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**Preparing Midwives as a Human Resource for Maternal Health:
Pre-service Education and Scope of Practice in Gujarat, India**

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Institutet**

Department of Women's and Children's Health
Division of Reproductive Health

**Preparing Midwives as a Human Resource for Maternal Health:
Pre-service Education and Scope of Practice in Gujarat, India**

DISSERTATION

For Doctoral Degree (Ph.D.) at Karolinska Institutet

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ABSTRACT

One key strategy to achieve reduction in maternal and neonatal mortality is to scale up the availability of skilled birth attendants (SBAs). The staff nurses (i.e., registered nurse and midwives) are skilled birth attendants recognized by the government of India.

Aim and objectives: This thesis studied women's choices, perceptions, and practices related to childbirth, and how these were affected by modernity in general and modernity brought in by maternal health policies (*Paper-I*). The midwifery scope of practice of staff nurses was studied in government facilities (*Paper-II*). The confidence of the final-year students on selected midwifery skills, from the diploma and bachelor's programmes, was assessed against the list of competencies of the International Confederation of Midwives (ICM) (*Paper-III*). The teaching and learning approaches associated with confidence were also studied (*Paper-IV*).

Methods: The grounded theory approach was used to develop models for describing the transition in childbirth practices amongst tribal women (*Paper -I*) and to describe the scope of midwifery practice of staff nurses (*Paper-II*). Data used for *Paper-I* included eight focus groups with women and five in-depth interviews with traditional birth attendants and staff nurses. For *Paper-II*, 28 service providers and teachers from schools of nursing were interviewed in depth.

A cross sectional survey design was used to assess the confidence of final-year students from 25 randomly selected educational institutions stratified by type of programme (diploma/bachelor's) and ownership (private/government) (*Paper-III & IV*). Students assessed their confidence using a 4-point Likert scale in the competency domains of antepartum, intrapartum, postpartum, and newborn care. Explorative factor analysis using principal component analysis (PCA) was used to reduce skill statements into subscales for each domain. Crude and adjusted odds ratios with 95% CI were calculated to compare students with high confidence ($\leq 75^{\text{th}}$ percentile of scores) and those without high confidence ($> 75^{\text{th}}$ percentile) to compare diploma and bachelor students (*Paper-III*) and to study the association of teaching-learning methods and high and not high confidence for each subscale (*Paper -IV*).

Results: A transition in childbirth practices was noted amongst women—a shift from home to hospital births seen as a 'trade-off between desirables (i.e., secure surroundings) and essentials (i.e., reduced risk of mortality)' (*Paper-I*). General development, increased access to western medical care, and international/national maternal health policies socialized women into western childbirth practices. The communities increasingly relied on hospitals as a consequence of role redefinition and deskilling of the Traditional Birth Attendants. Existing cultural beliefs facilitated the acceptance of medical interventions.

The midwifery practice of staff nurses was 'circumstance-driven' and ranged from extended to marginal because the legal right to practice was unclear (*Paper-II*). Their restricted practice led to deskilling, and extended practice was perceived as risky. The clinical midwifery education of students was marginalized. Because of dual registration as nurse and midwife, the identity of a nurse was predominant.

From 633 students, 25-40% scored above the 75th percentile and 38-50% below the 50th percentile of confidence in all subscales (*Paper-III*). A majority had not attended the required number of births prescribed by the Indian Nursing Council. The diploma students were 2-4 times more likely to have high confidence in all subscales compared to the bachelor students. High confidence was associated with number of births attended, practice on manikins, and being satisfied with supervision during clinical practice (*Paper-IV*).

Conclusions: Access to hospitals increases women's choices for childbirth in the context of high mortality. Inequitable distribution of health facilities requires region specific strategies. The women are dissatisfied with the psychosocial aspects of hospital care.

India has a national regulatory body, but midwifery specific regulation is lacking. In this situation, the midwifery scope of practice of staff nurses is undefined. The pre-service midwifery education does not develop student's confidence to provide first level care for childbirth, as expected by the governments. Short-term and long-term measures to professionalize midwives in India are suggested.

Key words: Midwifery scope of practice, midwifery regulation, pre-service midwifery education, staff nurses, childbirth, India

PREFACE

The research group at the Centre for Management of Health Services (CMHS) at the Indian Institute of Management Ahmedabad (IIMA) in Gujarat has been active in health systems, health management, and policy research for maternal and child health. The research questions included in this thesis emerge from the involvement of CMHS in a Sida-supported collaborative project with the Karolinska Institute from 2006 to 2013.

India has high maternal and newborn mortality rates and an almost non-existent midwifery profession. Sweden was successful in rapid reduction in its maternal mortality historically, with a competent midwifery workforce in spite of low resources at the time. This project was developed for India to learn from the midwifery profession in Sweden.

Sida brought in Sweden's strength and expertise in midwifery through the involvement of the Karolinska Institute, the Swedish Association of Midwives, and in the later phases the Uppsala University. The Indian partners included organizations working for and representing midwives such as the Academy for Nursing Studies and Women's Empowerment Research (ANSWERS) and the Society of Midwives of India (SOMI). The Trained Nurses Association of India (TNAI), which represents nurses in India, was also a partner. The other Indian partners were the White Ribbon Alliance of India and IIMA. The aim of the project was to strengthen the profession of midwifery in India for good quality basic childbirth services.

The situation analysis studies undertaken as part of the project identified several gaps in the education, practice, and regulation of midwives. These have been documented in the IIMA monograph [1]. Very few studies before this were undertaken for understanding maternal health and midwifery together. The set of studies included in this thesis delve deeper into the factors that determine the role of midwives in maternal health in India. They add to the contribution made by the Midwifery Strengthening Project and towards strengthening the midwifery profession in India.

LIST OF SCIENTIFIC PAPERS

- I. Sharma Bharati, Giri Gayatri, Christensson Kyllike, Ramani KV, Johansson Eva: **The transition of childbirth practices among tribal women in Gujarat, India - a grounded theory approach.** *BMC International Health and Human Rights* 2013, 13(41).
- II. Sharma Bharati, Johansson Eva, Prakasamma Mallavarapu, Mavalankar Dileep, Christensson Kyllike: **Midwifery scope of practice among staff nurses: A grounded theory study in Gujarat, India.** *Midwifery* 2013, 29 628–636
- III. Sharma Bharati, Hildingsson Ingegerd, Johansson Eva, Ramani KV, Prakasamma Mallavarapu, and Christensson Kyllike: **Do the pre-service education programmes for midwives in India prepare confident Skilled Birth Attendants? A survey from one district in India.** *(Submitted)*.
- IV. Sharma Bharati, Hildingsson Ingegerd, Johansson Eva, Ramani KV, Christensson Kyllike: **What are the teaching-learning methods contributing to the confidence of midwives during pre-service education? A survey from Gujarat, India.** *(Submitted)*

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LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency Disease Syndrome
ANM	Auxiliary Nurse Midwife
ANSWERS	Academy for Nursing Studies and Women's Empowerment Research
ASHA	Accredited Social Health Activist
CHC	Community Health Centre
CMHS	Centre for Management of Health Services
CSSM	Child Survival and Safe Motherhood
CY	Chiranjeevi Yojana
EmOC	Emergency Obstetric Care
FGD	Focus Group Discussion
FRU	First Referral Unit
GDP	Gross Domestic Product
GNM	General Nursing and Midwifery
GoI	Government of India
HDI	Human Development Index
HIV	Human Immunodeficiency Virus
ICM	International Confederation of Midwives
ICPD	International Conference for Population and Development
IIMA	Institute of Management Ahmedabad
INC	Indian Nursing Council
INR	Indian Rupee
JSY	Janani Suraksha Yojana
MDG	Millenium Development Goal
MMR	Maternal Mortality Ratio
MPW	Multipurpose worker
NRHM	National Rural Health Mission
NSDP	Net State Domestic Product
PCA	Principal Component Analysis
PHC	Primary Health Centres
RCH	Reproductive and Child Health
RM	Registered Midwives
RN	Registered Nurses
SBA	Skilled Birth Attendant
SC	Scheduled caste
Sida	Swedish International Development Agency
SOMI	Society of Midwives of India
SPSS	Statistical Package of Social Science
ST	Scheduled tribes
TBAs	Traditional birth attendants
TFR	Total Fertility Rate
TNAI	Trained Nurses Association of India
UNFPA	United Nations Population Fund
USD	United States Dollar
WHO	World Health Organization

1. BACKGROUND

1.1 Maternal health and midwifery a global perspective

1.1.1 Maternal and Neonatal mortality

Most maternal and neonatal deaths are preventable by timely medical attention [2]. Globally, Maternal Mortality Ratio (MMR) has declined from 400 maternal deaths per 100 000 live births in 1990 to 210 in 2010 [3]. However, low and middle income countries account for 99% (284 000) of the global maternal deaths, the majority of which are in sub-Saharan Africa (162 000) and southern Asia (83 000). These two regions accounted for 85% of the global burden, with sub-Saharan Africa alone accounting for 56%. The MMR in low resource regions was 15 times higher than in resource rich regions.

About 73% of maternal deaths are due to direct obstetric causes such as haemorrhage, hypertensive disorders, sepsis, and obstructed labour [4, 5]. There is inadequate information on indirect causes of maternal deaths. Anemia, malaria, HIV/AIDS, domestic violence, and suicides are some of the indirect causes of maternal deaths [6].

Each year, about four million newborns die before they are four weeks old; 98% of these deaths occur in low and middle income countries. Newborn deaths now contribute to about 40% of all deaths in children under five years of age globally and more than half of the infant mortality [54, 55]. Rates are highest in sub-Saharan Africa and Asia. Two thirds of newborn deaths occur in the WHO Regions of Africa (28%) and South-East Asia (36%). The neonatal mortality is now 6.5 times lower in high-income countries than in other countries [5]. The major causes of neonatal deaths are birth asphyxia, hypothermia, and sepsis.

1.1.2 Maternal health initiatives

The global campaign to reduce maternal mortality was launched in 1987 with the formation of the Inter Agency Group (IAG). Rosenfield and Maine (1985) questioned the lack of focus on maternal health within the maternal and child health programmes implemented at that point of time [7]. This was one of the factors that triggered this global campaign. The IAG was formed by three UN agencies — United Nations Population Fund (UNFPA), the World Bank, and the World Health Organization (WHO) - during the Nairobi International safe motherhood conference [8].

Since then, the global campaign for safe motherhood has changed strategies by learning from experiences. The strategies in the 1980s and 1990s focused on community-based interventions, such as antenatal care that focused on risk screening, and training of traditional birth attendants (TBAs). These changed to skilled attendance and Emergency Obstetric Care (EmOC) from late 1990s to the present time [9]. In the year 2000, the international public health experts set the

Millennium Development Goals (MDGs), of which goals 4 and 5 are for maternal and child health.

The maternal health strategies to prevent maternal and newborn deaths recommended now are as follows:

- 1) Intrapartum care is prioritized because most deaths occur during or immediately after birth. This includes first-level care close to the women given by a skilled attendant and backup referral services for Emergency Obstetric Care (EmOC) [5]. Health centre based intrapartum care is recommended as it is likely to include first-level care and also EmOC [9].
- 2) Antepartum and postpartum care, family planning, and safe abortions are essential but complimentary strategies to achieve reduction in maternal mortality [9].

1.1.3 Skilled assistance

In 2004, the WHO, International Confederation of Midwives (ICM), and the International Federation of Gynecology and Obstetrics (FIGO) developed a collective term: 'Skilled Birth Attendant' (SBA). They defined it as "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 (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns" [10].

This collective term was given to professionalize childbirth care and to include all potential professionals and exclude non-professionals (i.e., TBAs). They have differentiated between '*skilled attendance*', which means an enabling environment, and '*skilled attendants*', who provide care. The enabling environment could include competency-based education for SBAs, enabling policies, good health systems, and effective organization of services [11].

General trends in assistance at childbirth show a slow but unmistakable movement towards professionalization of care, but there are huge disparities across the world and within countries [12]. There are several constraints faced by low-resource countries in scaling up skilled birth attendants. For instance, they face shortages and inequitable distribution of SBAs [13]. The SBAs lack the competence to provide comprehensive services [12, 14-17], and the regulatory frameworks for SBAs are weak [18-20]. Many countries have taken shortcuts and detours, slowing the progress towards achieving the MDGs 4 and 5 [21].

1.2 Midwifery: a global perspective

Midwifery is the oldest profession to the advantage of birthing women in many countries. Midwives, as defined by the ICM, differ from other professionals with midwifery skills in their philosophy of 'women-centered care' and 'maintaining normalcy of birth' for best outcomes [22]. Birth is viewed as a natural process that has a profound meaning to individuals and the society. Birth should be treated as normal until there is evidence of a problem. The possibility of complications is not allowed to preempt all other values associated with the woman's

experience of bearing and giving birth to a child [23]. The midwifery model establishes the pregnant woman as an active partner in her own care and recognizes her as the primary actor and decision-maker [23]. The woman and the midwife share a reciprocal relationship [24]. Therefore the midwifery model of care is time-intensive and relationship-intensive.

Studies have shown, retrospectively, that in countries such as Sweden, and Holland, investing in professionalizing midwives in the 16th and 17th century showed faster reduction in maternal and neonatal mortality [25-27]. This occurred even before technology-assisted hospital delivery became the norm and blood transfusions, caesarean sections, or antibiotics became available. Amongst the low and middle income countries, Sri Lanka and Malaysia are cited as more recent examples [28], where technical (i.e., developing competence) and political conditions (i.e., state policies and cooperation from doctors) similar to those having prevailed in Sweden permitted a dramatic fall in maternal mortality [27].

At present midwives are primary providers for normal childbirth in many countries. Midwifery-led care has not shown any adverse effects on the mother and newborn. Albeit a Cochrane review of trials of more than 12,000 women receiving care from midwives and obstetricians showed that midwifery-based maternal care was beneficial in terms of less likely antenatal hospitalization. There were less episiotomies and instrumental delivery and more spontaneous vaginal births. Also, women felt more satisfied with the birthing process [29].

The availability, distribution, education, and the scope of practice of professionals termed as midwives vary across countries [30]. A survey by UNFPA and ICM in 58 low and middle income countries show a 43% shortage of SBAs in 38 countries [30]. The remaining 20 countries including India (as reported by the government of India) had adequate numbers of SBAs, yet the coverage of births attended by skilled birth attendants was found below 95% (i.e., the target for MDG5). These countries face constraints in utilizing available health workers.

The ICM and WHO recommend 18 months of additional education in midwifery after nursing to qualify as a midwife and at least 3 years for direct entry candidates [5]. There were three pathways to midwifery in the 58 countries that were surveyed. Seventy percent of the countries followed the direct entry pathway, 45% had nursing and an additional period of post-nursing midwifery education, and 43% had combined programmes for nursing and midwifery education [30]. The duration of midwifery education programmes ranged from 6 months to 5 years. Though many countries have a government designated regulatory body that provides a license and protects the title of midwife, only in three countries was it distinct from nursing.

Most of the countries in Europe fulfill the ICM recommended duration of midwifery education, and many have a direct entry programme. However, European countries also vary in the quality of education, regulatory frameworks, and scope of practice for midwives. The European Union is in the process of standardizing nursing and midwifery education in the 33 member countries that cover almost the entire Europe [31].

1.3 National Perspective

1.3.1 Evolution of Health system in India

The first plan for a national public health system in India was proposed by the Bhoré Committee Report in 1946 [32]. It was a plan equivalent to Britain's National Health Service based on a countrywide survey in British India. The plan recommended integration of preventive and curative functions, linkages with other non-health sectors to resolve the indirect causes of ill health, and provisions of free health services for all. Following this, India adopted the welfare state approach for health after independence. India's leaders envisaged a national integrated health system in which the State/Province would play a leading role in determining priorities of health and financing health services. Today in India, health is a state subject. Most of the preventive programmes are nationally funded, while curative care through hospitals is the state's responsibility.

India has wavered from its goal to establish an integrated health system. There has been an excessive preoccupation with single purpose vertical programmes [33]. For instance, there were single purpose programmes for the control of diseases such as malaria and tuberculosis from the first 'five year plan' (1951-56) onwards. The population control programme was implemented from the third five-year plan implemented 1961-66 onwards. The vertical approach continued for child immunization, diarrhea control, food supplements for pregnant women and children, and so on throughout the 1990s.

The Alma Ata Declaration in 1978 by the WHO was a result of worldwide disillusionment with vertical programmes and brought back the focus on universal coverage of primary health care. The Indian National Health Policy developed in 1983 and revised in 2002, argued that the rural health staff has become a vertical structure exclusively for the implementation of family welfare activities. Since family planning was a nationally driven targeted programme, it took away the time of most of the peripheral workers to the exclusion of everything else [34]. Vertical programmes failed to integrate the provision of general health services, weakened the health system, and became disconnected from the local health problems and the communities [35]. From 1974-1983, the Government of India (GoI) constituted many committees to find ways to re-distribute peripheral health workers appointed for vertical programmes to achieve integration [36-38]. By this time the private health sector had grown significantly, and discussions for including them in health care service delivery had begun [39].

1.3.2 Health infrastructure

As recommended by the National Health Policy (1983), a 'three-tier' health care system has been established in India based on the following norms:

- At Level-I are the Sub-centres that cover a population of 5,000, (3,000 in case of tribal populations) attached to Primary Health Centres (PHC). Each PHC covers a population

of 30,000 (20,000 in case of tribal populations). The Sub-centres are managed by the Auxiliary Nurse Midwife/Multipurpose worker (ANM/MPW). The PHCs are managed by a general physician, a staff nurse (i.e., a registered nurse and a registered midwife), and paramedical staff.

- At Level-II are the Community Health Centres (CHCs) with 30-50 beds. There is one CHC for every 100,000 people. Selected CHCs are upgraded as First Referral Units (FRU) for EmOC. There is one such unit for every 500,000 people, located below the district. The CHCs and FRUs have 4-5 specialist doctors and general physicians.
- At Level-III are the district hospitals with 100-300 beds located at the district town, with facilities for specialist care, a diagnostic laboratory, and a blood bank. At the apex are the medical college hospitals located in cities, with multi-specialty facility and super specialist doctors.

As of March, 2012, there were 148,366 Sub Centres, 24,049 Primary Health Centres (PHCs), and 4,833 Community Health Centres (CHCs) functioning in the country [40]. Although there have been investments to develop health infrastructure in the rural areas, less attention has been paid to urban areas where more than one quarter of the population resides [41].

1.3.3 Health System performance

The reason for the segmented approach to health care through vertical programmes described earlier is seen as due to meager resources [35]. However with meager resources, India could effectively control malaria and tuberculosis, reduce its fertility rates from 6.0 births in the 1950s to 2.4 by 2011, and also reduce Infant Mortality Rates from 129 in 1971 to 44 in 2011[42].

Nevertheless, the perception is that on the whole the public health system in India has failed to improve the health status of its people and to be accountable and responsive to people's health needs. It has failed to protect them from financial risk due to out-of-pocket expenditure.

The Bhore committee recommended that state governments should spend a minimum of 15% of their revenues on health activities. India spends 12.8% of its total budget on the entire social sector of which health is one [43]. Spending for health is 1.99% of the total budget, 1.4% of the Gross Domestic Product (GDP), and 4.8% of the total expenditure, according to the economic survey of India for the year 2013-14.

