of the TBAs had been taught the five cleans of delivery (96.7%) (see table 22), method of cutting the cord (99.2%), method of washing hands (98.3%) and nutritional counselling (99.2%). Some said they had been taught how to check for anaemia (78.3%), monitor foetal heart rate (62.5%), check mothers (33.3%) and baby's (38.3%) weight and height, and check temperature (40.8%). Only four (3.3%) had been taught how to give injections and conduct blood pressure examination. A majority of the TBAs recollected that they had been taught how to recognize danger signs and refer women to the hospital. Most of them also said they had been taught newborn resuscitation, newborn care and post partum care. Only 10 (8.3%) had received any additional training during the last one-year.

Table 22: Distribution of TBAs by the specific training received, Tehri Garhwal, 2005

Taught	**Number of TBAs (%)~~Frequency (%)~~**
Five cleans of delivery	116(96.7%)
BP examination	4(3.3%)
Temperature examination	49(40.8%)
Check mothers weight and height	40(33.3%)
Child weight and height	46(38.3%)
Injection	4(3.3%)
Anaemia	94(78.3%)
Foetal heart rate	75(62.5%)
Vaginal examination	49(40.8%)
Cord cut	119(99.2%)
Hand wash	119(98.3%)
Nutritional counselling	119(99.2%)

Table 22 continued

Taught	Number of TBAs (%)
Taught what to do if the woman has Bleeding during pregnancy	105(87.5%)
Taught what to do if the mother is Short	105(87.5%)
Taught what to do if the woman has High BP	106(88.3%)
Taught what to do if the woman has Excess bleeding post delivery	107(89.2%)
Taught what to do if the woman has Prolonged labour	97(80.8%)
Taught what to do if the woman has Fever during labour	97(80.8%)
Taught what to do if the woman has Retained placenta	103(85.8%)
New born care	118(98.3%)
New born resuscitation	117(97.5%)
Post partum care	117(97.5%)
Total	120(100%)

4.2.3 Knowledge and practices of the Trained Traditional birth Attendants

Antenatal care

All the TBAs felt that ANC was essential; 88 (73.4%) said that three or more ANC checkups were required. However only 51(42.5%) of the women said that the first antenatal check should be in the first trimester. Almost all the TBAs (99.2%) said they conduct antenatal check ups.

Table 23: Distribution of TBAs by their knowledge about the components of ANC, Tehri Garhwal, 2005

Knowledge about components of ANC	Yes
Height	47(39.2%)
Weight	57(47.5%)
Blood pressure	31(25.8%)
Blood Test	84(70%)
Urine test	30(25%)
Physical examination	104(86.7%)
Iron and folic acid tablets	118(98.3%)
Tetanus toxoid injections	116(96.7%)
Total	120(100%)

Knowledge about the components of ANC was mainly about physical examination (86.7%), giving iron and folic acid tablets (98.3%) and tetanus toxoid injections (96.7%). Only 40(33.3%) knew that two TT injections were required during delivery (see table 23). Even though only four women were trained for conducting blood pressure examination

25.8 percent of the TBAs knew about the need to have a BP exam during ANC. Less than five percent of the women reported that they could administer injections.

Pregnancy diagnosis

Almost all the TBAs (99.2%) said they could diagnose a pregnancy. A similarly high proportion said they would diagnose pregnancy based on the symptoms of amenorrhoea (90.8%) and two (1.7%) said they diagnosed pregnancy by urine examination (not shown in tables). 105 (87.5%) reported ability to calculate delivery date. Of the 105 women who could calculate delivery date, almost all 104 calculated it based on the woman's last menstrual period, 44 by foetal growth monitoring, and 10 by abdominal examination. No one mentioned determining delivery date using ultrasound.

Blood pressure examination

None of the respondents could check blood pressure or had their own BP apparatus. Most of them (95%) said they referred women to a doctor if she had high blood pressure, 16(13.3%) advised salt less diet and 8(6.7%) advised bed rest.

Delivery care

Almost all the TBAs reported that they had been taught about the five cleans of delivery yet only slightly more than three fourths (78.3%) had knowledge about all the five cleans of delivery; out of the 118 who reported having been taught how to wash hands 80 (67.79%) use soap and water to wash hands before conducting delivery, and 13(11.01%) use Savlon or Betadine and three (2.5%)said they do not wash hands. More than half of them (60.8%) said that they use gloves. 65 of the 75 TBA who said they had been taught how to monitor foetal heart beat said they could do so. Of the 119 TBAs who were taught about cord cutting, 78 said they use a clean blade to cut the cord while eight said that they use anything available and 34 said they use a sterile blade.

More than two thirds (65%) said they put nothing on the cord stump, and 42(35%) said they used some form of medicine like Dettol, Gentian violet etc.

Post partum care

On an average the TBAs stay with the woman for 41.1 hours after delivery, ranging from one hour to 240 hours post delivery. Most of the TBAs (92.5%) said they advise colostrum feeding. Almost all (99.2%) said they advise regarding personal hygiene. Most of them also said that they (90.8%) refer women to the hospital for post partum complications like fever, haemorrhage etc. All the respondents give advise regarding family planning.

Referral

Almost all the TBAs (98.3%) said they refer women to the hospital for post delivery complications; of these a majority (86.7%) preferred to refer to the government hospital. 57(47.5%) refer to private hospitals and 46(38.3%) to NGO hospitals. Only one respondent said she did not refer anywhere.

Four-fifths (80%) of the TBAs do not refer for prolonged labour and 101(84.2%) do not refer for fever during labour or post partum. However, more than 80 percent refer for difficult labour 118 (98.3%), severe bleeding106 (88.3%), high blood pressure 112 (93.3%) and fits119 (99.2%) during delivery. This practice could mean that symptoms of potential complications could get ignored in the early stages and referral delayed.

4.2.4 Analysis of the determinants of the knowledge and practice of TBAs

Simple chi square analysis was done to examine the effect of duration of training on, the nature of training, knowledge and delivery and referral practices.

Duration of training has 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 (see table 24).

A strong ~~correlation~~ association was also found between duration of training and knowledge about components of ANC.

Table 24: Distribution of TBAs by varied aspects of training and training duration, Tehri Garhwal, 2005

Component of training	Training duration	
	<=45 days of training	46 or more days of training
Practical training	77(86.5%)	31(100%)
Temperature check*	19(21.3%)	30(96.8%)
Examination of mothers weight and height*	16(17.97%)	24(77.41%)
Examination of baby's weight and height*	18(20.22%)	28(90.32%)
Monitoring foetal heart rate*	67(75.28%)	8(25.8%)
Component of ANC		
Height check*	22(24.7%)	25(80.6%)
Weight check*	31(34.8%)	26(83.9%)
Bp check**	18(20.2%)	13(41.9%)
Blood examination***	55(61.8%)	29(93.5%)
Urine examination	21(23.6%)	9(29.0%)
Physical examination	73(82.0%)	31(100%)
Iron and folic acid tablets	87(97.8%)	31(100%)
Tetanus toxoid injections	85(95.5%)	31(100%)
Total number of women	89(74.16%)	31(25.83%)

* P value significant at < 0.000 ** P value= 0.03 *** P value= 0.001

Practice during delivery

There was a strong association between duration of training and use of gloves during delivery (not shown in table). More than two thirds (68.5%) of those with training less than five days use gloves whereas only 38.7 percent of those with training more than 46 days use gloves during delivery. This is contradictory and the explanation could be because those with fewer days of training had been trained more recently and the use of gloves could be associated with the supply of safe delivery kits. An examination of the timing of training makes this clear, as 77.4 percent of those with forty-six or more days of training had been trained more than twelve years ago.