Largely due to the failure of the public health system and the unmet health needs of the population, India has a large private health sector [41]. At the time of independence in 1947, less than 8% of all medical institutions in the country were maintained by private agencies [32], whereas recent national health accounts show that 77.4% of all expenditures go to the private sector which is out of pocket [44]. Since 1986-96, there was a decrease in the utilization of public health facilities for outpatient care from 26% to 19% and a decrease in access to free care from 19% to 10% [35].

One of the causal factors for this failure is poor goal setting and lack of formulation of need-based strategic interventions [35]. For instance, in theory the National Reproductive and Child

Health (RCH) programme is gender sensitive and follows a life-cycle approach. But it is only limited to providing services for childbirth and family planning and ignores maternal morbidities and gynecological health problems of women [45].

There is a weak foundation of evidence for interventions in the health system in terms of in-house capability for research to enable evidence-based policy [35]. For example, there is evidence that for saving mothers skilled birth attendance and some surgical interventions are the most essential. The international definitions of skilled attendants disqualify the TBA and ANM who has 18 months of multipurpose training. It follows then that the policy focus for maternal health for at least the last fifteen years should have been to build a professional skilled cadre of skilled birth attendants for safe births. This has not happened.

There is inadequate technical capacity to plan and implement public health interventions at the central, state, and district levels. India has failed to develop a public health cadre who can provide stewardship to health programmes. By widening the recruitment criteria to include clinicians and generalist administrators, there is a shortage of epidemiologists and biostatisticians [35, 46].

Management failures occur because of a combination of reasons such as low budgets, untimely and irregular supplies, corrupt practices and poor governance. A World Bank study found 40%-45% absenteeism amongst doctors working at PHCs in low and middle income countries including India [47]. There are weak institutional processes for human resource management. Needs assessment for the requirements of health personnel is unrealistic. This is one reason for inequitable distribution of health personnel [48, 49]. There are limited promotional avenues, poor payment systems, poor facilities at work, and corruption that lower the motivation of personnel [35, 50]. The work environment and weak recruitment and the posting and transfer policies are amongst the reasons for severe staff shortages. According to the government of India report for 2012, 20.4% of the posts for doctors, 7.6% posts for ANMs, and 37.1% posts for supervisors for ANMs are vacant at PHCs. There was a shortfall of 74.9% of surgeons, 65.1% of obstetricians and gynaecologists, 79.6% of physicians and 79.8% of pediatricians in the public health system [40].

1.4 Maternal Health: National perspective

1.4.1. Policy and its evolution

The MMR of India for the years 2010-11 is 178 per 100,000 live births [51]. The goal for maternal health stated in the National Health Policy was to achieve MMR of 100 by the year 2010; this has been shifted ahead several times. The goal for reaching MDG5 for India is to reduce MMR to 109 per 100,000 live births by 2015 from an estimated MMR level of 437 per 100,000 live births in 1990/1991. In spite of progress, India still has a far way to go.

Until about a decade ago maternal mortality reduction took a backseat to disease control, population control, child mortality reduction, and polio eradication [34]. The first clear mention of safe motherhood came during the National Child Survival and Safe Motherhood (CSSM)

Programme (1992-1997) [52]. The CSSM focused on community-based maternity care. Screening high risk pregnancies, ensuring “clean” deliveries at home by trained Traditional Birth Attendants (TBAs) by distribution of “safe delivery kits”, were the priority activities.

There was a “Paradigm shift” after the International Conference for Population and Development (ICPD) in 1994 from population control to reproductive health. From 1998 to 2004, the vision of the RCH Phase-I was to enable women and men to achieve their personal reproductive goals without being subjected to additional burdens of disease and death associated with their reproduction. This was described as the “life cycle approach”. There was a shift in maternal health strategies from community-based births, moving towards health centre births. The strategies for maternal health under RCH-I included ensuring Essential Obstetric Care and EmOC through day and night PHCs and CHCs and provision of referral transport. Emphasis was also on improving the infrastructure for EmOC with blood storage facility at the FRUs and access to abortion services.

1.4.2 Current maternal health strategies

Learning from RCH phase-I, the national RCH-II programme was implemented as part of the National Rural Health Mission (NRHM) [53], now renamed as the National Health Mission after 2012. The NRHM was a major initiative to bring structural and functional reforms in the health system.

The maternal health services package under RCH-II showed a clear shift to health centre births. Safe delivery was equated with institutional delivery. The strategies for maternal health under the RCH-II programme described here briefly still continue with some variations [45]. There were two objectives for achieving the goals for maternal health: to achieve 100% institutional births, and to ensure all births are attended by a SBA.

Strategies for promoting health centre births

On the supply side, two levels of government institutions have been targeted under RCH-II:

- i) Upgrading PHCs and CHCs for day and night delivery services including management of common obstetric complications, emergency care of sick newborns, and referral.
- ii) First Referral Units for emergency obstetric and newborn care. This also includes ensuring access to a blood bank at all district hospitals and a blood storage facility at FRUs.

On the demand side an incentive scheme for promoting institutional births has been implemented throughout the country since 2006 called ‘*Janani Suraksha Yojana (JSY)*’, which is translated as ‘scheme for protecting the mother’ [54]. Women are given cash incentives for health centre births. Both the government and private health facilities are included in the scheme.

The provinces of India have been categorised as ‘low performing states’ and ‘high performing states’ based on their performance on health indicators. The JSY has different guidelines for these categories of provinces. All women from the low performing states are eligible for cash benefits under the scheme; a woman gets INR 1400. The Accredited Social Health Activist (ASHA), a volunteer chosen for each village, who accompanies the woman gets INR 600. In the case of the ‘high performing states’ only women from families Below Poverty Line (BPL) who are above 19 years of age receive benefits. The poverty line is estimated as a per capita income of Rs. 819 (13.40 USD) for rural areas, and Rs. 1000 (16.40 USD) per month for urban areas. All women belonging to the Scheduled Caste (SC) and Scheduled Tribes (ST) communities are eligible for cash incentives.

Strategies for Skilled Birth Attendance

There are two strategies adopted by India to ensure SBA at every birth. For essential basic childbirth services, the staff nurses and the ANMs already working in government health facilities are given a 2-3 weeks training to upgrade their skills as SBAs [55, 56]. The staff nurses and ANMs have been authorised to use lifesaving drugs which were out of their scope of practice before RCH-II.

To overcome the long standing problem of shortage of specialists at district and sub-district levels, the RCH-II programme planned for task shifting by training general physicians in anaesthetic skills for EmOC and conducting caesarean sections.

1.5. Midwifery: a national perspective

In India, health professionals included under the collective term SBAs are ‘midwives’ who could be staff nurses, and ANM/MPWs, and ‘other professionals’ with midwifery skills which include obstetricians and general physicians. It is important to understand the history of the growth, or lack of it, of midwifery in India to appreciate the current situation of the profession. The history of midwifery here is examined in the pre-independence and post-independence periods.

1.5.1 History Pre-Independence

Dai: The first midwife

In the pre-independence period and much before that, like all over the world, the lay woman or TBA called *Dai* were birth attendants in India. They operated outside any organized health system, were usually older illiterate women with no formal training, and acquired skills as apprentices to other Dais [57-59].

The discourses against the ‘unhygienic’ often described as ‘barbaric’ methods of the Dai in assisting birthing women began during the colonial period by the British government, which was supported by the middle class Indian women [60, 61]. In spite of the discourses against the Dai, the first attempt to train them in western childbirth practices occurred in 1886 by a Christian Missionary in Punjab [62]. The efforts to train Dais continued in the post-

independence period until the late 1990s. The Bhore committee (1947) recommended 'the continued involvement of these women will, for a period, be inevitable' as a short term measure until the time midwives trained in scientific childbirth practices were made available.

Education of western-style midwives: Pre-independence period

The formal education of midwives preceded that of nurses in British India [63]. The first midwifery school was started in the lying in hospital in the Madras (now Chennai) presidency in 1854 [61, 62]. The duration of the course was 9 months. It was difficult to attract Indian women to the course. Until 1871, only five Indian women had been trained, and most of them were Christians. The statistics for Madras-trained midwives in practice from 1863-75 showed a total of 146 midwives in practice, out of which 114 were Eurasian, 26 European, and only 17 were Indian. The Indian girls could not meet the level of education required for admission, and also they could not afford the course fee [61]. By the 1870s, the Madras-trained midwives were to be found all over India and as far as Burma and Singapore. Similar attempts were made to establish midwife training schools in the Bombay and Bengal presidencies, but it was even more difficult to attract Indian women to the schools due to women literacy levels even lower than the Madras presidency [32]. In 1946, it was estimated that there were about 5000 midwives in practice [32], but it is not clear what proportion of them were Indians. According to Adranwala (1968), there was a private autonomous midwifery practice especially in middle and upper class homes [63].

The Madras Presidency went on to be the first to pass the nursing and midwifery act in 1926 that professionalized and legally recognized the training and practice of nurses, midwives, and Dais. This led to the formation of the Madras nursing and midwifery council [64]. Similar acts were passed in the Calcutta Presidency and other areas of British India.

In 1885 the Dufferin fund committee was established to provide maternity services to the Indian women through doctors. The Dufferin fund committee established schools for training health visitors in 1918 by. The health visitors were to run maternity clinics in the rural areas and train and supervise the Dais. The course was 8-9 months, and the entry criterion was a certificate in midwifery. In 1946 there were 8 schools for training health visitors. There were 750-800 health visitors practicing during the British period [32].

There were simultaneous efforts to educate women doctors and to organize maternity clinics in rural areas. There were 3.7 times as many doctors compared to midwives, nurses, and health visitors put together in 1946 [32]. This can be partly explained by the fact that medicine was well entrenched in the towns and the country sides of India much before nursing and midwifery [65]. An All India League for Maternity and Child welfare was established in 1919. A maternity and child welfare bureau was established in 1933 to oversee the work for maternity care throughout the country [32]. Several Zenana (women's) hospitals were started throughout British India through all these efforts.

It is important to understand the development of nursing during the colonial period, as after independence nursing and midwifery were combined. It was equally difficult to attract Indian

women for nurse training just as in the case of midwives, as India did not have a tradition of female nurses [66]. It is said that the beginning of organized nursing training began when a few nursing superintendents from Britain formed the Trained Nurses Association (TNAI) in 1905 [67]. This was the first step towards professionalization of nursing in India [65]. In the early years hospitals trained nurses for their own needs rather than for broader health responsibilities. Therefore nursing courses were not standardised. There were 300 schools for training nurses operating in British India [68].

1.5.2 History Post-Independence

Autonomous midwives replaced by auxiliary workers

From Independence in 1947 until about 1962, which were the 1st and 2nd ‘five year plan’ periods, plans were developed for three distinct cadres: nurses, auxiliary nurse midwives (ANMs), and midwives.

Auxiliary nurses were trained during the Second World War in 1942 to overcome the extreme shortage of trained nurses in the Indian Defence Forces [62]. Candidates were trained for six months in selected civil hospitals and worked as assistant nurses. This continued until Independence. After independence, the Indian Nursing Council (INC) developed a standard syllabus for two years, and introduced the Auxiliary Nursing and Midwifery Certificate programme. The programme prepared ANMs to provide basic nursing care, preventive services, and midwifery and child care services in rural areas.

Around 1962, the ANM training was cut short to 18 months to meet the crisis of shortages of personnel for staffing the vast health infrastructure being established in the country. It was suggested that institutions for training midwives may be upgraded into ANM training centres [69]. The once autonomous midwifery profession was reduced to an ‘auxiliary’ level. Auxiliary workers, as defined by Iyer and Jesani (1995), are “trained for aspects of health care where responsibilities are defined by the tasks to be performed rather than the traditional professional roles” [65]; this implies that ANMs were never meant to be professionals.

Auxiliary Nurse Midwives converted to Multipurpose workers

The ANMs became regular staff in the public health system and replaced the midwife. The ANM’s primary responsibility was maternal and child health. The second blow came when their midwifery role became diffused by re-designating them as multipurpose workers [34] and assigning multiple tasks to their role. This was done to integrate the segmented health system that was a result of vertical programmes [36].

Midwifery merged with nursing

The parliament of independent India passed the Nursing Midwifery and Health Visitor’s Act in 1947 [70], and subsequently the INC was constituted in 1949. Today, the INC is the national level autonomous statutory body for nursing and midwifery regulation. The INC abolished all junior level courses existing for nurse training and developed basic standard syllabi for the two

year training for ANMs, three years diploma in General Nursing and Midwifery, and a four years bachelor's programme in nursing.

Midwifery training was an additional 9 months for those who chose to be further trained as midwives in the General Nursing and Midwifery programme until 1955. However since 1957, midwifery was made mandatory for all women candidates [64, 71]. This was the third blow to professionalizing midwifery in India. Since the last revision of the syllabus in 2001, midwifery has been made mandatory for even male candidates.

It is not clear but it seems the first college of nursing offering the bachelor's programme in 1946 was only for nurses. The INC included midwifery in the syllabus in its various revisions. The graduates for both the diploma holders as well as degree holders get a joint registration as Registered Nurses (RN) and Registered Midwives (RM).

1.5.3 The current situation

Pre-service education

The three programmes of pre-service education of nurses and midwives which were established around independence still continue and include the following: 18 months ANM training, which has recently been revised to 2 years [72]; a 3.5 years diploma in General Nursing and Midwifery (GNM); and a 4 years bachelor's degree in nursing. The diploma and degree graduates are registered nurse (RN) and registered Midwives (RM), while the ANM is a registered midwife and an auxiliary nurse. The INC has introduced a post-basic bachelor's programme for 2 years for those candidates with a diploma in General Nursing and Midwifery; this opens opportunities for them to pursue postgraduate studies.

There are Master's programmes in different specializations, that is an added qualification. INC has also introduced Ph.D. education since a decade by forming a consortium for Ph.D. education. There are six colleges of nursing designated for enrolling students for the Ph.D. programme. In addition, there are short term postgraduate diplomas for staff nurses to specialize in specific fields.

The educational infrastructure has increased many folds in recent years. As of October 2012, there were 1,642 ANM schools, 2,670 diploma schools and 1,578 bachelor's colleges of nursing in India out of which more about 80-95% are private institutions [73]. There are 696 colleges of nursing offering Post-Basic Bachelor's degree, and 535 colleges with a master's programme.

Midwifery component in the Diploma and Bachelor's programmes

Proportionately fewer hours (11.6%) are allocated to midwifery in the bachelor's programme compared to the diploma programme (18.6%) (Figures 1-2). The minimum requirements for number of births attended are also higher for the diploma programme, as there is a distinction between observed (15) and attended births (20) [74]; while under the bachelor's programme, there is no distinction between observed and attended. Students must attend 20 births [75].

Figure 1. Time allotted for theory & clinical practice for midwifery and other areas in General Nursing & Midwifery programme

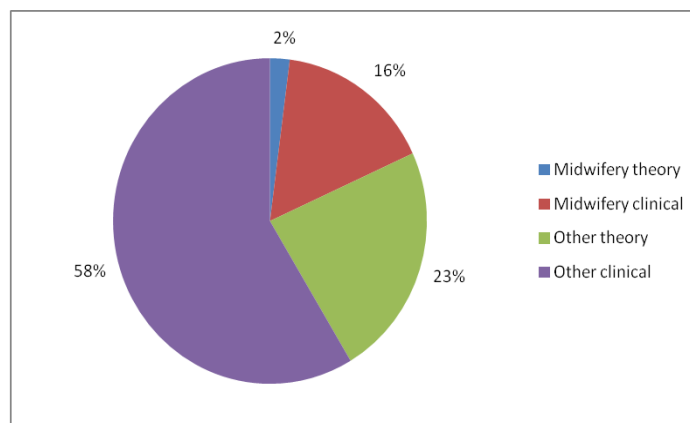
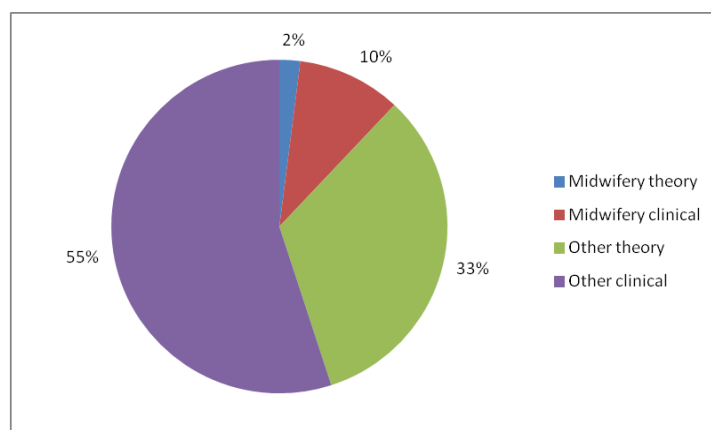


Figure 2. Time allotted for theory & clinical practice for midwifery and other areas in the Bachelors of nursing programme



Nature of employment

The ANMs are appointed at the PHCs to manage the Sub-centres in the rural areas. The graduates of the diploma programme work as general staff nurses in hospitals. The graduates of the bachelor’s programme could either work as general staff nurses or become tutors in ANM training schools or schools for diploma in GNM. They also have an option to pursue postgraduate studies. There are no posts for midwives in the government hospitals; the staff nurses posted in maternity sections practice midwifery as a part of the team led by the doctors.

Nodal centres for excellence

The Maternal Health Division of the GoI is establishing nodal centers of excellence to strengthen the pre-service education of the ANMs and the General Nurse and Midwife (GNM) from the diploma program [76]. One nodal center is planned in each high focus province, to be steered by a selected college of nursing offering the bachelor's program. The strategic plan for these nodal centres includes faculty development, improving pedagogy, and uplift clinical training of students.

1.5.4 Midwives in the private health sector

There is no record of the number of individuals working as nurses and midwives in the large private health sector in India. It is said that the private sector employs more nurses than those employed in the public health sector [65]. Majority of women who work as nurses or midwives in the private nursing homes are unqualified, and underpaid [77]. In maternity homes, run by individual private obstetricians, these informally trained nurses take almost 70% of the maternity load [78].

1.5.5 Associations of nurses and midwives

Trained Nurses Association of India (TNAI)

The TNAI was established more than 200 years ago [79]. It has its headquarters in New Delhi. It has more than 100,000 members across the country. The Association has established within its jurisdiction the Health Visitors' League in 1922, Midwives and Auxiliary Nurse-Midwives Association in 1925 and the Student Nurses Association in 1929. TNAI is a member of the Commonwealth Nurses Federation (CNF). The president of TNAI is a member of the Indian Nursing Council. The governments at times invite TNAI to discuss policy matters related to nursing. TNAI publishes a bimonthly journal called the 'Nursing Journal of India'.

Society of Midwives of India (SOMI)

SOMI was officially formed in the year 2000, by the Academy for Nursing Studies (ANSWERS), Hyderabad. SOMI still has its headquarters in Hyderabad. SOMI has nearly 5000 members across 20 states of India [80]. The organization is divided into units that comprises of 10 members and chapters with 100 or more members. SOMI currently has 17 chapters and 21 units. SOMI is the member of ICM.

2. AIMS AND OBJECTIVES

This thesis aims to study and describe the scope of practice and education of midwives and also describe the choices, perceptions, and practices of women related to childbirth in the province of Gujarat, India.

2.1 Specific objectives

- i) To understand the choices, perceptions, and practices related to childbirth amongst tribal women in Gujarat, and to understand how these have been influenced by modernity in general and modernity brought in through maternal health policies (Paper-I)
- ii) To describe the midwifery scope of practice of staff nurses at different levels of the government health facilities in the province of Gujarat (Paper-II)
- iii) To assess the confidence of final-year students on selected midwifery competencies from the bachelor's and diploma programmes in Gujarat using the essential list of competencies of the International Confederation of Midwives (Paper-III)
- iv) To study the association between confidence of final-year students in selected midwifery skills and teaching-learning approaches used in the bachelor's and diploma programmes in Gujarat (Paper-IV)

3. CONCEPTUAL FRAMEWORK

The subject of this thesis is human resources for maternal and newborn health with a special focus on midwives. The thesis refers to aspects such as access to birth attendants, equity in their distribution, their competence, and organization of maternal care services, which are all functions of the health system. I have been inspired by the anthropological and sociological research and discourses on reproduction in general and childbirth in particular, which have placed childbirth and midwifery within the bio-social context. This thesis lies at the interface of health systems and the disciplines of medical and feminist sociology and medical anthropology, which lend a cultural, social, and political lens to understand childbirth and midwifery.

Human reproduction has been a focus for social reforms across the world. The state and other powerful organizations have attempted to regulate sexuality and fertility, which has taken many forms. For instance, the global influences and state policies on population control and family size, abortion laws, adolescent pregnancy, and childbirth have been a part of reproductive reforms across the world [81-83].

Childbirth and midwifery are also culturally patterned and shaped by the ideologies and values of societies. The markets, in terms of the supply of available skills and technological resources in the society also influence childbirth and midwifery [84].

3.1 Childbirth as a social process

The sociological perspective of social construction of reality and knowledge, and the interpretations by the actors involved, has also been applied to understanding of childbirth [85]. Applying this sociological perspective, birth is not just physiological as viewed by obstetricians, but it is defined and interpreted by the social actors experiencing the birth process. These include the birthing women, her attendant, her family, and the community. Jordon (1993) terms this perspective as the bio-social perspective of childbirth that is opposed to an exclusively bio-medical perspective [86].

Birth is culturally patterned in all human societies. There are norms for nutrition during pregnancy, level of activity recommended for pregnant women, and rituals related to cord cutting and handling the placenta after birth. Human societies have been universally concerned about questions such as the following: Where should the birth take place? Who should attend the birth? What is the best position for giving birth? Should, and to what extent should, interventions in the birth process be acceptable?

Medicalization of childbirth is a global phenomenon [85]. The process of medicalization is complex and multidimensional. A definition that most agree on is 'medicalization is a process of defining a social problem in medical terms, understanding it using a medical framework and using medical interventions to treat it' [87].

In high resource countries, there are feminist movements to de-medicalize childbirth [81]. Medicalization necessarily places births in the hospital. The medical systems and hospitals have been described as patriarchal, i.e., controlled by the doctors of whom the majority are males

[88]. This has disempowered women because hospitals control the birth process. It is also seen as disempowering midwives who are the women's advocates, as hospital systems restrict opportunities to maintain the normalcy of birth and provide women centered care, which are the foundations of midwifery practice of midwives [86, 89-92].

3.2 Midwifery: Sociological Analysis

Though midwives share a common role and function of assisting women and taking care of their health, their professional status and social image differs greatly. The midwife challenge, according to Kitzinger (1979), affects the way midwives relate to their clients, to the medical profession, and to those who pass the laws that govern the area of maternity care [93].

The professionalization of midwifery is viewed by sociologists, in the context of the sociology of professions and the division of labour, in relation to other professionals — in this case, the physicians and obstetricians. The most important criteria for acquiring professional status, as described by Goode (1969), are the necessity for the professional group to set its own standards of education, training, and thereby competence [94]. Further, the group should demand a high calibre of students for formal training and a more rigorous socialization process compared to other professions. Professions that enjoy high incomes, power, esteem and prestige in society, and are relatively free of lay evaluation are deemed to have achieved professional status.

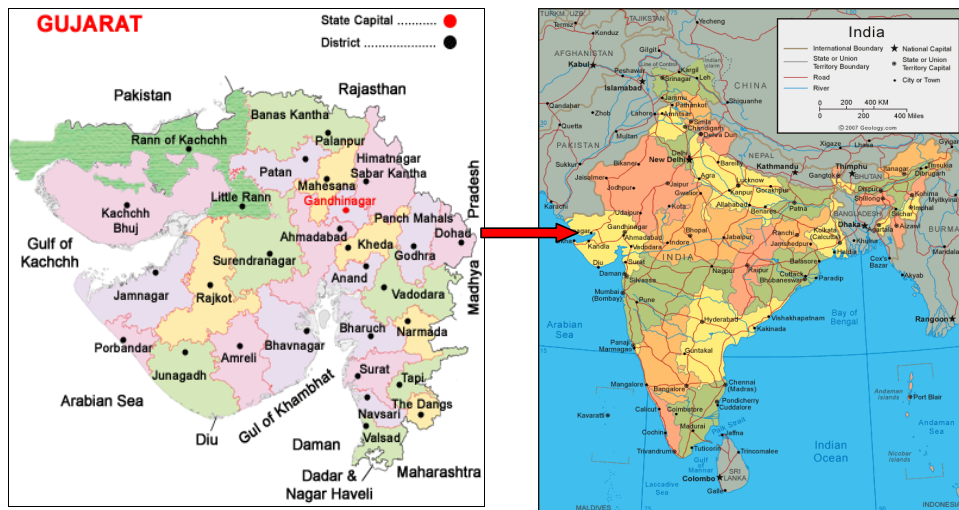
However, this straightforward and linear taxonomic approach to professionalization does not account for inter-professional competitions and rivalry, which is observed in the case of obstetricians and midwives in many parts of the world. Using a Marxist and Weberian analysis, sociologists such as Abbot (1999) have argued that professionals may not always work with altruistic motives. Instead professional autonomy is based on the ability of the profession to exercise power and control over other occupations, which he calls occupational jurisdictions [95]. Strategies of occupational closure through division of labour are used to achieve dominance and negotiate power between professions [96]. Examining professionalization in the context of capitalism and patriarchy, the process of professionalization is seen as a patriarchal process that helps to maintain the dominance of men over women [97]. This is seen especially in the cases of professions and semi-professions such as nursing and midwifery that have female members as a majority.

4. METHODOLOGY

4.1 Study setting

The Gujarat Province is situated in the western part of India (Figure-3). It is the seventh largest province in the country of 36 provinces, with an area of 196,204 km² (75,755 sq mi). The province is bordered by Rajasthan to the north, Maharashtra to the south, Madhya Pradesh to the east, and the Arabian Sea as well as Pakistan on the west. Its capital city is Gandhinagar, and Ahmedabad is its largest city. Administratively Gujarat is divided into 26 districts and further divided into 225 community blocks that consist of 18,270 villages and 348 towns.

Figure-3. Maps of India and Gujarat, the study sites for this thesis.



Geographically, Gujarat is a peninsula with a coastline of 1,600 km that is the longest in the country. The province comprises of three geographical regions. The peninsula traditionally known as Saurashtra is hilly and sprinkled with low mountains. Kutch to the northeast is barren and rocky consisting of the Rann of Kutch (desert). The mainland extends from the Rann of Kutch and the Aravalli Hills to the river Damanganga and is mostly a level plain of alluvial soil. The northern and eastern borders are made up of mountains which are the tails or offshoots of outside ranges like the Aravallis, Vindhyas, Satpuras, and Sahyadris, where the majority of tribal communities reside.

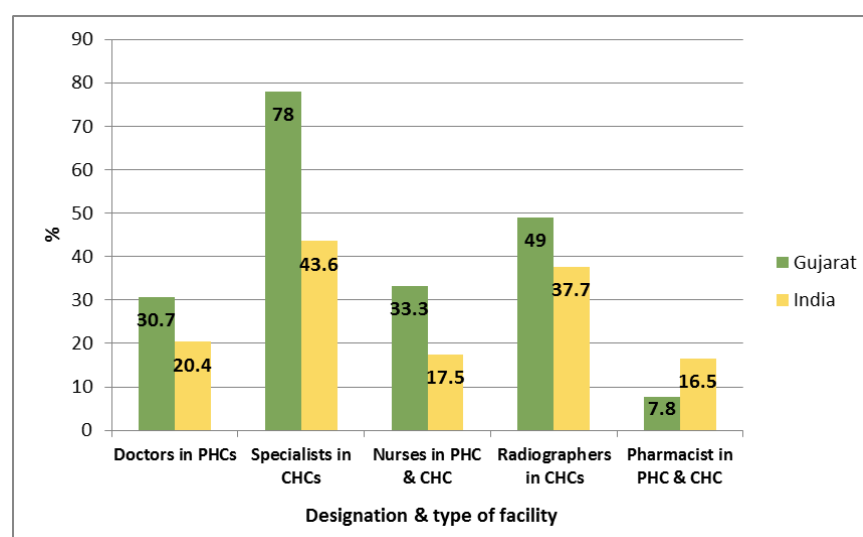
Gujarat's population is 60.38 million [98] and is proportionately 5% of India's population. A significant proportion, almost one fourth of the population, belongs to the marginalized groups: Scheduled castes (SC) (6.7%) and Scheduled tribes (ST) (14.7%). Gujarat's population is diverse in terms of religion, with 89% Hindus, 9% Muslims, 1.03% Jains, 0.5% Christians, 0.2% Sikhs, 0.07% Buddhists, and 0.05% others including Zoroastrians. Fifty seven percent of Gujarat's population lives in rural areas [99].

After independence, India was divided into provinces according to languages. The predominant language spoken in Gujarat is Gujarati which has evolved from Sanskrit and local Prakrits. The majority of the population in the state can speak Gujarati and also Hindi, the national language. For almost 88% of the Gujarati Muslims, Gujarati is their mother tongue, whilst the other 12% speak Urdu. Other native languages spoken in low proportions are Bhili and Gamit; they are spoken exclusively amongst the tribes.

4.1.1 Health infrastructure: Gujarat

Gujarat has also established a three-tier health infrastructure like the whole of India, with 7274 Sub-centres, 1158 PHCs at Level-I; 318 CHCs, 28 sub-district hospitals at Level-II; and 24 district hospitals at Level-III [40].

Figure 4. Vacancies of health personnel, Gujarat & India (March 2012)



At the apex level, there are 19 teaching hospitals in Gujarat; 6 are managed by the government, 3 by Municipal Corporations, 5 by a society managed jointly by the government and the private sector, and 5 are managed solely by private organizations.

Gujarat had higher percentages of vacancies for almost all cadres compared to India (Figure 4), for the year 2012 [40]. There were only 9 obstetricians and 3 pediatricians for 318 CHCs. There are higher proportions of vacancies in the high focus districts that are less developed and therefore have difficult living conditions.

4.1.2 Gujarat: Health and socio-demographic profile

Gujarat is one of the most industrialized provinces in India and is rated amongst the top five provinces showing growth in its GDP above the national average, according to the economic survey of India for 2012-13 [43]. Gujarat's Human Development Index (HDI) is higher (0.527) compared to the whole of India (0.467). The HDI includes a health index indicated by life expectancy at birth, an education index indicated by literacy rate, and an income index indicated by per capita real consumption expenditure. Gujarat has proportionately less BPL population (16.6%) compared to the whole of India (22%), according to the estimates for the year 2011-12 [100].

Though Gujarat has shown consistently high economic growth, it ranks 11th on the Human Development Index amongst the provinces [43]. In spite of lower poverty compared to the national average, there is disparity in the incidence of poverty amongst the rural and urban populations; rural poverty is higher (19.1%) than urban poverty (13%) for all social groups. Poverty amongst the SC population in Gujarat is 19% and that of ST is 28%, much higher than the total poverty for the province as a whole [101]. Gujarat has shown slow progress in the growth of HDI in spite of fast and consistent growth in Net State Domestic Product (NSDP), particularly the health index [101].

Table-1. Key Socio-demographic and health indicators of Gujarat and India

Demographic Indicators	Gujarat	India
Total population* (millions)	60.4	1210.01
Scheduled caste (SC) population* (millions)	0.81	201.4
Scheduled tribe (ST) population*(millions)	8.9	104.2
Crude Birth Rate*	17.3	21.8
Crude Death Rate*	6.6	7.1
Total fertility rate*	1.8	2.4
Sex ratio*	918	940
Population below poverty line**	16.63	21.93
Female literacy rate*	70.7	65.5
Health indicators		
Infant mortality rate*	38	44
Neonatal mortality rate*	28	29
Maternal mortality ratio*	122	178
Anaemia amongst children 6-59 months (%)***		
Total	69.7	69.5
Mild	25.0	26.3
Moderate	41.1	40.2
Severe	3.6	2.9
Anemia amongst women, 15-45 yrs (%)***		
Total	55.3	56.2
Mild	36.2	38.9
Moderate	16.5	15.5
Severe	2.6	1.8

Sources: *Sample Registration System [42], ** Planning Commission, Government of India [100], *** National Family Health Survey-III [102]

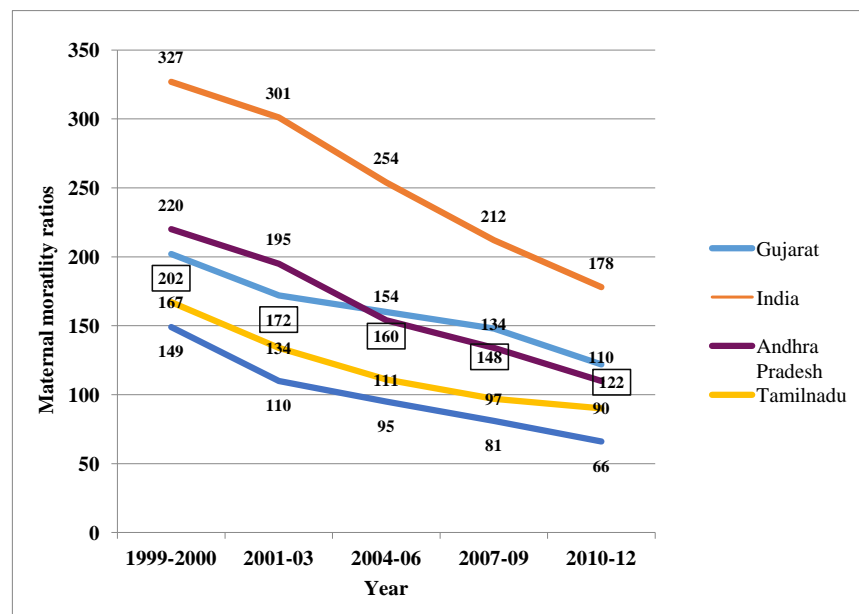
Gujarat has a lower Total Fertility Rate (TFR) and crude birth and death rates compared to the whole of India (Table-1). Gujarat also has a higher female literacy rate than the whole of India, but a lower sex ratio compared to the national average. The MMR of Gujarat is lower than the whole of India, but the neonatal mortality rate is at par with the national average (Table-1).

There are 69% anemic children between 6-59 months and 55.3% anemic women between 15-45 years in Gujarat. Both these proportions are equal to the national averages [102]. The proportion of underweight children amongst the SC is 45.9% and that amongst ST is 64.5% compared to 44.6% for the whole of India. A similar trend can be seen for other health indicators. It appears that the high growth rate achieved by the state over the years has not percolated to the marginalized social groups.

1.4.3 Maternal Mortality Gujarat

The MMR of Gujarat, and all of India, has been declining for the last three decades. Gujarat's MMR has been consistently lower to the ratio of India as a whole, but the south Indian provinces perform better. The province of Andhra Pradesh had higher MMR compared to Gujarat until the year 2003, but now it is much lower and surpasses the progress achieved by Gujarat, as shown in Figure 5.

Figure 5. Trends in MMR India, Gujarat, Andhra Pradesh, Tamilnadu & Kerala



Source: Special SRS Bulletins on maternal mortality [51, 103-105].

For all of India, the goal for reaching MDG5 by 2015 is to reduce MMR to 109 per 100,000 live births from an estimated MMR level of 437 per 100,000 live births in 1990/1991. At the historical pace of decrease, India will reach a MMR of 139 per 100,000 live births by 2015, falling short by 29 points [106].

The Gujarat province seems to have already reached the MDG 5 goal. Since India does not have a robust system for measuring MMR [107], these SRS estimates for MMR may be lower than expected [108]. There is disparity within the province; for instance, there are 6 districts in the province identified as ‘high focus districts’ by the GoI because of their poor maternal and child health indicators [109].

4.1.4 Maternal health: organization and utilization of services

Overall service utilization for maternal health services has improved for Gujarat over time (Table 2); however, some quality concerns remain. Although 83% of the women received three antenatal checkups, less than half received the full package consisting of three checkups, tetanus injections, and 100 tablets of iron folic acid as prophylaxis for anemia.

Table 2. Maternal Health Indicators in India and Gujarat

Indicator (%)	NFHS 3 (2005-06)		Coverage Evaluation Survey (2008)	
	India	Gujarat	India	Gujarat
Antenatal care				
Atleast three antenatal check ups	51.0	65.0	68.7	83.2
Full antenatal care (atleast three checkups+ TT injections+ Iron folic acid for 100 days)	15.0	25.6	26.5	45.7
Intranatal care				
Place of birth				
Health centre	39.0	55.0	72.9	78.5
Home	61.0	45.0	27.1	22.0
Type of health centre				
Government	18.0	13.9	47.0	34.2
Private	20.6	38.8	25.9	43.9
Birth Attendant				
Doctor	48	52.0	50.9	NA
ANM/LHV/ Nurses	10.3	11.0	24.7	NA
TBA	36.5	31.6	17.5	11.8
Relative/others	16.3	5.1	6.5	3.0
None	0.5	-	0.3	-
Births by Skilled birth attendant	46.6	64.0	76.2	85.2
Nature of birth				
Normal	NA	NA	83.6	NA
Assisted	NA	NA	1.4	NA
Caesarean	8.5	8.9	15.1	NA
Postnatal care				
Post natal care received	41.2	54.0	54.5	NA

Sources: NFHS-III [110], and Coverage Evaluation Survey [111]

Sixty one percent of women were found anemic during pregnancy in Gujarat, which is higher compared to 58% for the whole of India, according to NFHS-III survey. Almost 80% of births were in health centres, with a greater share (43.9%) in the private health centres compared to public health facilities (34.2%).

The shortcomings discussed for health systems in India are also true for Gujarat, that influence the way maternity services are organized [112]. Maternal deaths are not systematically registered and audited [107]. The estimates of MMR are only based on sentinel surveys. The public health facilities face problems of maintenance, supplies, and the availability of the right mix of professionals to enable good quality of services. The health system including private and public health sectors in the rural areas are ill-equipped to handle obstetric emergencies. For instance, there is very little availability of blood in the rural areas [113] and an acute shortage of specialists such as the anaesthesiologists [114]. Management failures, such as complexity of coordination between different actors involved in maternity care from state, district, to below the district slow down the process of policy implementation for maternal health [115].

4.1.5 Maternal health strategies specific to Gujarat

Gujarat implements all national strategies under RCH-II as described in the earlier sections. There are two state initiatives that have a potential to influence the access to delivery services and to reduce maternal and newborn deaths. These are now described below.