There was no association between knowledge about five cleans of delivery, use of instrument to cut the cord, and method of washing hands, and feeding of colostrum and the duration of training.

Practice for referral

There was no significant difference between referral for problems intra partum and post partum between the group which had received 46 or more days of training and those who had received less than or equal to 45 days of training.

Test A rapid test with ten questions was conducted prior to administering the interview schedule to assess knowledge of the TBAs. ~~GO BACK TO THE METHODOLOGY SECTION AND MENTION THIS TEST AND ITS PURPOSE~~There was no significant difference in the performance in the rapid test between those who had more than forty-six days of training and those who had less.

Literacy also has no effect on the knowledge and practices of the TBAs.

There is a significant ~~correlation~~ association between knowledge of all five cleans of delivery and the use of gloves during delivery. ~~.~~This may again be related to the supply of delivery kits, as 71.3 percent of those trained less than ten years ago use gloves compared to 40 percent of those trained more than ten years ago (see table 25).

Table 25: Distribution of TBAs by their knowledge of five cleans of delivery and use of gloves, and timing of training, Tehri Garhwal. 2005

	Know all five cleans**		**Timing of training***	
	Yes	No	1-9 years ago	>=10 years ago
Wear Gloves	63(67%)	10(38.5%)	57(71.3%)	16(40%)
Don't wear gloves	31(33%)	16(61.5%)	23(28.8%)	24(60%)
Total number of women	94	26	80	40

**P Value = 0.008 *P value significant at <0.01

Years of practice before training and knowledge and practice

Number of years of practice before training seems to affect the knowledge and practice of TBAs. It seems that more years of practice as a TBA prior to the training does influence their practice.

Table 26:Distribution of TBAs by their knowledge about the components of ANC and years of practice before training, Tehri Garhwal, 2005

Component of ANC	1-9 years of practice	10 or more years of practice
Height check*	40/85(47.1%)	7/35(20%)
Weight check**	46/85(54.1%)	11/35(31.4%)
Bp check***	27/85(31.8%)	4/35(11.4%)
Blood examination	62/85(72.9%)	22/35(62.9%)
Urine examination	77(90.6%)	27(77.1%)
Physical examinationα	26(30.6%)	4(11.4%)
Iron and folic acid tablets	83(97.6%)	35(100%)
Tetanus toxoid injections	82(96.5%)	34(97.1%)

* P value=0.007 ** P value=0.028 *** P value=0.022 α P value= 0.036

There is a strong ~~correlation~~ association between years of practice before training and knowledge about the timing of the first ANC check up (P value=0.002). More than half (51.8%) of those who have practice of less than ten years said that the first ANC should be in the first trimester, whereas only seven (20%) of those with practice of more than ten years before training knew this (see table 26). This clearly indicates that the years of practice prior to training does affect their practice to the extent that it could result in a negative impact on women's health outcomes. A similar finding was presented in an examination of TBAs in Delhi [48].

There was a significant ~~correlation~~ association between the ability to monitor foetal heart rate and years of practice before training (P value=0.001) (not shown in table). A lesser proportion (44.7%) of those with practice less than ten years before training reported the ability to monitor foetal heart rate, whereas 77.1 percent of those with practice of more than ten years before training reported the ability to monitor foetal heart rate.

There was no significant association between the years of practice before training, and knowledge about calculation of delivery date, knowledge about all five cleans of delivery, method of cutting the cord and referral practices (not shown in table).

Years of practice after training and knowledge

The women who had less one to nine years of practice after training (recent training) were less likely to remember what they had been taught regarding the components of ANC when compared to those with ten or more years of practice (see table 27). This means the recent nature of the training did not have an impact on knowledge. This is contrary to known understanding that those trained recently would remember better. This is because the duration of training for the more recent trainees was shorter (<45 days) when compared to those trained earlier (more than 45 days). This association was also found to be statistically significant (P value = 0.000). Therefore duration of training does seem to have a significant ~~correlation~~ association with retention of knowledge, in spite of the passage of time.

Table27: Distribution of TBAs by their recollection of training and years of practice after training, Tehri Garhwal, 2005

Component of ANC	1-9 years of practice	10 or more years of practice
Height check*	21(26.3%)	26(65%)
Weight check**	30(37.5%)	27(67.5%)
Bp check***	21(26.3%)	10(25%)
Blood examination	51(63.8%)	33(82.5%)
Urine examination	66(82.5%)	38(95%)
Physical examination	20(25%)	10(25%)
Iron and folic acid tablets	80(1000%)	38(98%)
Tetanus toxoid injections	77(96.3%)	39(97.5%)
ANC in first trimesterγ	17(21.3%)	34(85%)

* P value significant at< 0.0 1 ** P value=0.003 *** P value=0.037 γ P value<0.01

Table28: years of practice after training and knowledge about number of TT injections and referral for fever

Knowledge	1-9 years of practice	10 or more years of practice
Correct number of TT injections*	33(41.3%)	7(17.5%)

Do not refer for fever during labour$^{\gamma\gamma}$	63(78.8%)	38(95%)

* P value = 0.009 $^{\gamma\gamma}$ P value=0.022

However clearly those with more recent training (1-9 years practice post training) were more likely to refer women for fever during labour and post partum and also knew the correct number of TT injections to be administered to the pregnant women. This could be a reflection of the years of practice of before training.

The years of practice after training do not seem to significantly affect other knowledge and practices.

Section 3: Results of qualitative data analysis (Focus group discussions)

Two focus group discussions were conducted among trained traditional birth attendants (TBAs) in the month of August 2005, to assess their knowledge regarding referral, referral practices and beliefs and knowledge.

4.3.1 Profile of the participants and venue of the focus group discussions

One FGD was conducted in ~~the village of Barkota~~ a village~~,~~ about twenty kilometres from New Tehri, (an hour's drive on an untarred road). Seven TBAs from nearby villages were contacted through an NGO and were present for the discussion. The participants' ages ranged from 35 to 60 years. An NGO had trained all the participants in 1993; two of the participants had also received training from the government. Training from the NGO~~go~~ consisted of once a week classes for nine months. Government training was of one-month duration. On an average TBAs in this group had practiced for 26 years prior to and after training. The NGO, which has trained these TBAs, has been working in the area for the last seventeen years. Its work consists of mainly of community health and development projects and relief work. Training of village health workers and TBAs has

been part of the project. Over all they have trained 70 TBAs in two blocks of Tehri district, ~~Bhilangana and Jakhnidhar~~.