Chiranjeevi Yojana

One of the two state initiatives is the Chiranjeevi Yojana (CY) [116]. According to the government document for CY, the scheme was initiated because in spite of the significant presence of private sector obstetricians in Gujarat, it is difficult to force or lure them to join government health services and be posted to rural areas. Under the CY, private maternity homes or hospitals run by obstetricians are enrolled to provide childbirth services to women from families Below Poverty Line (BPL). They are given a fixed package of INR 3,80,000—roughly 6200 USD for every 100 births. The obstetrician gets INR 2500 per C-section if he/she carries out the same in a government health facility.

Emergency Transport

Another state initiative is the emergency transport service, which was launched in Gujarat in 2007. It is known by its dialing number ‘108 Services’ [117]. There are 525 ambulances under 108 Services in Gujarat that are distributed in all districts at strategic locations to provide emergency response to the entire population. It currently responds to between 2,000-2,200 emergencies on every day. According to service statistics on the government’s website, 108 Services attended to 21,974 maternity cases in the year 2012-13.

4.1.6 Midwifery and Nursing in Gujarat

Like other provinces, Gujarat implements the standard syllabi prescribed by the INC for all its nursing and midwifery programmes. As on October 2012, there were 92 schools that offered a diploma in General Nursing and Midwifery in Gujarat, out of which 77% were private schools. There were 42 colleges offering a Bachelor’s in Nursing out of which 81% were private [73]. Only 1 out of 16 colleges that offered Post Basic BSc in Nursing was run by the government,

while the rest were private. Out of 4 colleges offering a master's in various specialities, 1 was run by the government.

Initiatives for strengthening midwifery

Since Gujarat has been one of the provinces where interventions of the Midwifery Strengthening Project, with the support of Sida were implemented, there were several initiatives in progress during the project period.

The most important one, which has potential for far reaching and sustainable results, is creating a cadre of autonomous midwives for maternal and newborn health through a one year post graduate diploma programme called the "Nurse Practitioner in Midwifery (NPM)" [118]. This post graduate diploma in midwifery is a second such attempt in the country to create specialized midwives with advanced skills in maternal and newborn care. The West Bengal province had educated a few midwives sometime before the year 2005 but struggled to get them their due recognition as specialized professionals which happened only in 2010. The state nursing cell in Gujarat proposed 100 special posts of midwives with a higher salary structure than the staff nurse. The government sanctioned 25 such posts in 2011. To date, Gujarat has roughly 100 advanced midwives who have taken the course but are still working as staff nurses. The 25 posts also have not been filled due to mundane administrative hurdles.

4.2 Methodological Approaches

We have applied both qualitative and quantitative research approaches to explore and describe the phenomena of becoming midwives, practicing midwifery, and that of women experiencing childbirth (Table-3). Mixing qualitative and quantitative methods can be theoretically challenging as they are based on different ontological and epistemological assumptions and therefore require specific research designs [119]. Some researchers are opposed to mixing different qualitative traditions within one paradigm [120]. Though this project used both types of methodologies, we could adhere to the recommended methodological assumptions (i.e., ontological and epistemological) and methodological designs for each method, as these were not combined in the same studies.

The Grounded theory approach, as presented by Strauss and Corbin [121, 122], is appropriate to study social processes and meanings of social phenomena as interpreted by the participants themselves. Paper-I aimed to understand the social, cultural, economic, and political processes that led to a transition in childbirth practices amongst women over time. Paper-II aimed to describe the midwifery scope of practice within different contexts as experienced by staff nurses in the maternity sections of hospitals. It also aimed to investigate the legal, professional, and organizational factors that determine their scope of practice. Both these studies investigated social phenomena, for which the Grounded theory approach was appropriate.

The findings of Paper-II indicated a marginalization of midwifery education and therefore a possible lack of competence amongst newly registered nurse-midwives. We wanted to assess the confidence of final-year students from the two formally recognized pre-service education

Table 3. Overview of the studies: Aims, Study design, Informants, Data sources and Analysis.					
Paper	Research Question	Study design	Informants	Data sources	Analysis
I	To explore choices, practices, and perceptions of women related to childbirth practices from a tribal area of Gujarat	Qualitative exploratory study	Purposive sample of women (n=85, 8 groups) from 3 blocks of a tribal district from 6 villages Purposively selected traditional birth attendants (n=3) and staff nurses (n=2)	Focus group discussions In depth interviews Field notes	Explorative and analytical Grounded theory Methodological and analytical memo writing
II	Describe the midwifery scope of practice amongst staff nurses in public health facilities of Gujarat	Qualitative exploratory study	Purposive sample of staff nurses working in the maternity sections of hospitals, matrons, obstetricians, physicians, nursing and obstetric students (n=28) from 5 public health facilities at different levels of the health system	Observations In- depth interviews Field notes	Explorative and analytical Grounded theory Methodological and analytical memo writing
III	Assess the confidence of final-year students from Gujarat in selected midwifery skills from the list of essential competencies of the ICM	Cross-sectional survey Provincial level	Stratified random sample of final-year students (n=633) from 25 educational institutions of nursing and midwifery in Gujarat	Questionnaire	Factor analysis through Principal Component Analysis Odds Ratio with 95% CI
IV	To study the association between confidence and teaching-learning approaches of final-year students in selected midwifery skills in Gujarat	Cross-sectional survey Provincial level	Stratified random sample of final-year students (n=633) from 25 educational institutions of nursing and midwifery in Gujarat	Questionnaire	Factor analysis through Principal Component Analysis Odds Ratio with 95% CI

programmes for nurses and midwives in India against a benchmark. We used selected midwifery competencies from the list of competencies by the International Confederation of Midwives (ICM) as a benchmark for comparison (Paper-III, IV). For this a quantitative survey design was deemed the most appropriate. Using both qualitative and quantitative methodologies in a way helped us to triangulate research findings.

4.3 Study populations

4.3.1 Childbirth preferences, perceptions and practices of women (Papers I)

The Dahod district of Gujarat was selected for the study because of its tribal population. The proportion of tribal population in India is 8-9% compared to 14.7% in Gujarat [123], and 73% in the Dahod district. The district has an urban area of 13% compared to 48% in Gujarat, a total literacy rate of 60% compared to 81% in Gujarat, and a female literacy rate of 49% compared to 71% in Gujarat [98].

The tribal communities in India have been specially identified by the Indian Constitution article numbers 341 and 342 as ‘Scheduled Tribes’ for special focus [124]. The tribal society is described as indigenous communities; their economy and life are linked to natural ecosystems and resources and are dependent on agriculture, forestry, and hunting. As a result of settlements invading and taking control of natural resources during the pre-colonial period and into the early post-independence period, the tribal people have lost authority over their economic resources [125]. There is an out-migration of tribal people to larger cities for subsistence.

Dahod is one of the high focus districts out of a total of 264 high focus districts identified by the NRHM in the country [109]. These high focus districts contribute to 70% of infant deaths and 62% of maternal deaths nationally. The Indian population is heterogeneous in terms of religion, languages, castes, and thus make it difficult to carry out a study on the perceptions and practices of women's childbirth. The cultural homogeneity of the tribal population was one of the reasons for selecting the Dahod district. Unlike the Hindu population, there were no caste hierarchies. In addition it is the first district where the CY was piloted in 2005 to encourage institutional births for reduction in maternal and neonatal mortality [126]. Being an indigenous community of special interest to the government for childbirth reforms, recent developments show that women choose to go to institutions for childbirth, but 30-40% of the women still opt for homebirths [127]. This fulfilled our needs for the objective for the Paper-I.

Three blocks (i.e., administrative units below the district level) out of seven in the district were selected on the basis of their general development (i.e., infrastructure such as roads, transport, level of urbanization, health and other facilities) and geographic location. The urban block was the most developed, and the rural block was the least developed.

Under the national maternal health policy, a few PHCs are upgraded to function day and night for maternity services [128]. Each block in the Dahod district had one such day and night PHC.

Two villages from those covered by these PHCs in the selected blocks were chosen for data collection: one where the PHC was located and the other far away.

Eighty five women from 6 villages participated in 8 focus group discussions (Table-3). Three TBAs from the PHC villages and 2 Staff nurses posted in the selected day and night PHCs were interviewed in depth. In addition, field notes and chance observations of two childbirths were also used as data for the study.

4.3.2 Midwifery Scope of practice of staff nurses (Paper II)

We expected possible variations in the midwifery scope of practice of staff nurses with the size and level of specialty of health facilities. Health facilities from different levels of the government health system were purposively selected; one teaching hospital providing tertiary care, one district hospital which is also a referral hospital, and 3 CHCs which are below the district.

Twenty eight respondents (Table-3), purposively selected from the maternity sections of the hospitals, were interviewed in-depth in four phases using theoretical sampling. The respondents included staff nurses (10) posted in the labour rooms and maternity wards, general doctors (4), obstetricians (4), an obstetric student (1), a nursing student (1), principals (2), and teachers (2) from the schools of nursing attached to the selected hospitals. We also included 4 newly qualified nurse practitioners in midwifery who had taken the advanced training in midwifery.

4.3.3 Student's confidence in selected midwifery skills and associated factors (Papers III & IV)

For papers III and IV, we used the same data set. Six hundred and thirty-three final-year students responded to a questionnaire from 25 randomly selected educational institutions from the Gujarat province (Table-3). There were 134 total educational institutions at the time of the study from which 79 were excluded as they were newly established and therefore did not have students in the final year. From the remaining 55 institutions, 25 were selected and stratified by the type of programme (diploma/bachelor's) and type of ownership (Government/Private). Seventeen schools out of 38 and 8 colleges out of 17 with students in the final year were selected. The aim was to select at least 30% of the students from each stratum. Names of institutions were randomly selected until we could get at least 45% of the students from each stratum (considering the possibility of dropouts). All final-year students from these institutions were included and participated in the studies.

4.4 Data Collection Methods

4.4.1 Focus Group Discussions (Paper-I)

Focus group discussions are ideal for capturing experiences, opinions, and norm systems [119]. As the objective for Paper-I was to understand perceptions, practices/experiences, and changing norms of women related to childbirth opposed to individual childbirth experiences, FGDs were thought to be appropriate. The grounded theory approach was used for the study from the beginning, since we wanted to understand the transition in childbirth practices, which is a complex social process influenced by cultural, political, and health system factors. Some researchers are of the opinion that data from focus groups may not reflect attitudinal consensus amongst the groups or the strength of opinions, and that only theoretical generalizations — not empirical generalizations — can be made from focus group research [129]. However, many researchers have developed models using the grounded theory approach from data obtained from FGDs [119, 130, 131]. I think using a systematic methodology such as the grounded theory and utilizing multiple sources of data are strengths of Paper-I.

A team of three researchers carried out the FGDs to ensure we had a moderator, a note taker, and an observer. A thematic guide was developed for the FGDs in the vernacular and pilot tested with one group to assess if the type of questions and their sequence needed to be altered. Each focus group discussion started with taking a history of every woman, including name, age, education, number of children, age of the last child, and detail of the last birth such as the place of birth and type of birth. The initial questions were related to norms of practices when a woman is pregnant such as the following: Is she taken to a health centre, which health centres, when, why, and so on for each stage of pregnancy, childbirth, and postnatal period. The later focus groups were used to understand the transition, and its influencing factors.

We tried different ways of recruiting participants for the focus groups: through gate keepers such as the field staff of voluntary organizations in the area, the Accredited Social Health Activist appointed by the villagers under the NRHM, and the Anganwadi worker (i.e., the preschool teacher). We also tried recruiting women on the spot where we went from house to house in one lane and requested the women to participate. However, we had to involve the Anganwadi worker for permissions to use the preschool centre for the focus group discussion.

Both older and younger women participated in the focus groups; this could be considered a limitation of the methodology. It was difficult to separate the age groups because the older women were comparatively free and therefore eager to participate. Culturally the younger women are not free to talk to strangers without the presence of their elders. We found that having the older women in the group had both advantages and disadvantages. They were less shy and more confident, which stimulated better discussions; at the same time there was a potential that the voices of the younger women would be unheard. We tried to tackle these

limitations by utilising the help of an experienced moderator, who knew the local dialect and understood the group dynamics and ways to handle them.

Another limitation of the study was the difficulty in restricting the number of participants in the focus groups as women left in-between discussions and also new women joined in mid-discussion. The average group size was 7-11 women per focus group. Each focus group lasted for 1½ to 2 hours. The discussions were tape recorded and transcribed in the Gujarati language. Following an emergent design, analysis began soon after the first focus group discussions. Subsequently, transcripts were used to lead to further data collection to saturate the constructed categories [122].

4.4.2 In-depth interviews (Papers I & II)

According to Kvale and Brinkmann (2009), a semi-structured life world interview attempts to understand themes of the everyday world from the perspectives of the subjects. The qualitative interview obtains descriptions of the interviewees' lived world with respect to interpretation of the meaning of described phenomena [132]. The qualitative research interview is semi-structured; that is, it is neither an everyday open conversation, nor is it like a closed questionnaire. An interview guide that focuses on specific themes and further probing questions are used. The interviewer can decide during the interview to change the course of questioning in order to understand in depth what is emerging.

The five interviews carried out for Paper-I were to understand the childbirth practices of the TBAs (3), who have traditional knowledge through experience. On the other hand, the interviews with the staff nurses (2) helped us to understand the content of services offered in the PHC and their perspective on women's preferences. These interviews also focused on understanding how the maternal health policies at the national and provincial level have influenced their childbirth practices especially in the case of the TBAs.

An interview guide for Paper-I was developed after a few observations of division of tasks amongst doctors, staff nurses, and others in the antepartum outpatient clinics, the labour room, and the postpartum wards to determine the themes of the interviews. Staff nurses were interviewed first as they were the main focus of the study. They were asked to describe their activities during a typical day and night duty shift. We inquired about the clinical procedures they perform independently—those with doctor's assistance, and those they did not perform entirely. We also asked them to share their perceptions of the reasons behind this task division. The obstetricians and general physicians were asked about their perceptions of the role of staff nurses in the maternity sections. They were also asked about the reasons behind the current pattern of task divisions. The students, teachers, and principals of schools of nursing were included later as we found a weak link between the clinical sites of nursing students and their educational institutions. In the final round of data collection, four more interviews were carried out with the Nurse Practitioners in Midwifery, who have been trained for 11 months in

advanced midwifery after 5 years of previous experience in maternal care, and are meant to be autonomous midwives.

All interviews for Paper-II were taken at the respondent's workplace during their free time. The interviews were 45 minutes to 80 minutes long, and all were tape recorded and transcribed in Gujarati.

4.4.3 Questionnaire (Papers III & IV)

A questionnaire was specially designed for studies III and IV. The essential list of competencies for midwives given by the ICM has seven domains, with statements grouped under knowledge, basic skills, and additional skills for each domain [22]. Only the skills statements from four out of seven competency domains were included to keep the questionnaire short: antepartum, intrapartum, postpartum, and newborn care. These were reviewed by a group of six senior midwifery teachers for relevance, technical terms, and their interpretation to the Indian context. They rated each skills statement on a three point scale. The content and language of ICM was retained as far as possible. Skills, which were clearly out of the scope of nurse-midwives in India, were rated low on relevance and were removed, (e.g., 'using Doppler to monitor fetal heart rate').

The tool was translated into Gujarati and pilot tested twice both with the bachelor's (n=9) and the diploma students (n=15) to check students' understanding of statements and the response time. For instance, there were skills statements that included more than one skill, e.g., 'begin emergency measures for respiratory distress (newborn resuscitation; suctioning in case of airway obstruction), hypothermia, and hypoglycemia'. After the pilot test these were divided into three separate statements each for respiratory distress, hypothermia, and hypoglycemia.

The final tool included 19 skill statements for antepartum, 38 for intrapartum, 14 for postpartum, and 19 for newborn care. Background questions such as age, sex, religion, and qualification on admission were included. Confidence was assessed on a 4-point Likert scale ranging from 'I do not have the skill' to 'I am confident'. The question for each skill statement read as "Suppose you are posted at a rural primary health facility without a doctor, will you be able to perform this procedure independently?"

The questions related to teaching-learning processes were developed in consultation with midwifery teachers. Structured experiences for students at three learning sites were included: learning theory in the classroom, learning in the skills laboratory (i.e., observing demonstrations on manikins and practicing on manikins), learning in the clinical settings (i.e., observing practice on mothers and newborns carried out by senior nurses and doctors, supervised practice by the student herself), and total number of births attended. The question on supervision at the clinical site (i.e., a 4-point Likert scale from no supervision to good supervision) read as 'When you were practicing on the mothers and newborns, how was the supervision/guidance given to you?'

4.5 Data Analysis

4.5.1 Qualitative Analysis (I & II)

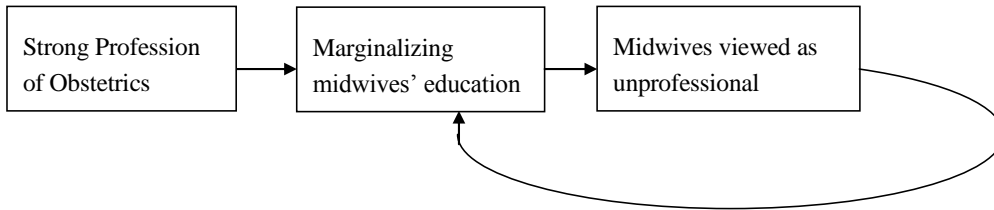
Models were constructed from the data obtained from FGDs and in depth interviews for Paper-I and II, following the grounded theory approach. The N Vivo software was used for the Paper-I and the Open code software aided analysis for Paper-II.

The technique of constant comparisons, comparing incidents, narratives, and concepts as emerging and as constructed from the data were used [121, 122]. The three distinct but interrelated and many times simultaneous-coding processes, called the open, axial and selective coding, were used. Open coding involved reading the transcripts several times word by word and line by line and labeling words or meaning units as expressed by the respondents with open codes. The codes were then labeled with more abstract concepts, and similar concepts were pooled into categories. These categories were analyzed for their properties and dimensions (Table-4).

Open codes	Categories	Properties	Dimensions
Pushing the baby down (externally) is not good	Perceptions of women about childbirth practices	Attitudes about childbirth practices	Good practices Bad practices
Pushing shortens the labour Pushing essential to save life of mother and baby	Perceptions of women about labour process	Duration of labour	Long duration Short duration
Drip (oxytocin) shortens labour If drip given only gentle push required	Cultural conceptualizations of childbirth	Nature of childbirth	Natural process versus dangerous i.e. interventions needed

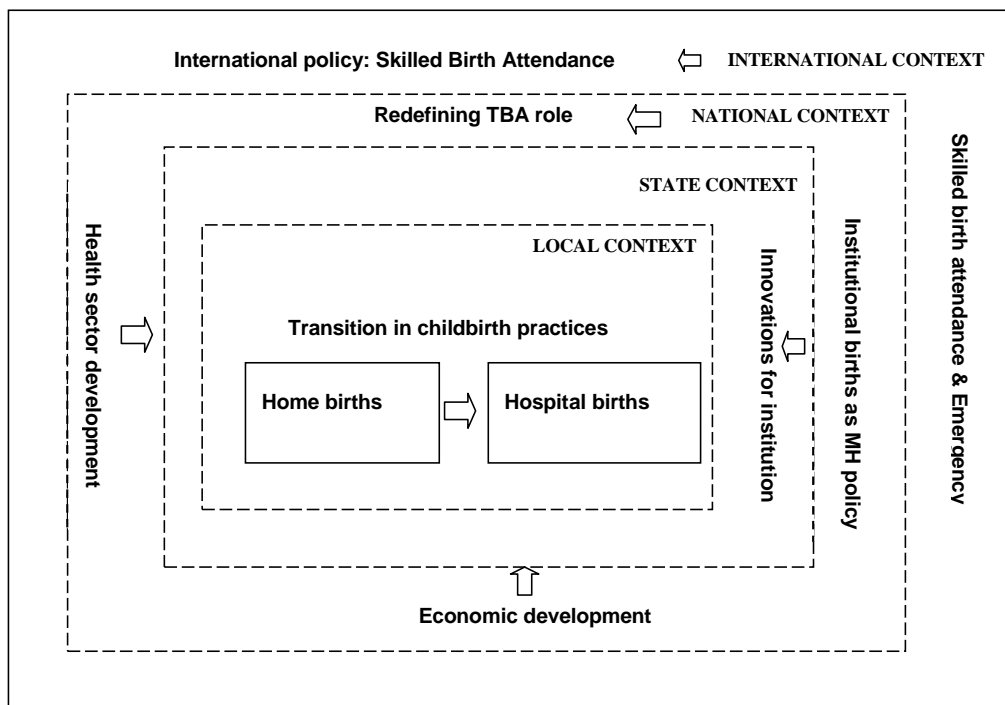
Axial coding, as developed by Strauss and Corbin (1998), involves sorting the concepts and categories and finding an *axis* amongst them, i.e., searching for connections between categories and searching for patterns [122].

Figure 6. Finding axis between categories, an example from Paper- II



For example, it was found that the obstetricians had a strong profession; the education of obstetric students was prioritized, and therefore the education of midwives was marginalized. This marginalization of midwives' education keeps reproducing the discourse of midwives as unprofessional (Figure 6).

Figure 7. Use of conditional matrix to saturate category 'Transition in Childbirth Practices', Paper-1

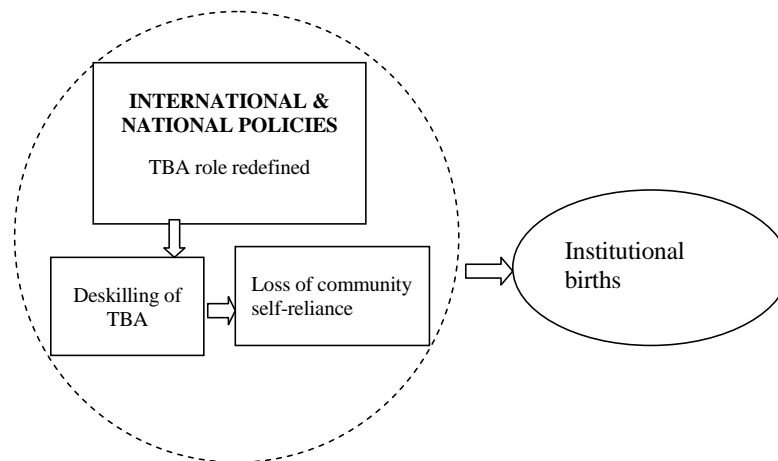


The conditional matrix helped us to analyze the global and national contexts (macro), which are furthest from the phenomena, and the organizational and local contexts (micro), which are nearer to the phenomena under study [121] (Paper-I). For example, in case of the category 'transition in childbirth practices', the conditional matrix was helpful in understanding how the international discourses for maternal health in low income countries related to skilled birth

attendance, and the role of the TBAs in saving lives of mothers and newborns, shaped the national and provincial policies on maternal health. Further, the conditional matrix helped us to understand the local effect of these national and provincial policies (local context) (Figure 7).

A process is conceptualized as an ongoing action/interaction/emotion that is in response to situations or problems; it has the purpose of reaching a goal or handling a problem and can contain a response of individuals or groups which may change as the contextual conditions change. A process can also be visualized as having sub-processes [121]. For example, three categories explained a sub-process that contributed to the transition of place of childbirth from home to institutions (Figure 8).

Figure 8. A sub-process within the process ‘transition in childbirth practices’, Paper-I



Influenced by the international discourse against TBAs, the national maternal health policy shifted from a community-based approach for intrapartum care to an exclusive health centre-based policy. The role of the TBA was redefined from a birth attendant to a facilitator for health centre births. As a consequence, she lost her skills and the community lost the choice of home births.

4.5.2 Statistical Methods (Papers III and IV)

Principal component analysis

For the analysis of associations between confidence and explanatory variables, first principal component analysis (PCA) with Oblimin rotation [133] were performed separately for the four domains of competencies to identify subscales and to reduce the number of statements.

The factorability of data was assessed through the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO), which should be above 0.6 [134], and Bartlett’s Test of Sphericity [135] to

be significant ($p \leq .05$). The Kaiser-Meyer-Olkin values were 0.92- 0.95 for the four domains (i.e., antepartum, intrapartum, postpartum, and newborn care), all exceeding the recommended value of 0.6 [21], and Bartlett's Test of Sphericity [135] reached statistical significance in all domains, supporting the sample adequacy and factorability. The number of retained subscales was guided by Kaiser's criterion (eigenvalues > 1) and Catell's scree test [136] with inspection of the scree-plot. All components with an eigenvalue >1 and statements loading above 0.40 were retained. The internal consistency reliability for each of the subscales was measured using a Cronbach's alpha coefficient [137]. An example for the newborn care domain is given in Table-5. The skills retained for each subscale are highlighted.

Three subscales were identified out of 19 statements for the domain of antepartum care. Each component explained 38%, 8%, and 7%, respectively, and 53% of the total variance. The internal consistency reliability for each subscale under antepartum care measured by Cronbach's α ranged from 0.77 to 0.84. The subscales were labeled as the following:

1. *Assess maternal and fetal health* included five skills: take antenatal history, conduct a physical examination of mother, assess understanding, and explain fetal growth and activity to the mother.
2. *Identify antepartum risks* included four skills: identify symptoms of risk, take up first-line management of high risk pregnancies based on national and local guidelines, administer lifesaving drugs, and maintain records.
3. *Provide health education to women and families* included eight skills: take maternal vital signs such as blood pressure, etc., interpret maternal vital signs, communicate with the mother about her vital signs, advise on expected delivery date, assess mothers' nutritional status, educate the mother on nutrition, guide her concerning common discomforts, and guide her for birth preparation.

The four subscales identified from 39 statements for intrapartum care explained 38%, 7%, 5%, and 4% respectively, and 53% of the total variance, and the Cronbach's α for each subscale ranged from 0.6 to 0.8. The subscales were labeled as the following:

1. *Manage and monitor the first stage of labor* included eight skills: take history and vital signs, complete a physical examination, complete a vaginal examination, monitor uterine contractions, assess them, use the partograph, identify abnormal labor patterns for taking action, and encourage normal labor.
2. *Manage the second and third stages of labor and their complications* included sixteen skills: augment and monitor labor (2 skills), perform version, administer anesthesia to the perineum, perform episiotomies and repair tears, actively manage 3rd stage of labor including use of uterotonic drugs (2 skills), give fundal massage, inspect placenta and membranes, assess for perineal and cervical lacerations and tears and take action (2

Skills under newborn care	Subscales Identified												
	Identify and treat newborn complications			Educate parents about newborn care			Initiate essential newborn care			Communities			
	Pattern coefficients	Structure coefficients	Structure coefficients	Pattern coefficients	Structure coefficients	Structure coefficients	Pattern coefficients	Structure coefficients	Structure coefficients	Pattern coefficients	Structure coefficients	Structure coefficients	Communities
Support parents during transport/transfer of newborn	-.050	.380	.847	.845	.846	.847	.051	.461	.720				
Support parents in case of loss of pregnancy, stillbirth, congenital birth defects	.014	.419	.838	.838	.846	.846	.003	.438	.716				
Assist parents to access community resources available	.041	.432	.810	.764	.810	.810	.052	.461	.660				
Document newborn diagnosis and care in registers	-.032	.355	.736	.689	.736	.736	.122	.460	.562				
Support/educate parents with multiple babies, & those with special needs	.288	.583	.774	.664	.774	.774	-.056	.415	.659				
Educate parents about normal growth & development of infant and young child	-.072	.357	.746	.651	.746	.746	.252	.553	.600				
Provide care for baby born to an HIV positive mother	.492	.676	.696	.550	.696	.696	-.178	.328	.657				
Provide routine newborn care, as per local guidelines	.296	.609	.648	.334	.648	.648	.334	.640	.610				
Begin emergency measures for hypoglycaemia	.866	.810	.322	-.072	.322	.322	-.047	.311	.664				
Begin emergency measures for respiratory distress	.777	.796	.364	-.070	.364	.364	.115	.433	.644				
Begin emergency measures for hypothermia	.727	.809	.411	-.070	.411	.411	.254	.549	.699				
Perform a screening of newborn for congenital defects	.626	.740	.501	.156	.501	.501	.086	.451	.580				
Transfer the at-risk newborn to emergency care facility	.618	.735	.546	.255	.546	.546	-.013	.398	.588				
Identify complications of low birth weight and refer	.584	.745	.570	.234	.570	.570	.107	.492	.621				
Promote/maintain normal newborn body temperature by covering, environment control, & skin-to-skin care	-.061	.362	.498	.113	.498	.498	.808	.838	.712				
Provide immediate care to newborn- cord clamping and cutting, drying, clearing airways, ensuring breathing	.199	.511	.393	.116	.393	.393	.808	.839	.733				
Position infant to initiate immediate breast feeding/support exclusive breastfeeding	-.060	.369	.601	.321	.601	.601	.602	.739	.616				
Assess immediate condition of newborn	.383	.649	.486	.006	.486	.486	.577	.755	.687				
Give appropriate care to the low birth weight baby	.099	.448	.524	.182	.524	.524	.574	.713	.549				

3. skills), manage post-partum bleeding, perform aortic compression, manually remove placenta, identify and manage shock (2 skills), and manage a timely referral.
4. *Perform routine procedures during labor* included six skills: cut and clamp cord, administer prescribed drugs as per guidelines, insert intravenous line, draw blood for the laboratory, provide an environment for mother and child bonding immediately after birth, and maintain records.
5. *Support women during labor* included five skills: provide physical and psychological support for the woman and family, promote normal birth, facilitate the presence of a birth companion, ensure hydration and nutrition of the mother during labor, and provide choices to mother during labor.

The two subscales identified from 14 statements under the domain of postpartum care explained 47.8% and 10.4% of the variance respectively, and 58% of the total variance. The Cronbach's α for each subscale for postpartum care ranged from 0.85 to 0.9. The subscales were labeled as the following:

1. *Postpartum physical examination and treatment* included six skills: perform physical examination of the mother, assess uterine involution and healing of lacerations, provide contraceptive services, detect and manage complications before referral, provide emergency treatment for late postpartum hemorrhage, and support families in case of bereavement and loss.
2. *Postpartum health education and information for parents* included seven skills: determine routine history of birth, support immediate breast feeding, educate mothers for self-care and care of the newborn at home, educate on contraception, nutrition, hygiene, signs of infections, rest, and exercises.

The three subscales identified for newborn care explained 50%, 8.6% and 6.5% of the variance respectively, and 64.5% of the total variance. The Cronbach's α for each subscale for newborn care ranged from 0.86 to 0.9. The subscales for newborn care were labeled as the following:

1. *Initiate essential newborn care* included five skills: cut and clamp cord, dry and clear airways and establish respiration, assess immediate condition of newborn, maintain body temperature (skin to skin included), care for low birth weight newborn, and initiate breastfeeding.
2. *Identify and treat newborn complications* included six skills: take emergency measures for hypothermia, hypoglycemia, and respiratory distress, take measures for complications of low birth weight and refer, screen for congenital anomalies, and refer.
3. *Educate parents about newborn care* included seven skills: educate parents about newborn care of normal and multiple newborns and those with complications, support them during separation from a sick newborn, care for the newborn of an HIV positive mother, document, and keep records.

Analysis of associated factors

The confidence responses for each subscale were summed up and dichotomized based on the 75th percentile as 'High confidence' (75th percentile or above) versus 'Not high confidence' (lower than 75th percentile). For Paper-III, crude and adjusted odds ratio with 95% confidence intervals were calculated for students with high confidence from the bachelor's and diploma programmes. The variables adjusted for were total number of births attended, type of clinical site, and ownership (private/government). The background variables were not adjusted for because of fewer variations found.

For Paper-IV, we used the same definition of 'High confidence' and 'Not high confidence' as in Paper-III. Crude odds ratios with 95% confidence intervals (CIs) were calculated separately for each explanatory variable between students with high confidence and not high confidence. Thereafter, each teaching-learning method was adjusted for type of medical site, type of ownership (private or government), and type of program (bachelor's or diploma). It was previously found that diploma students had 2-4 times greater odds for high confidence in all subscales in all four domains (Paper-III). Theory sessions and background variables were excluded from the analysis because there were fewer variations. All analysis was performed using the Statistical Package of Social Science (SPSS) Version 20 (SPSS, Inc., Chicago, USA).

4.6 Trustworthiness and Validity

Trustworthiness in qualitative research is ascertaining the believability of the findings. Several criteria such as credibility, dependability, conformability, and transferability are applied to judge the trustworthiness of qualitative research [138].

Credibility or truth value of qualitative research is the extent to which the research has been able to capture the multiple realities of the participants. Prolonged engagement with the participants, in terms of being in touch with their physical and psychological worlds, was used for Paper-I. Since the focus group discussions were carried out within a larger research project that investigated the Dahod district's capacity to make operational basic services for intrapartum care, the research team visited the district more times than required for the FGDs. During the time FGDs were conducted, the research team stayed for a couple of days in one of the villages to interact informally with the women in addition to the FGD, where we could observe a homebirth attended by a TBA.

Some weaknesses of the FGD process have been discussed in the section on data collection such as having to conduct the FGD with the older and younger women together, not being able to restrict the number of participants, and retaining the same participants from the beginning to the end of the discussion. We triangulated findings with different data sources such as in depth interviews with TBAs and staff nurses of the government PHCs and field notes.

We used triangulation, peer debriefing, and member checks to ensure the trustworthiness in Paper-II. As part of the Sida funded collaborative midwifery strengthening project, I had several opportunities to share the preliminary results with groups of staff nurses, teachers of nurse-midwives, the registrars of nursing councils, and state level officers. The findings were discussed regularly within the larger project team. I also had the opportunity to present the findings to the midwives who were participants in a workshop organized by the Karolinska Institute from the South East Asia region. They could also identify with the 'circumstance driven scope of midwifery practice' found in the Paper-II in their respective countries.

Dependability refers to how others can follow the research process that is assessed through audit trails. The audio-tapes and transcripts of the in-depth interviews and FGDs are available for scrutiny for both Papers I & II. Logbooks, detailed field notes containing methodological and analytical details of field experiences, and memos written during analysis have been organized and filed. Utilizing the Open codes software for Paper-I and NVivo for Paper-II also made it easier to document the process of analysis. Using the grounded theory methodology in itself is systematic and lends itself to dependability [122].

Conformability refers to neutrality of the data rather than the neutrality of the researcher in the case of qualitative research. The closeness of the researcher and the subject is unavoidable, but conformability ascertains that the interpretations of the world realities of study participants are not distorted due to poor analysis or researcher bias. It was not feasible to return the results of

Paper-I to the participants due to practical reasons, such as long distance and the spread of the data collection sites. We shared the results of Paper-II with two participants, one at the early stage when categories were constructed. At a later stage the model was shared with one more participant. It was easier for the participants to relate to the preliminary findings, but they found the model too abstract to understand. One can never be sure of the conformability of the results, but the process of emergent design and theoretical sampling helped compare and confirm the findings from one type of participant to another.

Transferability refers to how generalizable the findings are. In qualitative research one cannot claim geographical or population representativeness. The models provide a substantive theory in a given context that can be tested in other contexts. Therefore the characteristics of the participants, their situation, the research process, and the analytical approaches (i.e., the ‘thick descriptions’) have been provided for Papers I & II.

Validity for the quantitative part of this thesis (Papers III & IV) can be discussed in terms of the tools used. The questionnaire prepared for the study included skill statements taken from the list of midwifery competencies of the ICM [22]. The list of competencies can be considered valid as they have been prepared using the Delphi technique, where experts from 52 countries participated [139]. While designing the questionnaire, we utilised the help of six midwifery teachers from India, who examined each skill statement for its relevance to the Indian context, keeping in mind the midwifery syllabi of the diploma and bachelor’s programmes, the practice situation of the staff nurses, and the current expectations from them as reflected in the Skilled Birth Attendant guidelines of the government of India [140]. The questionnaire was translated into the vernacular language by a tutor of midwifery who also had clinical experience in hospital and community settings. Pilot testing of the questionnaire was done separately with students of the diploma and the bachelor’s programmes.

4.7 Ethical Considerations

Verbal consent was taken from all participants. They were assured complete confidentiality, and they were informed of their right to refuse participation anytime during the course of the studies. The government of Gujarat gave permissions for all the studies and informed the participating facilities and institutions for studies II, III and IV. For the first study, permissions were also taken from the district health office. The ethical clearance committee at the IIMA gave ethical clearance for the first and second studies.

5. FINDINGS

The findings of studies under this thesis are summarized under three themes: 1) Women's childbirth preferences, choices, practices, and influencing factors; 2) The scope of midwifery practice of licensed nurse-midwives and its determinants; and 3) Self-confidence of final-year students in midwifery skills and associated factors.

5.1 Women's childbirth preferences, choices, practices, and influencing factors (Paper-I)

There was a transition observed in the childbirth preferences, choices, and practices conceived as a trajectory of change over time (Figure 9). The core category 'trade-off between essential and desirable' represents the process through which the women and their families adapted and also shaped the transition. Three categories, interpreted as sub-processes (underlined> in Figure 9, contributed to this transition.

The sub-processes in Figure 9 are shown enveloped in four circles. Sub-process 1 titled 'External factors' represents the overall context of economic development and growth of the health sector. It also includes the response of national policies to the changing international discourses on maternal health as well as local impacts. Sub-process 2 titled 'from home to hospital; childbirth as a status passage' and Sub-process 3 titled 'Cultural conceptualizations of childbirth' describe the influence of socio-cultural belief systems on childbirth practices. The circles have permeable overlapping boundaries as they exist simultaneously and are inter-linked. There were several sub-categories (italicised) that explained the consequences of these sub-processes, thus contributing to the trajectory of transition.

The women from the three blocks that participated in the study could be placed at different points on the trajectory in terms of birth preferences and practices. For example, the women from the urban and semi-urban blocks could be placed on one extreme and the rural block on the other. Hospital births were planned in the urban and the semi-urban blocks. Few homebirths occurred only because there was a miscalculation of the progress of labour, leaving no time to go to the hospital. On the other hand women planned for homebirths in the rural block.

The statistics from the district health office for 2010-11 showed 93% births in institutions, out of which 81% were in private institutions for the entire Dahod district (unvalidated). Forty-five percent of the births in private institutions occurred in the CY-enrolled private facilities, which were free. For the remaining 55% of the births, we assume the families must have paid out-of-pocket. Whereas in the rural block 56% of the births were at home attended by the TBA, 5% were performed in any of the government facilities including the PHC, and 39% in the private facilities.