The second FGD was conducted in ~~Mishrangaon~~another village about~~,~~ seventy kilometres from the district head quarters and four kilometres walking distance from the main road. The walk to the village from the main road is down hill, the up hill climb is steep and requires one and a half hours. Five TBAs participated in the discussion. Their ages ranged from 34-66 years. Four of the participants had received training from and NGO ranging from five to ten days. The government had trained one participant ten years back, for one month. On an average these TBAs had been practicing for 21.6 years (range 3-40 years). The NGO, which has trained these TBAs, is a Mother NGO of the UA government, carrying out various programs such as outreach for RCH, training village health workers and TBAs, in Tehri Garhwal district.

4.3.2 Delivery care options

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".

The government facilities are available between distances of one to five kilometres. But the TBA said the role of the public ~~care~~ health system ~~–~~was ~~they~~only ~~come~~ to give injections, and the women perceived that there was no care at the government centres, however TBAs ~~most of the women from Thauldhar~~ from the second village~~find a way to mask the name of the village~~ referred cases to the government hospital or said they called the ANM to help with difficult deliveries. Doctors they said were not available at the nearest government Centre, and one had been recently appointed who only came there sometimes. The government has constructed delivery houses in some villages when asked about this the ~~women in Barkot~~ TBAs from the first village had no ~~K~~knowledge of the

"prasuti grahs' (delivery homes). At ~~Thauldhar~~ the second village, only one ~~person~~ TBA out of the five knew of such a place but she said it was closed and nobody used it.

A mission hospital was located twenty-five kilometres from ~~Barkot~~ the first village and ~~where~~ the ~~women~~ TBAs from ~~Barkot~~ the nearby villages referred ~~any~~ difficult cases to that hospital. However, ~~from Thauldhar~~ for the second ~~village which~~village, which was distant from the district headquarters, the nearest private hospital that the women had knowledge of was in Rishikesh, about 200 kilometres away and Chamba (about 100 Kms). The nearest district hospital from ~~Barkot~~ the first village is about 30 kilometres away and from ~~Thauldhar~~ the second, about 100 kilometres, and yet not one of the TBAs mentioned referring women to the district hospital. For more serious ailments the TBAs refer patients to Rishikesh or Dehradun.

4.3.4 Training received

All the TBAs participating in the FGDs had been trained. The trainings they had received were of varying duration and received from various sources. All the TBAs had received training from NGOs, three had received government training lasting a month and most of them said they started practice before training with senior TBAs from whom they learnt initially.

Training from the NGOs ranged from five days to nine months. The nine months training consisted of once a week classes for nine months.

The government training lasted a month, however one of the ~~the~~ TBAs reported ~~they~~ she only went there on the day they were being given 'boxes' and certificates. Another lady said that,

> 'After thirty years of working I knew everything, and they also realised that, so I went only for one day'.

Everyone reiterated this idea 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?"

They had been taught how to monitor the feta heartbeat, some had foeto-scope 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 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.

4.3.5 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. One of the TBAs had just come from attending a delivery and she said that the relatives of the lady had initially called an older untrained TBA ~~dai,~~ whose vision was failing ~~couldn't even see~~. The woman had been in labour for two days. Finally this trained TBA was called, she administered an injection to increase the pain. The baby was still born.

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~~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.

4.3.5 Practices

Antenatal care

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) one group said they soak the feet in hot water with *'phitkari'* (rock salt which is not refined~~DEFINE IT~~), and if the condition does not improve the women are referred to the hospital. One ~~Dai~~ TBA said that they massage the

hands and feet with '*Bhais ka ghee'* (clarified butter from buffalo's milk). Another ~~Dai~~ TBA said that it is normal and goes away after the baby is born.

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 has to be kept so they avoid salt for seven to ten days. They give 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 foods like 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 is stored and the mother and child were confined there for 21 days. This room is on the ground floor of the house; the main living space is on the first floor. 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 sleep, another said her daughter in-law was BA pass and from the city so she had gone back to the city hospital for delivery. They said they themselves had delivered in the room where cattle are tied.

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. One TBA reported she washes her hands with cow urine before conducting the delivery. Ritual cleansing with cow urine is part of the customs of both high and low caste Hindus even in Nepal [48].

The TBAs are aware of the safe delivery kit and received this from the NGO or the government. However there is a problem of sustained supply, once the project is over there is no supply of kits and so the women are left to use whatever is available. Another study by CARE in Nepal found similar conditions prevailing [48] ~~situations~~.

The TBAs most often use 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~~ one of them ~~said~~ mentioned that they use a *'daranti'* (tool used to cut grass) after sharpening it on a stone. One lady said she uses whatever is available. They use thread from a new reel to tie the cord, but some just pull the thread from a blanket or sheet and tie the cord with that. Some of the women knew that to sterilize a blade you have to boil it for half an hour, others thought rubbing it on a stone or boiling it for ten minutes was sufficient. Some applied 'blue medicine, others did not apply anything on the cord stump.

The ~~group in Barkot~~ TBAs who participated in the FGD in the first village said that they bathe the mother and child immediately and every day after that in the room where the delivery is conducted.

Two TBAs in the other group said they bathe the baby in cow urine then also have a bath themselves in cow urine and by evening give the mother also a bath with cow urine. Others said they bathe the child and mother with soap and water. One lady said they only

give the mother a wash below the waist on the first day and then give them a complete bath after five days.

With the exception of one they all advise breastfeeding the baby immediately after washing the mouth with warm water. One lady said in their village they make a bowl out of cow dung and put the colostrum and some mother's milk into it and keep it in the room so that no evil eye comes on the mother and child. They feed the child cow or buffalo milk if the mother does not have milk.

TBAs in ~~Barkot~~the first village 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

The mother and child are confined to the room where the delivery takes place ~~from~~ till the eleventh ~~to~~ or the twenty-first day~~s~~ .She cooks for herself and bathes there. Only on the fifth day they are "shown the sun' this is called the '*Panchola*'. On the eleventh day, and in some places on the twenty first day there is a '*havan'* (a sacred purifying ritual in Hinduism that involves a fire ceremony), only after that the new mother can enter the kitchen and cook. The TBA stays with the woman from one hour to a couple of hours after delivery. She then visits the mother everyday for the next four to five days and helps her bathe and cook.

Practice and Payment for service

The TBAs said they conduct thirty to hundred deliveries in a year. Some of them maintain records of maternal and child health. The older TBAS are considered better and are called more often.

The TBAs said they received payment for services from the families of the women. Some also received payment of Rs.100 per month from the NGO. The TBAs in ~~Barkot~~ the first

village said that were given Rs.60 per ~~delivery~~ month from the training NGO but did not receive any fee for service in 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 also received delivery kits from the government when they went for training but never after that. The NGOs also supply them with delivery kits, but the women in ~~Barkot~~ the first village reported that they were not able to get delivery kits any more~~did not get them any more~~.

4.3.6 Referral

The women in ~~Barkot~~ the first village said that prolonged labour is normal and some women can be in labour for up to one week. In ~~Thauldhar~~ the second village they said they give the women *ghee* and *'gur'* but if nothing happens sometimes they call the ANM *didi* or send the lady to the hospital. If the baby is upside down, they massage the abdomen to make the baby straight, then if

'A hand comes out we put our hand in and pull the baby out'.

They said they refer cases of severe bleeding post delivery to the district hospital. From the village the woman has to be carried on a cot to the main road and then a jeep has to be arranged, this costs a lot of money. Fever they said is normal and good,

" Everyone should get fever after delivery"

They do not do anything for it. Some said if fever lasts for more than three days they send the lady to the hospital.

The TBAs sometimes accompany the women to the hospital if requested by the relatives. When they anticipate problems during delivery they ask the relatives to take the women to the hospital. Sometimes the relative's take the TBAs advise and sometimes they just request the TBA to the best she can. In village 2 the women said that they could not send

the women because of the difficult terrain and so called the ANM *didi* or did what they could.

They did not perceive any role for men in delivery related care and ~~laughed at~~ ridiculed the idea.

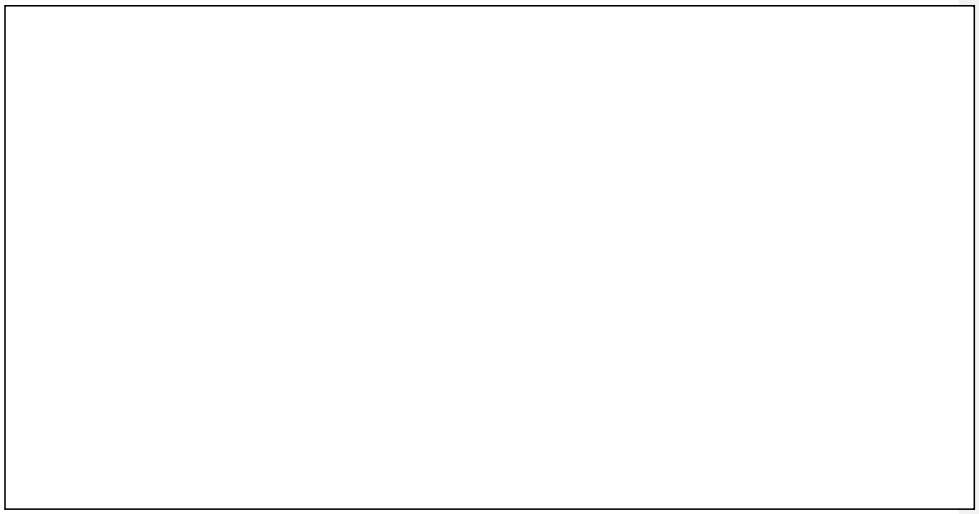
Family planning advise

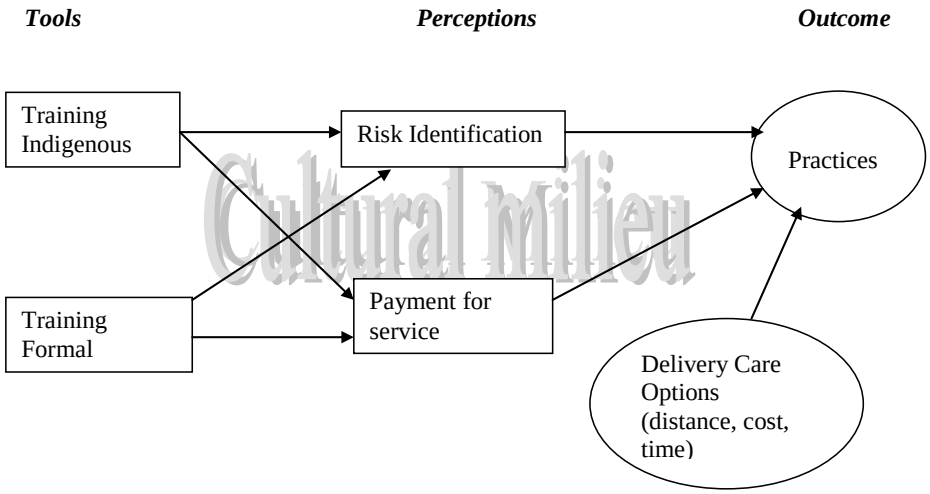
The preferred method of contraception is female sterilisation. Knowledge about oral contraceptives is poor. One group said that oral pills do not have effect; that was the end of the discussion, they did not feel that it was even worth talking about it.~~they looked socked that I should even mention this and should know better~~PUT THIS IN ANOTHER WAY IN A NOT PERSONAL WAY~~~~ One lady wanted to know if it was okay for her daughter to take the pills, or if it will harm her. She said when the daughter is feeling better she will take her for operation. All but one advised women to go for family planning. There is son preference and they said if a daughter is born the people keep trying to have a son, otherwise they go in for operation.

Conceptual Framework

From these themes and possible linkages between them we developed a conceptual framework to explain the TBAs knowledge, beliefs and practices related to pregnancy and childbirth and their referral practices (see figure 2).

Figure 2: Conceptual framework





From the analysis it becomes clear that TBAs who underwent formal training still retained many practices that were in keeping with their cultural milieu and some of these such as washing hands with cow urine, cord cutting with grass cutting instruments, bathing the mother and child with cow urine could be harmful. However such practices are in keeping with the community demands and the indigenous training many TBAs undergo at the hands of senior TBAs. Further such practices may also be a consequence of the community demands as the TBAs who do not receive remuneration from elsewhere but only from the community. Therefore breaking common norms regarding ritual practices practiced for delivery may be difficult, as it becomes a livelihood issue. Since TBAs are well entrenched into the community and reflect the cultural traditions and practices of their own settings [36], they may not be able to implement the sporadic trainings imbibed in settings removed from their practice settings.

Further even if the trainings facilitate an understanding of the various risks, still many TBAs do not recognize fever as a symptom of risk. They viewed it as normal and natural.

This again serves to reiterate the understanding that the cultural norms and beliefs have a stronger role to play than any training received.

In addition the health systems in Tehri Garhwal is largely visible by its absence. Therefore TBAs, families and communities remain the only available delivery care option to women during childbirth. The absence of any referral options in the vicinity renders women further vulnerable as even if a TBA is able to recognize the risks and attempt referral the places she could refer a woman top are limited, distant and therefore expensive options.

In these circumstances it then falls to these TBAs in Tehri Garhwal Uttaranchal to help women during childbirth with their limited skills, cultural compliances and their own hands.

‘ We are the only ones here. It is only our hands and Gods grace’

– TBA from Village 1.

Chapter 5.
Conclusions and Recommendations

5.1 Synthesis and discussion

In this chapter we attempt to triangulate and synthesise the findings from the three different methods of data collection, the RCH2 survey, the cross sectional survey among TBAs and the focus group discussions among TBAs. There are certain limitations inherent to this process of synthesis because two of the data collection processes were undertaken in July/August 2005 and the reference period for the RCH data is the four-year period prior to 1998-1999. However assuming there would have been no changes in availability and access to health care during delivery, we undertook this synthesis process. This assumption was justified by the findings of remarkable congruence between the results of the 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 system is the major source of the antenatal care (14.4%). And yet only 1.1 percent received ANC from a subcentre and less than one percent received ANC from a PHC or CHC and these are the immediately available resources to women in the communities. This may be a reflection on the poor reach and availability of primary health care in the community.