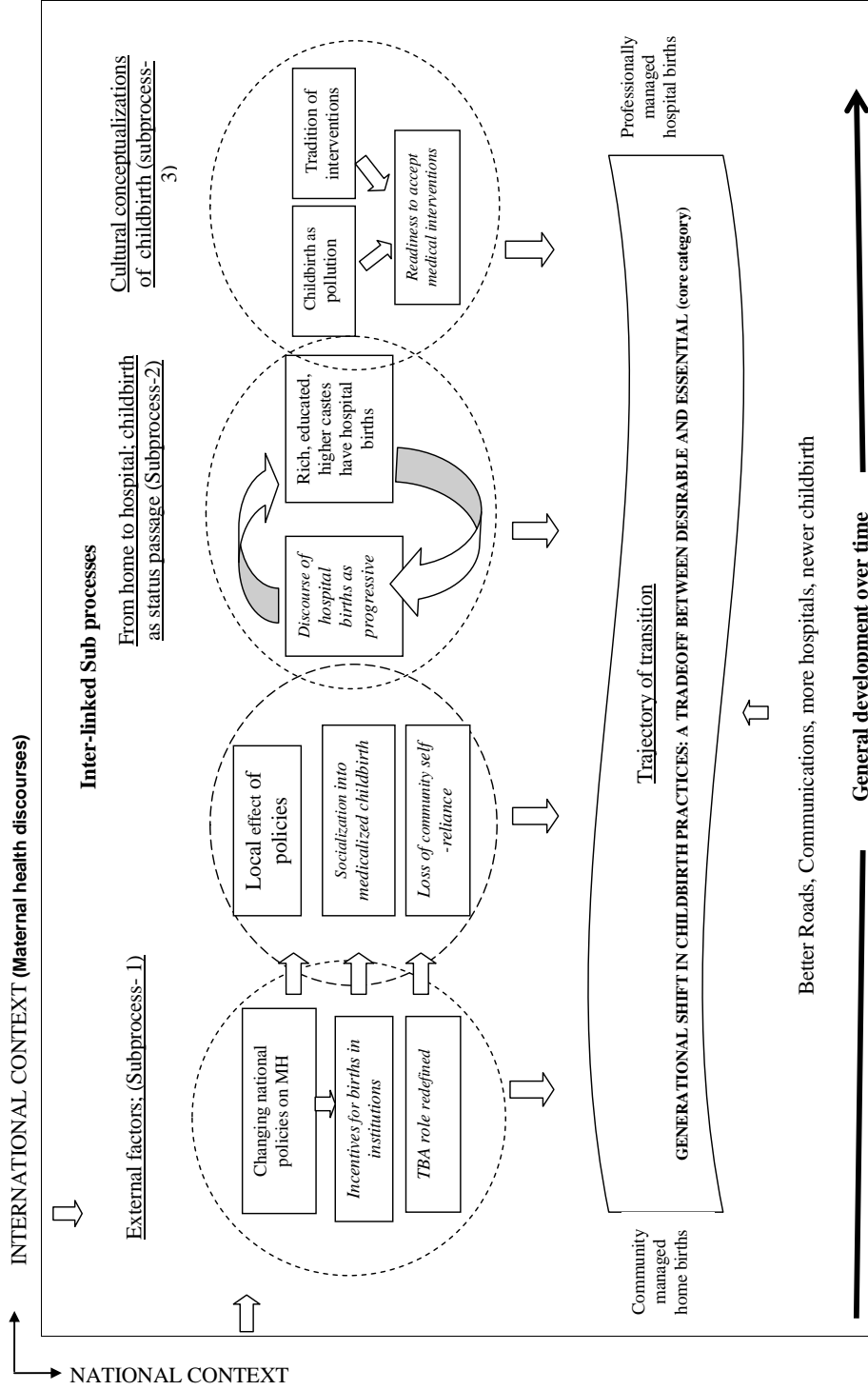


Figure 9. Transition of childbirth practices-a model

The 'desirable' in the core category 'A tradeoff between desirable versus essential' was the comfort of being in the midst of family, friends, and neighbours during labour and being attended to by a known TBA. The 'essential' was forgoing these comforts and accepting the negative aspects of hospital births for the sake of expert services, better equipment and infrastructure in hospitals, and prompt action to deal with complications that could save the lives of the mother and the baby. The negative aspects of hospital births were many. Hospitals had unfamiliar surroundings and unknown attendants. At times the behavior of the staff was not courteous. With the acceptance of hospital births, there was also acceptance of medical interventions, though partial, as discussed later in this section.

5.1.1 Subprocess-1: External factors

The *external factors* included general development and growth in the public and private health sectors in India. The inequitable distribution of general development and access to western style health facilities influenced the choices of women for childbirth services.

For instance, in the case of the rural block — both hilly and remote — the facilities for transport were poor (i.e., roads and public transport). The government health facilities were not functional, as it was difficult to recruit staff. Out of fourteen private health centres enrolled under the CY, only 2 were located in this block. The only choice for women in this block was homebirths by the TBA.

The sub-process *external factors* also included the influence of changing national maternal health policies in response to the international discourses for maternal and newborn survival (Figure 9), as discussed in the background section of this thesis. There were two influences of the external factors identified as two categories: 'socialization of women into medical childbirth practices' and 'redefinition of the role of the TBA' (Figure 9). In spite of the skewed distribution and low performance, the public health system through its PHCs and the Sub-centres has been successful in giving preventive services such as child immunizations and antenatal care. The antenatal clinics served as contact points for women and the health system, and exposed them to western biomedical childbirth concepts and practices. This socialized them into western medical care, and thus contributed to their acceptance of hospital births. The current incentive policies in the form of JSY and CY coupled with the emergency transport system have further helped women to overcome the barriers of cost of services and transport to access maternity care services.

As a consequence of the role redefinition of TBAs, the training of TBAs and distribution of safe delivery kits for clean homebirths have been discontinued. Instead, they have been co-opted by the government as partners to promote hospital births. Since the TBAs have been deskilled, the communities have lost their self-reliance for childbirth (Figure 9). Owing to the strict implementation of the exclusive policy for hospital births, the women from the rural block were being forced to choose hospital births. The TBAs were given incentives that were higher than

the fees they received from families to attend homebirths, if they brought the women to the hospitals. They were threatened punishment if they attended homebirths.

5.1.2 Sub-processes 2 and 3: Cultural influences on childbirth practices

The other two sub-processes that contributed to the move towards institutional births represent socio-cultural influences that shaped the transition (Figure 9). The sub-process '*From home to hospital childbirth as a status passage*' borrows from the concept of status passage put forth by Glaser (2010). Status passages occur in societies and refer to a journey or mobility from one social status to another that may be desired or undesired by the passagee and may be either individual or collective [141]. The women perceived that having hospital births was progressive and a part of their conception of modernity; they saw it as changing and moving with the times. The educated, upper caste and rich women had hospital births, reinforcing this discourse. To be able to afford a private facility for birth was considered as adding to their status of being progressive and modern.

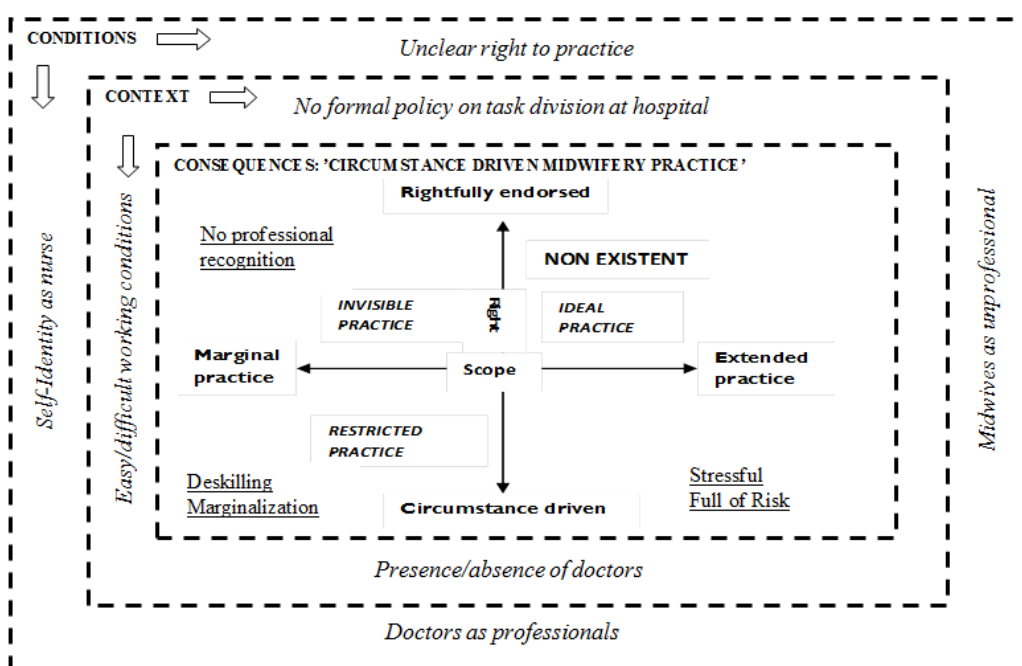
The cultural understanding of the nature of the labour process, its duration, and the connections in the minds of women about the intensity of pain/contraction and speed of birth shaped their care-seeking behaviors. Two concepts — 'childbirth as pollution' and 'tradition of interventions in childbirth' — were part of this sub-process (Figure 9). Describing the features of a hospital birth, the participating women always included cleaning after birth as one advantage of going to hospitals. The women in the urban and semi-urban blocks seemed to be happy to shift the pollution to the hospital.

The women also felt the need for intervention to speed up the birth and reduce the labour time. Giving external fundal pressure to push the baby out and expel the placenta after birth was practiced both at home by the TBA and by the hospital staff in hospitals. The women were aware of the negative consequences of external fundal pressure but still felt it necessary. The women also linked the intensity of pain with the speed of dilatation and therefore the duration of labour. In their minds if oxytocin is given to 'increase pains', then one does not need to give external fundal pressure, or one only needs to give a 'gentle push'. We found augmenting labour was practiced routinely in the government hospitals. This attracted the women to hospitals. The acceptance of the medical model of childbirth was partial though as the women wanted to avoid routine episiotomies and caesarean births.

5.2 Midwifery scope of practice of staff nurses (Paper-II)

The midwifery practice of staff nurses, as described in Paper-II, is specific to Gujarat/India and not as defined by the ICM [22]. There are seven domains of midwifery competencies given by the ICM [22]. In the present study, the scope of midwifery practice of staff nurses only includes the domains of antepartum, intrapartum, newborn, and postpartum care.

Figure 10. Midwifery scope of practice of staff nurses, conditions, context and consequences



The paradigm model developed by Strauss and Corbin (1998) helped us to analyse the context of midwifery scope of practice, the causal conditions, the actions/interaction strategies taken by the staff nurses, and the consequences of these actions. We developed a model that described the scope of midwifery practice of staff nurses using the paradigm model [122]. The innermost square of Figure 10 represents the consequences of the context (the second square) and the conditions (the outermost square) of midwifery practice as interpreted from the in-depth interviews of the study participants. The midwifery practice of staff nurses was 'Circumstance driven midwifery practice', identified as the core category and is presented in the innermost square of Figure 10. The circumstance driven midwifery practice was further interpreted as having two dimensions or continuums: the scope of practice that ranged from marginal to extended practice, and the degree of right to practice that ranged from circumstance driven to rightfully endorsed practice.

Table 6. Division of tasks for maternity care amongst doctors and staff nurses at different levels of government health facilities	
Type of facility	Division for maternity care/scope of midwifery practice of staff nurses
Community health centres <i>Compelled practice</i>	<ul style="list-style-type: none"> • Antepartum care by GP/Ob-Gyn with assistance of staff nurses • Antepartum care by staff nurses if GP/Ob-Gyn unavailable • Normal labour attended by staff nurses , including minor complications (Repair tears, episiotomies) • Immediate newborn care and postpartum care by staff nurses
District hospital <i>Restricted practice</i>	<ul style="list-style-type: none"> • Antepartum care by GP/Ob-Gyn with assistance of staff nurses • Normal labour attended by staff nurses with assistance of GP/Ob-Gyn • Minor complications in the night handled by staff nurses or if doctors unavailable • Immediate newborn care by staff nurses • Postpartum care by staff nurses under supervision of GP/Ob-Gyn
Teaching hospital <i>Marginal practice</i>	<ul style="list-style-type: none"> • Antepartum care by Ob-Gyn with assistance of staff nurses and obstetric students • Normal labour attended by obstetric students with assistance of staff nurses and nursing students • Complicated births attended by Ob-Gyn with assistance of obstetric students • Immediate newborn care by staff nurses with assistance of nursing students • Postpartum care by obstetric students under supervision of Ob-Gyn and with assistance of staff nurses

The ‘scope of practice’ in this study is defined by the clinical procedures the staff nurses were allowed to perform independently in the antepartum outpatient clinics, the labour rooms, and the postpartum wards (Table 6). An ‘extended practice’ meant attending normal labour, including managing the third stage of labour, immediate newborn care, and postpartum care. They also attended to minor complications through clinical procedures such as episiotomies or suturing tears. A ‘marginal practice’ meant preparing women for birth, helping them to change into hospital clothes, giving enema, shaving perineum, giving the lithotomic position, and assisting the doctor in managing normal and complicated labour. Newborn care was still within the scope of practice of the staff nurses even in the case of ‘marginal practice’.

The midwifery practice of the same staff nurses could change depending on their place of work and the contextual conditions. The situations led to three types of midwifery practice of staff nurses described by the following categories: *compelled practice*, *restricted practice*, and *invisible practice*. Staff nurses with an ‘invisible practice’ were those who had undergone an 11 month additional diploma in midwifery after their basic registration as RN & RM. The fourth category ‘ideal practice’ is non-existent; it is an ideal still to be achieved. The permeable boundaries in Figure 10 show the interconnectedness of the conditions, the context, and the consequences that influence and are influenced by each other.

5.2.1 Context

Context is defined, according to the paradigm model, as specific sets or patterns of conditions in which action/interaction strategies were taken by the staff nurses. As seen in Figure 10, in the middle square three categories describe the conditions that influence midwifery practice: 'easy/difficult working conditions', 'presence/absence of doctors', and 'light/heavy workload'. The contexts were different for the types of midwifery practice identified.

In settings where staff nurses assumed '*compelled practice*', their practice was extended but legally unendorsed and undertaken due to working conditions and could also involve taking on complex clinical procedures. The working conditions included the following: unavailability of doctors, poor referral support, high workload, and poor high risk women as clients. The staff nurses faced staff shortages and also performed nursing duties.

A '*restricted practice*' could range from marginal (i.e., little role in direct care) to restricted (i.e., extended role under instructions of the doctor) (inner square of Figure 10). Both restricted and marginal practice were low on legal endorsement. The staff nurses with restricted practice had good backup support in terms of doctors on call and referral linkages for complications. The scope of practice of staff nurses in the case of '*restricted practice*' was restricted during the day when the doctor was available and extended during the night (Table 6). The staff nurses were team members led by the doctors. The doctors made decisions and were held accountable for patient outcomes.

A '*marginal practice*' was observed in a medical college hospital that was large, complex, and contained hierarchical management structures. There were several units of obstetrics that were headed by Ob-Gyn professors and their assistants and 500 staff nurses that worked in the hospital. Here there were clear lines of task division. The senior staff nurses managed the supplies and maintained records in registers, while the junior staff nurses and the nursing students assisted the doctors in attending women for both normal and complicated labour. With less hands (i.e., vacant positions) and inadequate supplies, some staff nurses were forced to constantly prepare gloves and delivery sets.

This was a clinical training site for both undergraduate and postgraduate medical and nursing students. In spite of high caseloads (i.e., 4,000 births per year) the obstetric students attended all births. Those nursing students who wanted to learn had to negotiate with medical students or learn during the night. The clinical experience of students in midwifery was not strictly monitored by their schools. Their tutors had little control over the clinical sites as they did not practice themselves, unlike the professors of obstetrics who had both clinical and academic responsibilities. The senior staff nurses, who supervised the nursing students, were busy and not trained to be clinical teachers.

An '*invisible practice*' was assumed by the staff nurses with advanced midwifery training (inner square, Figure 10). They had more right to practice compared to the other staff nurses because the course is implemented by the government. In spite of higher endorsement, the scope of practice of these specialized midwives ranged from marginal to extended adapting to their context just like the other staff nurses. However because of their improved competence, their work was recognized but not fully, as they do not have the post of a midwife nor the right to take full responsibility of the mother and baby.

5.2.2 Conditions

Conditions are defined as broad, general events that bear upon the actions and interactions of the actors experiencing the phenomena [122], which in this case were the staff nurses practicing midwifery. The categories given in the outer most square of Figure 10, describe the conditions that determined the midwifery practice of staff nurses.

Unclear legal right

It is unclear as per the Indian Nursing Council Act whether midwives can practice independently. Their practice seems to be illegal through judicial interpretation or statutory inference, but it is not specifically prohibited from practice. The participants from educational institutions assumed they were preparing midwives to attend to normal low risk childbirth, independently, whereas the staff nurses and the doctors working in health facilities were unclear. The federal and the provincial governments also have not clarified the role/task division of various medical professionals. None of the respondents had a written job description at the time of joining duties. No employing facility had written service protocols that defined the role division between different professionals.

Self-identity

Midwifery was not always the first choice for the staff nurses. Identity formation was difficult as they were considered generalists who could fill in wherever required. The staff nurses were transferred to any department during their service period. Identifying themselves as nurses put them under the supervision of clinicians.

The staff nurses who had taken the 11 month course in midwifery had higher competence and confidence. They identified themselves as midwives more clearly. They expressed demands for change in policies to be able to practice safely and be accountable. For instance, they demanded a need for the right to admit, refer, and discharge mothers, and to screen mothers through antenatal care for timely referral on their own responsibility.

5.2.3 Action/interaction strategies and consequences

Action/interaction strategies are defined as purposeful or deliberate acts or absence of strategies designed to resolve problems that shape the phenomenon. Resulting from the action/interaction strategies, the consequences could be related to people, places, things, actual, or potential events in the present or future [122].

As a consequence of lack of legal clarity for midwifery practice and the lack of clear role divisions amongst colleagues for maternal care, the staff nurses were easily controlled by the doctors who enjoyed their higher professional status. The doctors used risk of adverse outcomes to restrain midwifery practice of staff nurses. Since the staff nurses do not have a collective identity as midwives, they seemed not to feel the need to assert for a wider space in maternity care. The staff nurses wanted to save themselves from blame; consequently, their midwifery practice was malleable, molding itself to their local work contexts.

For those staff nurses with extended practice, their practice was stressful as it was perceived as not legal and risky. In case of restricted practice, the skills of the staff nurses were wasted with a danger of deskilling. In the clinical sites of teaching hospitals, the education of midwifery students was marginalized. The staff nurses with advanced training in midwifery that assumed 'invisible practice' could utilize their advanced competence. However they did not have the professional designation and the legal protection that would provide a clear boundary of practice, professional rights, and protection to the mothers and newborns. One could see the beginning of a discourse amongst the advance midwives on the meaning and scope of midwifery as practiced specifically by midwives and not other professionals. However they found it difficult to act from their current position in the power hierarchy of the hospitals.