The public sector care is the most often sought for problems during pregnancy (92.9%). Only for percent consulted a private doctor for problems during pregnancy. However for problems one week after delivery, 46.6 percent sought care from a private doctor and 34.9 percent consulted the public sector. The role of traditional practitioners seems negligible as only 2.73 percent consulted a traditional practitioner for problems during pregnancy and 1.66 percent consulted a traditional practitioner for problems one week after delivery.

The limited options for care are also reflected by the fact that only 28.7 percent received an antenatal check up and this is lower than the state average of 43.4 percent for UA [35]. In addition there are only 43.26 ANMs per lakh population (table 4). The terrain probably limits the outreach of the ANMs even where they are present. In the FGD too the women said, "*The ANM didi only comes when she has to fill registers*" and "*only to give injections sometimes"*.

Anaemic symptoms are the most commonly reported problems during pregnancy (>50%), for UA the percentage was 45.6 percent in the NFHS 2 survey. Swelling of hands and feet also appear common with 125 women (29.62%) reporting these symptoms. And yet from the analysis of the RCH survey only 73 out of 304 women who reported a problem during pregnancy sought health care. This could be because many of these problems are treated as normal; one TBA said during the FGD, 'swelling of hands and feet is normal, it goes away after the baby is born'. Also the lack of options for health care near the village may keep the women from seeking health care. According to the NSSO survey of 2002 [10], only 74 villages out of 1000 have a subcentre/PHC/CHC within the villages and for 340 out of 1000 villages this distance is greater than 10 kilometres (More than 80% villages are not connected by '*pucca'* road).

Home deliveries seem to be the norm with 86.5 percent deliveries occurring at home in this population, which is much higher than the state and national average. This is a figure far higher than that reported from the NFHS 2 conducted at the same time as the RCH survey, 60 percent of deliveries in rural UA and 35 percent of deliveries in India occur at home [11].

Only 56 deliveries were reported to have occurred in the hospital, a majority (50%) of hospital deliveries were in a government hospital, 48.2 percent in a CHC/PHC and only one occurred in a private hospital.

The majority (50.7%) of the home deliveries were conducted by untrained TBAs and 31.5 percent by trained TBAs. Relatives and others attend about fourteen percent of the home deliveries. This is also reflected from the findings of the qualitative data analysis where the TBAs said, " we are the only ones here, and it is only our hands and God's grace". One study has shown that TBAs may be 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].

Literacy seems to play a major role in health care seeking behaviour, receiving of ANC and type of attendance at birth. Women who are literate are more likely to get ANC, and those who receive an ANC are more likely 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 post delivery. James Trussel comments that 'It would appear that education of girls reduces maternal mortality to a greater extent than does altering their reproductive behaviour ' [50]. And this seems to be illustrated by the FGD where the woman said her daughter in-law was a graduate so she went to the city for delivery.

Training of TBAs seems to be from two sources; one is the indigenous training that they receive from apprenticeship with older TBAs, and the other is the formal training from the NGOs and the government as was made explicit from the FGDs. Indigenous training seems to be important since most TBAs started practicing with older TBAs in their villages, and subsequently trained others to take on after them. This form of training has a strong influence on the practices of TBAs as has already been indicated by the FGDs. Janet Chawla in her work on TBAs in North India comments that,

> "Dais can be seen as indigenous specialists in women's well being and cultural repositories of such body knowledge and practice. This knowledge is decentralized and collectively held; non-textual and orally transmitted; usually acquired by apprenticeship with an older relative and often caste based" [37].

Older TBAs have more practice than younger ones, and are preferred for delivery care as revealed from the FGDs. One family called an old TBA with failing vision to assist in delivery and only after two days was a trained TBA called. A study in UP found that even when trained TBAs were placed in villages people were still calling untrained TBAs for delivery [42].

The formal training of TBAs in Tehri Garhwal district is of varying duration, ranging from one day to nine months. A third of TBAs have had six days of training. A review of midwifery training programs in Tamil Nadu in 1980 found that even then training ranged from ten days to six months, teaching aids and equipment was lacking, raising questions about the quality of training [47]. Twenty-five years later nothing much seems to have changed.

Less than half (45%) of the trained TBAs interviewed were illiterate and their mean age was 45.6 years (std deviation=10.801). The thrust of the training seems to be on the five cleans and risk identification and referral. Duration of training has a significant impact on the TBAs knowledge.However a study found that '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'. Also she might be reluctant to break a particular norm even if her training teaches her otherwise, since flouting the norm might cause misfortune to the entire community as childbirth is considered a period of ritual impurity [51]. In the interview all the TBAs said this training was good and added value to their work, however the FGDs revealed that the older TBAs believe that after years of practice they know everything and so only went for the government training for one day to collect certificates and boxes. A study in Haryana found similar situations where only 35.4 percent had attended more than fifty percent of the training sessions [52].

Knowledge regarding antenatal care seems to be limited to TT injections and iron, folic acid tablets and physical examination because that seems to be the contribution of the public health system and the NGOS for antenatal care as identified by the TBAs in the FGDs. However the survey indicated that less than fifty percent know about blood pressure check up. They all felt that ANC was essential however only 42.5 percent of the TBAs said that the first ANC should be in the first trimester. The FGDs revealed that the TBAs conduct physical examination in the last month of pregnancy to check the direction of the foetus and possible difficult delivery. This may be the time of the first contact with the women so unmet need for antenatal care may exist.

Knowledge about all the five cleans of delivery is lacking or overridden by cultural expectations of the communities and the norms prevailing. Only 78.3 percent of the TBAs have knowledge of all the five cleans of delivery. The TBAs' practices are embedded in the cultural norms of the community and this is expected to change following training. Jeffery et al (1989) observe that 'in rural Bijnor (UP), *Dais* who had been trained appreciated the stipend but gave little indication of having changed their obstetric practice. Furthermore, since Dais tend to be middle-aged when they start work, such benefits of training as they are, may be short-lived' [53]. A study in Delhi found that even though the TBAs had knowledge of the five cleans it was not translated to practice [48].

The TBAs reported during the FGD that they use cow dung and cow urine to wash their hands, prior to conducting a delivery after which they may or may not wash with soap. If a clean blade is available that is used to cut the cord the most often. Findings from the FGD reveal that once supply of delivery kits is over the TBAs use whatever is available to cut the cord including a '*daranti'* (tool used to cut grass).

' We rub the *daranti* on a stone to clean it'

Studies reveal that there is inconsistency in the supply of delivery kits and once supply is over the TBAs revert to traditional practices [47,54]. Knowledge about how to sterilize a blade is also limited they may boil it or put it in hot water or rub it on a stone to clean it. Delivery takes place in the room used to store fodder, where the woman is confined for 21 days post delivery. A study by CARE, in Nepal found similar situations where birth processes are considered unclean and so the women deliver in the *"goth"* (fodder room)[54]. There is however an indication of changing trends with older TBAs reporting they had delivered in the room where cattle are tied but "*nowadays women are educated and aware and demand much better"*.

Even though 97.5 percent said they had bee taught newborn resuscitation, when asked during the FGD only one group seemed to know about this. All the TBAs advise immediate breast-feeding with colostrum. They said during the interview that they advise regarding personal hygiene. During the FGDs they revealed that in one area they use cow urine to wash the child and mother post delivery. The mother is given a bath only after five days in some regions.