5.3 Confidence of midwifery students and associated factors (Papers III & IV)

Four competency domains from the list of essential competencies for midwives by the ICM were used as a benchmark to assess confidence of students: antepartum, intrapartum, postpartum and newborn care. The students assessed their confidence on skills statements for each domain on a questionnaire.

5.3.1 Participants and background

Ninety-eight percent of the students from the selected institutions participated; 2% were absent on the day of data collection. From the total 1,525 final-year students available in the province at the time of data collection, we could cover 633 (41%), and at least 30% from each stratum (Table 7). The variations in proportions of students selected from each stratum reflect the variations found in class size ranging from 15 to 65.

Table-7. Sample distribution across all categories of institutions							
Type of Institution		Diploma Students		Bachelor's Students		Total	
		Selected/Available		Selected/Available		Selected/Available	
		n/N	%	n/N	%	n/N	%
Government	Attached to teaching hospital	143/312	45.8	85/185	45.9	228/497	45.9
	Attached to district hospital	80/235	34.0	0	0	80/235	34.0
Private	With own hospital	73/239	30.5	87/115	75.7	160/354	45.2
	Without own hospital	68/134	50.7	97/305	31.8	165/439	37.6
Grand Total		364/920	39.6	269/605	44.5	633/1525	41.5

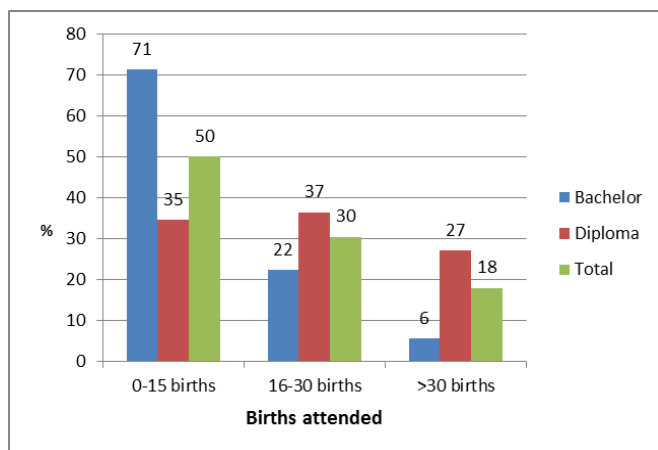
Because the size and workload of clinical sites could influence confidence of students, we also considered this variable during analysis. The bachelor's programmes have multi-speciality teaching hospitals and the diploma programmes have either district hospitals or teaching hospitals for clinical practice of students. The private institutions could either have their own hospital or pay the government hospitals for clinical practice, which in the majority of the cases are teaching hospitals with high maternity workloads. We obtained between 35-45% of students from all types of medical sites (Table 7).

The median age of the students was 21 years ranging from 20 to 23 years; 93% were females; 92% were unmarried; and 91% were Hindus. Sixty-four percent of students said nursing education was their first choice, while 8% preferred to work as midwives after their graduation.

5.3.2 Teaching-learning methods practiced (Paper-IV)

A majority of the students (50%) reported attending 0-15 births, 30% reported attending between 16-30 births, and 18% reported attending more than 30 births (Figure 11). The requirements for students who attend the bachelor's program must attend 20 normal births and those in the diploma program must observe 15 normal births and attend 20 independent births. Twenty-six percent of the diploma students and 15% of the bachelor's students reported attending the required number of births for registration.

Figure-11. Total number of births attended by type of programme



Teaching-learning methods were analysed separately for each subscale identified for the four selected domains (Paper-IV). The students reported sessions or lectures in the classroom as the most frequently practiced method, followed by practice on manikins and demonstrations in the skills laboratory. All the methods were practiced more frequently in the diploma program than the bachelor’s program. Fewer bachelor’s students (38-85%) compared to diploma students (82-95%) were satisfied with supervision during clinical practice.

5.3.3 Confidence compared against ICM competencies (Paper-III)

For the domain of antepartum care, almost 40% of the students were below the 50th percentile of confidence (Figure 12) in all subscales, while between 23-28% were above the 75th percentile defined as high confidence in this study. More diploma students had high confidence compared to bachelor’s students.

A little less than 50% of the students were below the 50th percentile for ‘manage/monitor the first stage of labour’ and ‘manage the 2nd and 3rd stage of labour’ (Figure 13). The students from both programmes had low confidence in a majority of the intrapartum skills, some of which were very basic skills.

For instance, 61% of the bachelor’s and 25% of the diploma students either did not know or needed a lot of practice in performing a pelvic examination. Also, 44% of the bachelor’s and 26% of the diploma students said they did not know or needed a lot of practice in calculating the time of uterine contractions. Similarly 55% of the bachelor’s and 24% of the diploma students said they did not know or needed a lot of practice in assessing the effectiveness of uterine contractions. A similar pattern was also observed for the subscales of postpartum and newborn care (Figures 14-15) (Paper-III).

Figure 12. Confidence of all students in subscales for antepartum care by percentiles

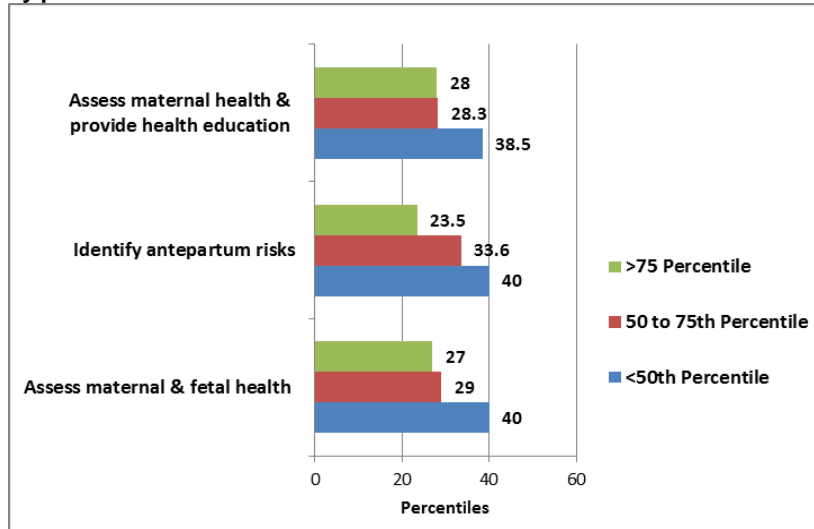


Figure 13. Confidence of all students in subscales for intrapartum care by percentiles



Figure 14. Confidence of all students in subscales for postpartum care by percentiles

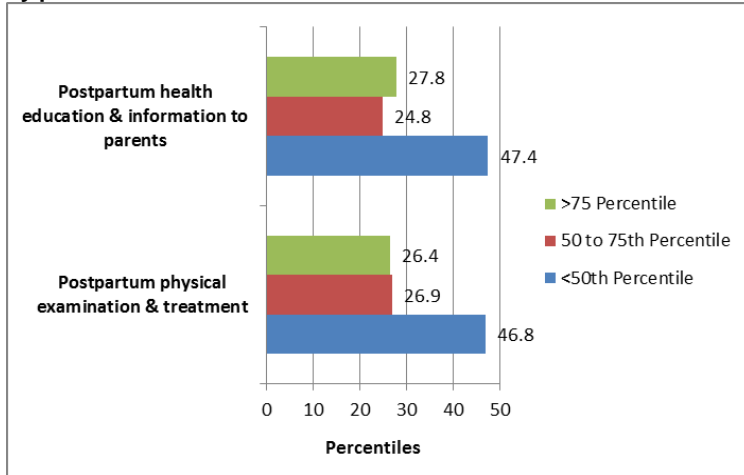
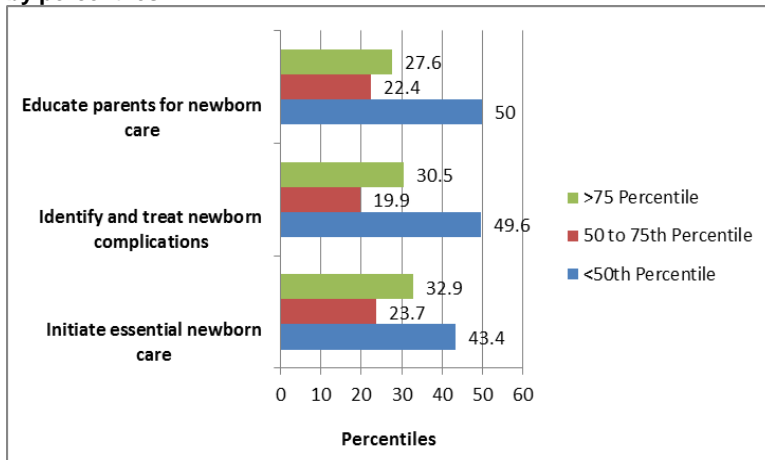


Figure 15. Confidence of all students in subscales for newborn care by percentiles



5.3.4 High confidence and associated factors (Papers III & IV)

The diploma students were 1.5 to 4 times more likely to have high confidence ($\geq 75^{\text{th}}$ percentile) in all subscales for antepartum, intrapartum, postpartum, and newborn care compared to the bachelor's students (Paper-III). High confidence in all subscales was associated with number of births attended, practice on manikins, and being satisfied with supervision during clinical practice (Paper-IV).

6. DISCUSSION

The aim of this thesis was to describe the scope of practice of staff nurses who practiced midwifery. It also aimed to assess the confidence of midwifery students in core midwifery skills. At the same time the thesis describes the choices, perceptions, and practices of women related to childbirth in the province of Gujarat. The findings of the four papers contained in this thesis are discussed within the conceptual framework described in earlier sections.

6.1 Women's childbirth preferences, choices, and practices

The first paper in this thesis described a transition in childbirth practices amongst the women from a tribal community. The tribal communities have an agrarian economy, are poor, and have the worst health indicators as described in the background section of this thesis. There was a change in the place of birth, from home to hospital, and therefore a change from a lay midwife attending births to nurses and doctors. Yet this change was a tradeoff between desirable (i.e. secure surroundings) and essential (i.e. survival) rather than full acceptance. The transition in childbirth practices was a result of many simultaneous and interlinked sub-processes. External factors, including general socio-economic development and growth of the health sector, made western style medical services for childbirth accessible to women. The international discourses on maternal health and the subtly coercive state policies for childbirth reforms further facilitated the transition.

In India childbirth reforms were introduced in the colonial period as part of general reproductive reforms and focused on the birth setting and the birth attendant [60, 82]. The many forms of state interventions to reform childbirth practices have led to a 'socialization' of women into western childbirth practices. For example antenatal clinics are points of influence where women get exposed to medical concepts of childbirth, and they help facilitate the move to health centre births. Other studies have also traced pathways from antenatal care to health centre births [142, 143].

Paper-I also describes how communities have lost their self-reliance for managing childbirth. This is because the TBA was disempowered and deskilled. There were cultural conceptualizations of childbirth that facilitated the acceptance of new technologies offered in health centres. Further, hospital births were perceived as a status passage or an upward social mobility.

6.1.1 The birth setting

The shift from one institutional site (the family and the midwife) to another institutional site (hospital as a site) symbolizes a shift in the systems of knowledge about the body in general and women's reproductive bodies in particular [144]. Births in hospitals are viewed as a part of the process of medicalization of childbirth, which is a global phenomenon [145]. Even in countries such as Netherlands, where home births by midwives has been its distinguishing feature, the

rate of home births have declined from 34% in 1996 to 23% in 2010 [146, 147]. The medicalization of childbirth is viewed with different perspectives though.

Within mainstream discourses, a medicalized childbirth is hailed as a sign of economic, social, and medical progress and an indicator of safe childbirth practices [5, 9, 12]. On the other hand, hospitals are viewed as violating the autonomy of women by feminist critics [148, 149], because they are controlled by doctors of which the majority are males. Hospitals are synonymous with advanced technologies, monitored pregnancies, and specialist intervention, and are sometimes viewed as dehumanizing births [150]. Conversely, home births are associated with fewer maternal interventions, less maternal morbidity, and with similar perinatal mortality rates as hospital births, but with significantly elevated neonatal mortality [151].

In the context of low and middle income countries, the priority is reduction in high maternal and neonatal mortality. This debate around place of birth is like romanticizing home births when the homes of the poor women may not even have an adequate supply of water. Poor support for transport and functioning health facilities to handle unexpected emergencies is reason enough for women to choose hospitals [152].

Choosing the place of birth is a complex decision influenced by many factors. The economic status of the family [153], physical barriers to access in terms of availability of health centres, transport [154], and the women's autonomy and status in the family [57] are some of such factors. Studies in other states of India have shown that it is possible to prevent maternal deaths in spite of sizable home births. What is needed is an assured choice of a low cost and a functional referral hospital or insurance to cover the cost of treatment for emergencies [155].

In Paper-I, women saw the incentive schemes introduced by the government as beneficial, attracting them to health centres for childbirth services. However, there are mixed results on the effects of incentive schemes. The government strategies such as the CY and JSY have been found to increase institutional births [156], but they do not effectively target high risk women and ensure EmOC. Consequently they may have limited impact on mortality rates [157-160].

6.1.2 The birth attendant

There is in equitable distribution of general development and the public and private health facilities across India favouring the urban areas [41, 44]. A similar pattern was observed in the rural block that was the least developed economically (Paper-I). This rural block therefore had fewer health centres. The TBA was the only care provider.

The TBAs serve the socially, economically, and geographically marginalized communities as also seen in the present study. The coverage evaluation survey in 2009-10 shows 23% of the total births were attended by TBAs or relatives and a higher proportion of about 27% in rural areas [111].

The TBAs are readily available because they live in the community, and they are acceptable because they share the cultural beliefs of the women. They provide affordable services and generally have the trust of the community [58, 161]. The discourses against TBAs began in British India, and projected them as 'dangerous' because of their unhygienic practices [60, 61]. These discourses, according to some researchers, highlighted extreme cases of mishandled complications and overshadowed the positive aspects of TBAs [60, 61, 162]. The arguments against TBAs which are not unfounded include the delays in the referrals, for instance, in case of excessive postpartum bleeding that can cause serious harm to mothers and babies [163, 164].

The Cochrane meta-analysis used to assess the effectiveness of TBA training was inconclusive about its effectiveness to reduce maternal deaths, but it was positive about training effectiveness in saving newborn lives [165]. Many argue that the few evaluations focused on TBA training are from a bio-medical perspective and therefore disregard other indigenous birthing care systems [166]. The TBA training was found to be alienating and disrespectful to the TBAs [167]. TBAs were trained only briefly and then left unsupervised, often without links to a referral system [168].

The government has withdrawn all interventions to support TBAs in India. The women from the rural block were extremely poor, lived in difficult geographic surroundings, and the government health facilities in this block were not functional (Paper-I). Taking away the choice of the TBA in underserved areas such as the rural block without offering culturally and practically acceptable alternatives is according to me, doing injustice to women.

6.1.3 Hospital births as a status passage

Pregnancy and birth have been explored from culturally comparative perspectives by many anthropologists that call for a 'bio-social' analysis [86, 145]. Although the topic of childbirth is physiological, the language is cultural [86]. Anthropologists also argue that reproduction provides an environment for people to conceive new cultural futures and reorganize and re-conceptualize their world [81, 86]. Donner (2003), investigating childbearing and kinship in middle class women in eastern India, concluded that middle class women perceived state-of-the-art medical treatment as part of their rights and privileges [169]. A study in southern India exploring the impact of modernity on practices of childbirth concluded that bio-medical childbirth was accepted by poor women in Tamilnadu as 'a culture in the making' [167]. Childbirth reforms in the form of hospital births were conceived by the women as progressive and moving with the times, as described in Paper-I. The lower status of women in the patriarchal society in India could be the underlying reason why Indian women perceive medical interventions as a privilege. Getting the best medical treatment that includes hospital births, or perhaps a private hospital where the family spends money, probably makes them feel valued and taken care of.

6.1.4 Cultural influences

As described in Paper-I, three cultural concepts related to childbirth contributed to the transition. The women were anxious to shorten the labour period. Therefore the practice of applying external fundal pressure was prevalent. Women associated the intensity of labour pains/contractions to the speed of dilatation. The third cultural belief was that the childbirth process is polluting.

Applying external fundal pressure to push the baby out and expel the placenta has been a practice in India since many centuries it seems; discourses against this practice can be traced to colonial times [60]. A recent study in the Rajasthan province showed that this practice of external pressure is practiced both in cases of home births by the TBA and also by professionals who were present during home births. It is practiced also in the health centres by doctors and nurses [170].

The belief that the intensity of pain/contractions is directly related to the speed of dilatation as seen in Paper-I was also found by Van Hollen (2003) in Tamilnadu [167]. Because of this association, the women demanded the oxytocin drip to increase contractions and pains. Both these practices of applying external fundal pressure and the demand to increase pain/contraction have facilitated the acceptance of labour augmentation through oxytocin. This practice is a part of the women's perceptions of 'good' delivery. The demand for the drip in the first stage of labour to hasten progress has been confirmed by several studies in India [167, 171-173]. This is also true for Sri Lanka [174]. The women are not aware of the consequences of the abuse of labour augmentation, so why are the health facilities giving into the demands of the women? Some argue that it could be an unconscious effort of the hospital staff to control the crowd [167, 175]. I have not come across any studies in India that assess the maternal and newborn outcomes of such unmonitored use of labour augmentation. There is evidence that high dosages create hyper-stimulation, which can lead to precipitate labour, perineal tears, uterine rupture, and fetal distress [176].

Notions of purity and impurity are key concepts in most religions. They are the fundamental logic on which castes are organized in the Hindu religion. In the case of women, the period of menstruation and a certain period after childbirth are considered polluting or times of impurity in the Hindu religion and also the Buddhist religion [177]. The perception of childbirth as pollution has also facilitated the move to health centres for birth because then the pollution is shifted to the hospital, as discussed in Paper-I.

6.2 Midwifery: Scope of practice and education

The nursing and midwifery professions have grown in India in terms of the capacity to train and license midwives and nurses, and the capacity to utilize their skills for the vast health infrastructure established in India. Yet the findings from Papers II, III and IV point towards a weak regulation of these professions.

A quality midwifery workforce is determined by midwifery education programmes, regulatory frameworks, and association development [30]. The prime objective of a regulatory framework is to protect women and families by ensuring that safe and competent midwives provide high quality of care to all women and babies [178]. According to the ICM, one of the functions of regulation is to define the scope of practice. Designing and facilitating the implementation of pre-registration midwifery education, licensing, and ensuring continuing competence is also the function of regulation. Another important function of regulation is to determine the code of conduct and address complaints. The findings of Papers II, III, and IV are discussed using this regulatory framework put forward by ICM.

6.2.1 Midwifery regulation

The midwifery scope of practice of staff nurses as found in Paper-II was ‘circumstance driven’ and ranged from extended to marginal practice. The root cause is a lack of a midwifery-specific national regulatory framework. There does not exist a separate legislation, a council, or a section within the Indian Nursing Council for midwifery. The INC provides for representation of one midwife from each province, but these are the Auxiliary Nurse Midwives (ANM) who may not have the power and voice to represent the cause of midwifery. They are considered low in the management hierarchy of the health system.