The major component of TBA training programs has been based on risk identification and timely referral. When asked about risk identification during pregnancy a majority of them said they would refer the women to the hospital, for pre eclampsia, bleeding during pregnancy or if the mother is short. However findings from the FGD reveal that they consider prolonged labour normal and fever as an essential and good phenomenon post delivery. The TBAs advise families regarding referral and yet sometimes they are asked to do what they can since reaching the hospital in the city is constrained by the cost and difficulty of finding transport. To overcome this problem, Yabrundi et al suggested

recommended that referral facilities should be established first and then TBAs should be trained. Otherwise too many expectations are placed on the TBAs [55].

The majority of the TBAs said they refer women to the hospital for problems; 86.7 percent refer to government hospital and 47.5 percent to private hospitals. The FGDs revealed the problems with regards to referral. The TBAs do refer women to the available neighbouring public health care places, and problems of transport such as arranging vehicles, walking the distance to the main road are constrains and sometimes the TBAs are just asked to do what they can for the women. For most problems the said they refer the women to the bigger cities like Dehradun and Rishikesh (200 kms away). No one mentioned referral to the district hospital. Deborah Maine states that, 'the most difficult problem with training TBAs to refer women with complications is that that often there is no feasible referral option. In fact it is precisely in circumstances when medical treatment is least available TBA training is proposed as a solution' [56].

The training of the TBAs does not seem to impart skills and knowledge required by a skilled attendant, and constraints such as cultural requirements and lack of options for referral limit the use of knowledge gained by training. A World Bank report on Improving Women's Health in India (1996) states that 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' [39].

5.2 Conclusion

At the community level TBAs are the only source of delivery care in view of the difficult terrain, and a non-functioning government system on which the people do not seem to have any trust. Cultural and social norms and the influence of the indigenous training, a non-functional health system put the lives of women in this hill district in jeopardy.

Therefore TBAs trained or otherwise are not able to meet the need for maternal and child health care. The onus of maternal and childcare rests on inadequately trained TBAs at the community level; while there seems to be neither publicly funded health care systems that can constitute appropriate referral mechanisms nor public transport available to reach these sites nor the infrastructure by way of roads in this district. These are very much needed to prevent the tragedy of maternal and child death in the this district.

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. Only then will the task of reducing maternal mortality and morbidity and tackling infant mortality become feasible. 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.

5.3 Recommendations:

1. Need for the government to invest on infrastructure development both for health care and roads and transport especially with regards emergency obstetric care.
2. Adequate training of midwives at the community level. An educated woman can be selected from each village and trained in midwifery. Her role would be to conduct deliveries, and supervise and guide the TBAs.
3. Find innovative mechanisms to transport women in need of referral to sites that can provide adequate care during delivery, such as community prepayment schemes for transport.
4. Adequate training of TBAs till such a time as such alternatives are built up.
5. Close supervision of the TBAs by the ANMs, NGOs regarding implementation of knowledge gained from training.

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Appendix I
Consent form for Interviews

I am Dr Pratibha Esther Singh, a student of Masters in public health at the Achuta Menon Centre for health science studies, Sree Chitra Tirunal institute for Sciences and technology Trivandrum.
I am doing a study as part of my course requirement, this is only for research.
In this study I would like to know your knowledge and practices regarding pregnancy, delivery and post partum care. For this I would like to ask you a few questions, which will not require more than 15-20 minutes. You will not be identified in any way in the results of the study. There is also no direct benefit for you from this study, however we will be able to understand your value as caregivers to pregnant women and children. The participation is voluntary and you may choose not to participate at any point in the study without fear of penalty or harm.

If you choose to participate in this study please sign in the space provided below. If you are willing to participate in the study but not willing to or otherwise unable to sign, will you permit the interview to be undertaken?
Yes: No:
(If yes) name of un-interested person witnessing the consent process:

Participant:
I understand the requirements of this study, and the freedom to participate or not. I give my consent to participate in the study.

Signature of participant.

Appendix II
Interview Schedule

Demographic ~~characteristics(~~characteristics

Q.No	Question	Response and code		
1.	How old are you?	Age in completed years as reported by the respondent. ----------		
2.	Name of the village and Block			
3.	Can you read and write?	1.Yes- □ 2.No- □	If no skip to question 5	
4.	What level of schooling have you completed?	Years of schooling ---		
5.	Have you been ever ~~Are you~~ married?	1. Yes □ 2. No □		
6.	Do have your own children?	1. Yes □ 2. No □		
7.	Did you practice birth attendance before you were trained?	1. Yes □ 2. No □		
8.	If yes for how long?			

Nature and extent of training

Q.No.	Question	Response and coding		
9.	Have you ever received any training in a formal setting for birth attendance?	1. Yes □ 2. No □	IF no, go to Q.No.22	
10.	Which year were you trained as a birth attendant?			
11.	How many days training did you receive?			
12.	Did it include practical training?	1. Yes □ 2. No □	IF no skip to Q 14	
13.	If yes where did you go for practical training?	1.Government hospital □ 2.Private hospital □ 3. NGO/Trust □ 4. Trained 'Dai' □		

14.	Were you taught any of the following	1. Five cleans of delivery 2. Taking B P 3. Taking temperature 4. Checking weight and height of mother 5. Checking weight and height of child 6. Giving an injection 7. Checking for anemia 8. Checking fetal heart beat 9. Vaginal examination 10. Washing hands 11. Cutting of the cord 12. Nutritional counseling		
15.	Were you taught what to do when-	1. A pregnant lady has swelling of feet 2. There is bleeding during pregnancy 3. The mothers height is short 4. A pregnant lady has increased blood pressure	Yes No	
16.	Were you taught what to do when	1.There is excessive blood loss during delivery 2.Baby is not delivered after 24 hours of labor 3.the mother has fever during labor 4. The placenta is retained.	Yes No	
17.	Were you taught about new born care	1. Yes □ 2. No □		
18.	Were you taught about newborn resuscitation?	1. Yes □ 2. No □		
19.	Were you taught about post delivery care?	1. Yes □ 2. No □		
20.	Have you received any additional training in the past one-year?	1. Yes □ 2. No □		
21.	Do you think the training is helpful in your care of mothers and newborn babies?	1. Yes □ 2. No □		

Antenatal care

Q no.	Question	Response and coding		
22.	Do you think antenatal care is essential	1. Yes ☐ 2. No ☐		
23	How many antenatal check ups should a pregnant lady have?	~~1.~~1.None ☐ ~~2.~~2.One ☐ ~~3.~~3.Two ☐ ~~4.~~4.Three ☐ ~~5.~~5.Four ☐		
24.	When should a mother have the first Antenatal check up?	~~1.~~1.1st trimester ☐ ~~1.~~2.2nd trimester ☐ ~~1.~~3.3rd trimester ☐ ~~3.~~		
25.	What are the essential components of ANC?	1. Height 2. Weight 3. Blood pressure 4. Blood test 5. Urine test 6. Physical examination 7. Iron tablets 8. Tetanus injections		
26.	For how long should a mother take iron tablets during pregnancy?			
27.	How many TT injections should she receive?	~~1.~~1.One ☐ 2.Two ☐ 3.Three ☐		
28	Timing of the TT injections			
29.	Can you give an injection	1. Yes ☐ 2. No ☐		
30.	Can you check blood pressure?	1. Yes ☐ 2. No ☐		
31	What is the normal Blood pressure?	~~1.~~1.120/80 ☐ ~~2.~~2.140/90 ☐ ~~3.~~3.160/100 ☐		
32.	Do you have a BP apparatus to take the measurement	1. Yes ☐ 2. No ☐		
33	How many times should you check B P to ascertain that it is high?	~~1.~~1. Once ☐ 2. Twice ☐ 3. Thrice ☐		

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34.	What do you advice a woman who has high blood pressure during pregnancy?	~~1.~~1.Nothing □ ~~2.~~2.To see a doctor □ ~~3.~~3.Salt less diet □ ~~4.~~4.Bed rest □		
35.	Do you conduct antenatal checkups?	1. Yes □ 2. No □		
36.	Can you diagnose a pregnancy?	1. Yes □ 2. No □	If no skip to question 38	
37.	If yes how?	~~1.~~1.Amenorhhea □ ~~2.~~2.Urine test □ ~~3.~~3.Others □	Specify others	
38.	Can you calculate the delivery Date	1. Yes □ 2. No □	If no skip to question 40	
39.	How do you calculate the delivery date?	1.On the basis of women's LMP □ 2.By examining the abdomen □ 3. Asking for USC □ 4.By monitoring the fetal growth □		

Delivery Care

Q no	Question	Response and coding		
40.	What are the five cleans of delivery	1.clean delivery surface 2. Clean hands of birth attendant 3.Clean cord tie 4.Clean blade 5. Clean cord stump		
41,	How do you wash your hands when conducting a delivery?	1.Water □ 2.Soap & water □ 3. Savlon/betadine □ 4. Don't wash □		
42.	Do you wear gloves for conducting delivery?	1. Yes □ 2. No □		

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43.	Can you monitor fetal heartbeat?	1. Yes ☐ 2. No ☐		
44	How do you cut the cord?	~~1.~~1.Clean blade ☐ ~~2.~~2.Kitchen knife ☐ ~~3.~~3.Anything available ☐ ~~4.~~4.Sterile blade ☐		
45.	What do you put on the cord stump?	~~1.~~1.Cow dung ☐ ~~2.~~2.Grass ☐ ~~3.~~3.Dettol/ Savlon/ betadine ☐		

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Post partum care

Q. No	Question	Response/ code		
46.	For how many days do you stay with the lady post delivery			
47.	Do you advise colostrum feeding?	1. Yes ☐ 2. No ☐		
48.	Do you advise regarding personal hygiene post delivery?	1. Yes ☐ 2. No ☐		
49.	If the woman has fever, chest pain, abdominal pain after delivery what do you do?	~~1.~~1.Nothing ☐ ~~2.~~2.Advise home remedies ☐ ~~3.~~3.Refer to a hospital ☐		
50.	Do you advise about family planning?	1. Yes ☐ 2. No ☐		

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Referral practices

Q.No	Question	Response and coding		
51.	Do you ever refer women to a hospital?	1. Yes ☐ 2. No ☐	If no skip to question 53	
52	If yes, where do you refer them?	1.Government hospital ☐ 2. Private hospital ☐		

		3. NGO □ 4. Others □		
53.	If no, why not?	1.Too far □ 2. No doctor in the hospital □ 3.No nurse at the hospital □ 4.No Medicines in hospital □ 5. No transport □ 6. No need □		
54.	When do you think you should refer a patient to the hospital?	1.Labour more than 18 hours □ 2. Fever during labor □ 3.Excessive bleeding post delivery □ 4.Mother has high blood pressure □ 5. Mother has a heart problem, tuberculosis, malaria □ 6. Previous history of abortion, difficult delivery □ 7. The woman has fits during labor □		

Pregnancy related outcomes

Sl.no	No. of deliveries in last five years	No. Of deliveries in last one year	Number of infant deaths	Cause of death	Number of maternal deaths	Cause of death

Maternal morbidity

Sl.no	No of deliveries in last five years	No of women who had fever after delivery	No of women who had severe bleeding after delivery	No of women who had abdominal pain post delivery	No. of women who had Convulsions during/ after delivery

Appendix III
Consent form for Focused group discussion

I am Dr Pratibha Esther Singh, a student of Masters in public health at the Achuta Menon Centre for health science studies, Sree Chitra Tirunal institute for Sciences and technology Trivandrum.
I am doing a study as part of my course requirement, and this is only for research.
In this study I would like to know your beliefs and practices regarding pregnancy, delivery and post partum care. For this I would like to request you to participate in a group discussion, which will last for half an hour. You will not be identified in any way in the results of the study. There is also no direct benefit for you from this study, however we will be able to understand your value as caregivers to pregnant women and children. The participation is voluntary and you may choose not to participate at any point in the study without fear of penalty or harm.
If you choose to participate in this study please sign in the space provided below.

If you choose to participate in this study please sign in the space provided below. If you are willing to participate in the study but not willing to or otherwise unable to sign, will you permit the interview to be undertaken?
Yes: 1 No: 2
(If yes) name of un-interested person witnessing the consent process:

Participant:
I understand the requirements of this study, and the freedom to participate or not. I give my consent to participate in the study.

Signature of participant.

Appendix IV

Guide lines for focus group discussions among TBAs in Tehri Garhwal district of Uttaranchal

Participant selection process:

1. Participants for the Focused group discussion will be selected from among those trained birth attendants not selected for the interview.
2. Eight to ten women will be called to a central village on a pre scheduled day, preferably in the morning
3. These women will be selected based on the following criteria
    a) Age
    b) Number of years practiced birth attendance
    c) Training received
    d) Deliveries conducted in the preceding year
    e) Literacy
4. The discussion will be conducted in Hindi, with help from local health workers from the NGOs to explain finer points in the local dialects if necessary.
5. The health workers of the local NGOs will be trained for facilitating the fgds prior to the fgd to be note takers.
6. The researcher will moderate the fgds.
7. The fgds will be taped with permission from the participants and transcribed after translation in English.

Guidelines for fgds:

Introduction: the moderator will introduce herself and the purpose of the fgd to the participants after greeting them. Allow time for self-introductions. Mention that this discussion is not a test but a method to understand the rich knowledge and skills that the TBAs have acquired over time. Specifically mention that there are not right or wrong answers and that the researcher is only interested in the opinions and practices of the TBAs themselves.

- What are the delivery care options available to women in that region?
- What are the possible problems related to these options?
- Number of years practicing birth attendance
- Training received: from, how many days? Practical training.
- Beliefs regarding pregnancy and child birth
- Beliefs about diet during pregnancy, child birth and post partum
- Beliefs regarding breast feeding
- Beliefs regarding personal hygiene and care post delivery
- Beliefs regarding care of new born
- Beliefs regarding danger signs of pregnancy.
- Beliefs regarding men's role in Pregnancy and childbirth and care of the mother and child.
- Role in post partum care of mother and child
- Beliefs and practices of referral
- Hindrances to referral
- Roles if any other than a birth attendant in the village. (Village doctor, village nurse)
- Collaboration with ANM/ PHC staff
- Collaboration with NGOS

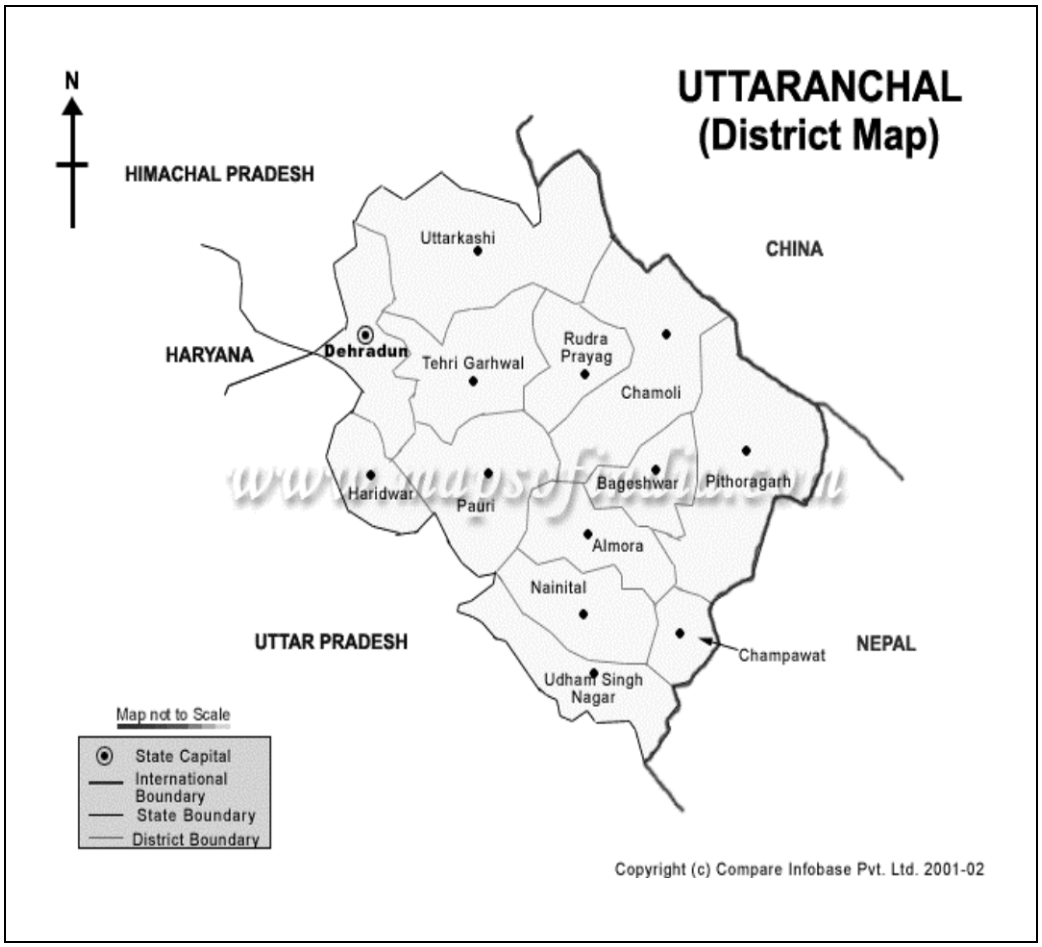
Appendix V
TBA Training program

Day	Time	Subject
One	10 –12 am	Inauguration and introduction
	12-1pm	Registration of pregnant women and Tetanus injections
	1-2pm	Anatomy of the female reproductive system and menarche, fertilization and pregnancy, diet during pregnancy, and dangers
	2-2:30pm	Lunch break
	2:30-4pm	Question and answers
Two	10-10:30am	Recap
	10:30-12	Preparation for delivery, and safe delivery
	12-1:30pm	Stages of labor and care of the new born
	1:30-2pm	Lunch break
	2-4pm	Question and answer session
Three	10-10:30am	Recap
	10:30-12	Mothers milk, care of mother and newborn, Child immunization
	12-1:30pm	Reproductive tract infections and AIDS
	1:30-2pm	Lunch Break
	2-3:30pm	Film (TBA training)
	3:30-4pm	Questions and Answer session
Day 4	10-10:30am	Recap
	10:30-12	Family Planning, Small family
	12-1:30pm	Family planning methods: permanent and temporary
	1:30-2pm	Lunch Break
	2-4pm	Practical Doon Hospital)
Day 5	10-10:30am	Recap
	10:30-12	Question answer session
	12-2pm	Distribution of certificates

Subjects

1. Anemia and health of the mother
2. Child health
3. TBA record book
4. What is pregnancy
5. Dangers in pregnancy
6. Premature babies
7. Safe delivery
8. Post partum care
9. New born care
10. Problems during delivery

Appendix VI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CHINA
HARYANA
Dehradun
Uttarkashi
Tehri Garhwal
Rudra Prayag
Chamoli
Haridwar
Pauri
Bageshwar
Pithoragarh
Almora
Nainital
Champawat
Udham Singh Nagar
UTTAR PRADESH
NEPAL
Map not to Scale
State Capital
International Boundary
State Boundary
District Boundary
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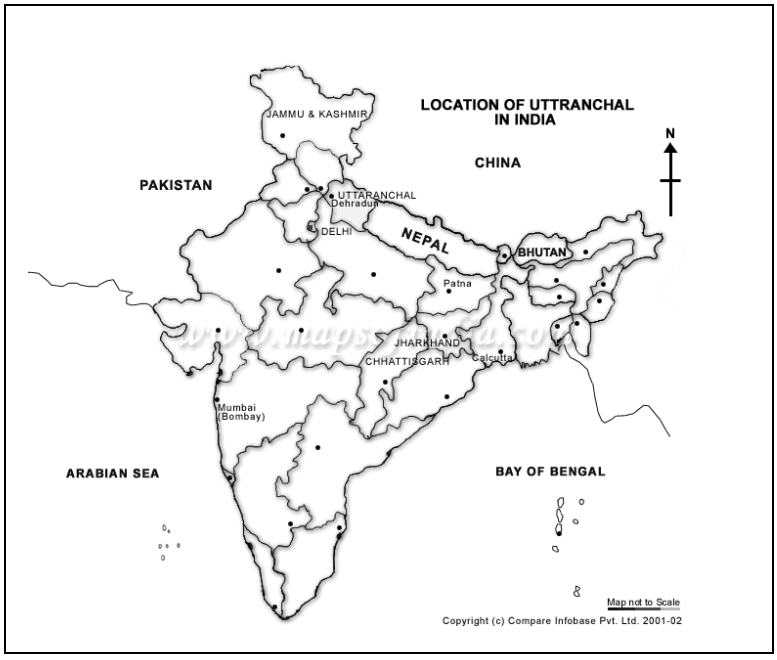
LOCATION OF UTTRANCHAL IN INDIA
N
JAMMU & KASHMIR
CHINA
PAKISTAN
UTTARANCHAL
Dehradun
DELHI
NEPAL
BHUTAN
Patna
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