The INC’s role has been to standardise curricula for basic pre-service education, master’s education and various postgraduate diplomas. The INC certifies educational institutions based on norms such as infrastructure and staffing. The respective State Nursing Councils also certify educational institutions and register and license nurses and midwives for their province. The role of the INC/State Nursing Councils has not expanded to regulating practice. There are limitations in human resources and infrastructure to take on this responsibility. The councils are established by the governments, receive government funds, and have government officials as ex-officio members which undermines their autonomy [71]. Re-licensing has been introduced by the councils recently, but it is not linked with continuing education.

It is unclear according to the INC Act [70] whether midwives are autonomous, though nowhere are they denied to practice. In an attempt to revise byelaws for midwifery the Gujarat Nursing Council realised there were several other non-midwifery legislations that needed to be aligned with the midwifery legislation. These included the Drugs Act (for permission to prescribe drugs and laboratory tests), the Medical Practitioners Act (for accountability of outcomes), the

Clinical Establishment Act (in case she wants to have solo practice), and the Consumer Protection Act (to ensure safe practice).

There is no title of a midwife that is independent of nursing in India. Both nursing and midwifery titles are not protected, as indicated by the fact that the large private sector trains lay women to perform nursing and midwifery functions.

6.2.2 Defining the scope of midwifery practice

The profession should determine its own scope of practice rather than employers, government, other health professions, or other commercial interests [178]. As seen in Paper-II, the midwifery scope of practice of staff nurses was defined by many actors. The educational institutions were under the impression that they were developing competence of students to attend normal labour independently, whereas the employers and the staff nurses themselves were unclear. Explicit task division policies between doctors and staff nurses were not found in the hospital sites for Paper-II, which explained the elasticity of midwifery scope of practice of staff nurses. Also, the staff nurses did not have any job description handed to them at the time of joining duty.

The definition of scope of midwifery practice must be founded on the basic principles and values directing the profession [178]. The syllabi documents for both the diploma and the bachelor's programmes and the code of ethics given by the INC have nothing specific to midwifery.

6.3 Midwifery pre-service education

Providing pre-service or pre-registration midwifery education is also a function of regulatory bodies [178]. The aim of Paper-III was to assess the confidence of final-year students in selected midwifery skills from four out of the seven domains listed by the ICM as 'essential competencies' for midwives [22]. The selected domains were antepartum, intrapartum, newborn, and postpartum care. The study included the diploma programme for general nursing and midwifery and the bachelor's programme, as these two were the nearest to the ICM recommendations for pre-registration midwifery education essential for midwives.

Though the midwifery scope of practice as found in Paper-II was circumstance driven, it cannot be denied that they were important members of the maternal care team. Some of the staff nurses served the most marginalized women in extremely difficult circumstances. The GoI considers them to be SBAs and considers them to be capable of attending to normal pregnancy, childbirth, and postpartum care services independently [45]. As described in the background section of this thesis, the in-service training for a 2-3 week duration aims to prepare them to recognize obstetric and newborn emergencies and to provide first-level care before referring to higher level facilities [55]. Therefore the pre-service midwifery education is assumed to, or is expected to, prepare students for at least attending to normal antepartum, intrapartum, newborn, and postpartum care, independently.

It follows then that the students need to develop high levels of confidence in their personal ability. They need to be aware of their personal limitations and the need to ask for appropriate help [179]. This is more so when they are expected to assist women in difficult circumstances with limited resources at their disposal.

Butler et al. (2006) identified 'being a safe practitioner' as one of the essential competencies required of a midwife at the point of registration [180]. Being a safe practitioner includes having a reasonable degree of self-sufficiency, using up-to-date knowledge in practice, and having self and professional awareness. Butler's definition of self-sufficiency was similar to Bandura's concept of self-efficacy, but also included the ability to detect deviations and take appropriate action and to respond to emergency situations [181]. Professional confidence has its genesis during basic education and continues during a professional's practice of a chosen vocation [182].

6.3.1 The overall confidence of final-year students

The findings of Paper-III are disturbing and raise several questions for the safety of mothers and newborns. Nearly half of the students from both programmes had confidence below the 50th percentile while less than 40% had high confidence in all the subscales under the four selected domains of competencies. A majority of them had not attended the required number of births prescribed by the INC. Students from both programmes were not 'fit to practice' (i.e., they did not fulfill all requirements for registration) [183] by even the national requirements. Also, they were not 'fit for purpose' (i.e., they did not meet the expectations of the mothers, communities, employers, and other stakeholders) [183]. They do not measure up to the expectations of the government of India for being SBAs even if they take the 2-3 weeks of in-service training, because they lack confidence in even basic skills for normal labour (not to mention dealing with complications).

One reason for failing to attend the minimum number of births required for registration could be because only 8% of the students were interested in working in the maternity sections after graduation. Another reason could be lack of adequate supervision of clinical practice because there is no designated supervisor at the clinical sites to ensure that students fulfil the clinical requirements (Papers III, IV). Midwifery education was found to be marginalized because the midwifery students had to compete for cases with the obstetric students in the teaching hospitals (Paper-III). In the district hospitals there might be lower maternity workload.

One reason for low confidence in midwifery skills is likely to be the proportion of time allotted to midwifery within the integrated programmes implemented in India. Since midwifery is one topic within the curricula, the students are required to develop competence in several nursing domains and also in maternal and child care. The time allotted for midwifery in the diploma programme is 18.6% within the 3.5 years programme. In the 4-year bachelor's programme, midwifery is allotted 11.6% of the total time. This works out to be a few weeks. Both

programmes fall short of the international recommendations. The ICM recommends 18 months of midwifery education in addition to three years of nursing education, or three years of direct entry midwifery education for fully competent midwives [184]. The fixed requirements for clinical experiences in both the diploma and bachelor's programmes in India does not seem to come from any evidence except that some of them are the same as those suggested by the Bhore committee [185]. The documents of syllabi only list these requirements without any mention of the level of proficiency needed for each of the clinical areas.

Just as in other parts of southeast Asia [186], India does not have national standards for midwifery education and lack accreditation systems to monitor the quality of education to ensure that students being awarded the midwifery license are competent and fit to practice. The overall lack of confidence amongst students seen in Paper-III could be an indicator of their future performance as midwives since self-confidence has a mediating effect on performance and could be one of its predictors [187].

6.3.2 Comparing diploma and bachelor students

The diploma students were found to be 2-4 times more likely to have high confidence for all domains compared to the bachelor's students, which are at the university level and therefore at a higher level (Paper-III). One obvious reason for the lower confidence of the bachelor's students is likely to be the proportionately fewer hours allotted to midwifery in the bachelor's programme, and the lower requirements for clinical experience for registration compared to the diploma programme.

Ironically, the bachelor's graduates qualify for both clinical and academic roles and usually become tutors for the diploma students that are eligible for admission for postgraduate education. The diploma graduates fulfill the need for clinical nurses in hospitals and require two additional years of education to get the bachelor's degree for an academic career. It is not clear from the curriculum documents whether the objective of the diploma programme is to prepare competent clinical midwives and that of the bachelor's programme is to prepare teachers and researchers. Even if that is the case, the bachelor's programme is producing clinically incompetent midwifery teachers, as the first qualification for teaching midwifery amongst many other qualifications is clinical competence [188].

The other reason that needs further investigation is the differences in the governance structures for both types of programmes. The diploma programme is governed by the department of medical education in the Directorate of Health in the Government of Gujarat. The superintendents of the hospitals to which the schools of nursing are attached are the supervisors. The bachelor's programme is governed by universities, which are autonomous bodies. The universities may not have adequate technical expertise to oversee nursing colleges. The higher confidence among diploma students found in Paper-III is further explained by the findings of Paper-IV, discussed in the next section.

6.3.3 Teaching-learning approaches

Three teaching-learning methods were found to be associated with high confidence for the four selected domains: the number of births attended, practice on manikins, and being satisfied with supervision during clinical practice (Paper-IV).

Theory sessions in the classroom were commonly practiced in both types of programmes, while demonstration in the laboratory, practice on manikins, demonstrations on mothers and babies, and hands-on clinical practice in the form of attending births were practiced less. Such hands-on teaching-learning practices, though few in both types of programmes, were fewer in the bachelor's programme than in the diploma programme. More students from the diploma programme expressed satisfaction with supervision during clinical practice than in the bachelor's programme.

Hands-on skill practice

The laboratory for clinical skills was found to be a safe environment for students to learn skills before beginning practice on patients [189]. Simulated practice in the laboratory built their confidence and helped them to integrate theory with practice during their first clinical practice placement [190]. Despite the fact that the skills laboratories referred to in these studies might be of better quality compared to those in India, the findings of Paper-IV show that practice on manikins contributed to the confidence of students in clinical skills. The fewer opportunities for demonstration and practice on manikins in both programmes found in our study could be due to the unavailability of manikins and shortages of teachers to demonstrate and provide feedback during practice. Educational institutions across India are found to have an inadequate number of teachers, infrastructure, and facilities [191].

6.4 Faculty development: Supervision and mentorship

There is an abundance of literature that emphasizes the roles of clinical role models, preceptors, or supervisors in shaping the next generation of nurses and midwives for their clinical competence and professional roles [192-197]. This is a part of socialization into a profession [198]. Prescriptive role models, who follow doctor's orders, do not prove to be good role models [199].

As found in Paper-II, the students were only able to observe and emulate marginal or restricted practice of the staff nurses who were the role models, or they could emulate the practice style of obstetricians. Because clinical supervisors are not formalized in the pre-service education for either programme in India, the students are supervised by whoever is present rather than a designated supervisor (e.g., resident doctors, senior staff nurses, senior nursing students, tutors). Without fixing responsibility of supervision at the clinical sites, there is no mechanism for the teachers to interact with the staff at the clinical sites for effective assessment of the students' clinical competence.

After accepting the teacher's role, the tutors of midwifery lose their clinical skills as they stop practicing [200]. The experienced staff nurses, who might supervise the clinical practice of students, do not have any preparation for clinical supervision. Assuming that a good clinician is automatically a good clinical teacher has been challenged by many researchers [192, 193, 201]. The minimum standards of midwifery education of the ICM recommend that the midwife teacher has formal preparation in midwifery and holds a current license/registration or other form of legal recognition to practice midwifery, that she demonstrates competency in midwifery practice, with two years full scope practice, and that she has a formal preparation for teaching and maintains competence in midwifery practice and education [202].

6.5 Obstacles to professionalization of midwifery

6.5.1 Collective/self-identity

The self-identity of staff nurses is that of a nurse (Paper-II), because of a dual qualification. Therefore they are supervised by clinicians. They are general staff nurses who can be transferred to any department within the hospital, which means they cannot grow in professional status as specialists.

Moreover, midwifery pre-service education is marginalized. The next generation midwives do not have preceptors as role models who can demonstrate autonomous and good quality midwifery practice. All these factors prevent the midwives to develop a collective identity. This lack of collective identity affects the way midwives relate to their clients, to the medical profession, to those who administer health services and to those who pass the laws that govern professional practice in the sphere of maternity care [93]. The staff nurses did not seem to feel the need to assert for a wider space in maternity care, as seen in Paper-II. Professional identity is closely linked with professional confidence, and one underpinning factor for professional confidence is competence [203]. The marginalization of midwifery education jeopardizes professional identity, competence and professional confidence of the staff nurses to function as midwives.

The underpinning ideology and philosophy of midwifery, internationally, focuses on the autonomy of birthing women [23] and natural childbirth opposed to medical birth. With births becoming more dependent on technology, midwives perceive their role as either diminishing or in need of redefinition [204] in order for the women to reclaim their birthing power [149]. In some countries, such as Australia [205], women and midwives appeal for supportive policies for homebirths. Because of absent collective identity, discourses on what is exclusive about care given by midwives compared to an obstetrician are tentative and weak in India. The doctors are the preferred service providers in the eyes of society. Discourses are essential for 'positioning' of individuals and as a group with reference to other professionals, organizations, and society to carve out a special niche [206], that differentiates and justifies the need for professional status.

6.5.2 Risk, blame and division of labour

As seen in Paper-II, as a consequence of unclear legal right to practice the staff nurses were at a lower position to negotiate for space in maternity care with the obstetricians who enjoyed higher professional status. The professional status of obstetricians comes from high incomes, power, esteem and prestige in the Indian society, which is an important criteria for achieving professional status [94].

The findings of Paper-II further show that the doctors used risk of adverse outcomes to restrain the midwifery practice of staff nurses. The risk was magnified during the day when the doctors were available and it was played down during the night when the staff nurses could take independent charge of maternal services. The staff nurses had a fear of being blamed if complications occurred. This fear was real as they were unclear about their right to practice.

The concept of risk has objective and subjective dimensions [207]. In the areas of epidemiology, for example, and the statistical assessment of risks, it is treated as objective and measurable. Risk is also socially constructed, influenced by experiences, perceptions of individuals, and groups involved; therefore, it is difficult to separate its objective and subjective dimensions [208].

Risk has been a central theme around which reforms in childbirth have been organized, leading to the medicalization of childbirth across the globe. There is a perceived risk in childbirth by health professionals, managers, policy makers, and women alike; this is not totally unfounded, as mortality during childbirth is real. The degree of risk and the expertise to handle complications is the basis for division of labour amongst midwives and obstetricians. For instance, the Dutch maternity care has successfully delineated 'physiological' and 'pathological' pregnancy and birth, with a rational and safe division of labour among primary ('first line') and specialist ('second line') care [146].

However, De Vries (1993) argues that risk in maternity care is 'created' [209], or is magnified [210], by professional groups, to gain control at organizational, professional, and individual levels. The best example is the history of midwifery and the way maternity care is organized in the United States of America [211]. As argued by Abbot (1999), this is about defining jurisdictions [95], in this case by the obstetricians to limit the jurisdictions of the midwives.

This thesis has not examined the midwifery work of the staff nurses in the context of capitalism and patriarchy. Sociologists see the process of professionalization as a patriarchal process, helping to maintain the dominance of men over women [97]. This aspect needs further research.

6.5.3 Social and professional image of the midwife and nurse

The greatest obstacle that nursing and midwifery professions face originates from the Indian cultural milieu with its notions of “purity and pollution” [65, 212]. Pollution and defilement are identified with natural body functions like menstruation, sexual relations, and body emissions like blood and urine. Since the caring functions of a nurse and the job of assisting birth by a midwife brings them in direct contact with pollution, it does not fit into a cultural definition of a good job. This negative cultural image of an occupation has effects on the self-worth and self-respect of its representatives and their worth in the professional and social worlds [212].

For instance, in most societies the TBAs command respect and are regarded with deference [84], whereas in the Indian society the TBA’s work was and is considered menial because of the desire to avoid pollution [57, 59]. Though her services were valued they were never in full control of the childbirth process [61], and at times they were only invited to cut the cord and take care of the pollution, bury the placenta, and clean up the home [57]. In India, the TBAs usually come from the lower castes of the Hindu society or other religions.

The first women to come forward for training as nurses and midwives were non-Hindus — the Christians, destitute women, or women from the lower castes. Efforts to attract women from ‘good’ families, which meant higher castes of middle and higher income group families, are mentioned in most historical accounts of nursing [62, 67, 212].

Today in India, nursing has attracted women from higher income families and castes, but discussions about its low social image and professional status, are still on-going [191]. The possibilities of migration to other countries with better prospects, have contributed more to furthering the image of nursing as a suitable job [162, 213], rather than favourable conditions in the country.

7. CONCLUSIONS AND WAY FORWARD

The findings of this thesis show that women from underserved groups are likely to prefer hospital births perceived to reduce the risk of mortality. The access to western style childbirth services has improved because of increased availability of such services. The finance schemes such as JSY, CY, and emergency transport services have further facilitated access to hospitals. Yet these services are inequitably distributed. Women find hospital births as essential but undesirable, as they are dissatisfied with the psychosocial aspects of care in hospitals. They have partially accepted technologies such as labour augmentation, but are concerned about unwarranted interventions, such as routine episiotomies and Caesarean section births.

The best way to bring the essential and desirable together for women is to strengthen midwifery – which includes care by midwives and those with midwifery skills. As part of the Lancet series on midwifery, the systematic review of effective interventions for best outcomes shows that, maternal and child survival, health and wellbeing of women and infants, and effective use of resources, lie within the scope of midwifery practice [214].

Homer et al (2014), estimated that scaling up midwifery services in countries with lower Human Development Index (HDI) even by 10% would decrease maternal mortality by 27% over a period of 15 years [215]. Midwifery care provided by midwives was found to be the most resource efficient, and sustained. Care provided by competent, licensed and regulated midwives, who are integrated into the health system within effective teams, with adequate resources and referral linkages, can bring in a balance between the social and medical components of care [214]. India has lost the gains in midwifery-based practice introduced during the British period. The governments and the INC are slow to re-introduce midwifery-based maternal care.

India has the infrastructure and capacity in terms of educational institutions for educating midwives (table-8). There has been an interest in strengthening midwifery in the form of the government taking several initiatives. These are windows of opportunities to make beginnings towards professionalizing midwifery (table-8).

Table-8. Midwifery in India: Strengths, Weaknesses, Opportunities and Threats	
Strengths	<ul style="list-style-type: none"> • Large infrastructure/ capacity exists to educate midwives • The need to improve pre-service education of midwives felt by GoI • Association of midwives exists with large membership across the country
Weaknesses	<ul style="list-style-type: none"> • Midwifery subsumed under nursing • Midwifery pre-service education, inadequate for preparing competent midwives • No midwifery specific regulatory framework • Scope of practice undefined • No separate cadre of midwives or posts for midwives in government facilities • Discourses on ideology which could make services by midwives exclusive to that of other professionals, weak
Opportunities	<ul style="list-style-type: none"> • Midwife led care through day and night (24x7) PHCs included as a strategy under NRHM • Post graduate diploma for ‘Nurse Practitioner in Midwifery’ introduced • ANM training duration increased to 2 years • Nodal centres for excellence being established to strengthen pre-service education • Midwife representative for South East Asia for ICM – headquarters in India
Threats	<ul style="list-style-type: none"> • Strong professional lobby of obstetricians –childbirth their main source of income • Nursing profession, reluctant to let go of midwifery • Low sociocultural image of midwives as childbirth considered polluting • Lay midwives practicing midwifery in private maternity homes

7.1 Short-term measures

Support the implementation of ‘Nurse Practitioner in Midwifery’

Gujarat and West Bengal have implemented the 11 month post basic diploma for nurse practitioners in midwifery. These states have also created dedicated posts in the CHCs for

midwives with a higher salary. This initiative has the potential for establishing midwives as autonomous professionals.

In Gujarat the course was introduced in 2008. Gujarat has more than 100 midwives, who are staff nurses with additional 11 months education in midwifery. Yet these midwives still work as staff nurses, because the special posts are delayed due to bureaucratic reasons [118]. This initiative needs careful nurturing lest it be labeled as a nonstarter. It will not be enough just to train midwives and give them designations. Their working relationships with the teams caring for mothers and babies should also be facilitated. Careful consideration as discussed below, are needed to take it successfully forward.

1. The candidates for the course are recruited through advertisement. Purposeful selection of local candidates who will not be reluctant to serve rural areas as they will be near their home. As India and many low resource countries have experienced difficulties in retaining qualified staff for rural settings. It is unrealistic to expect a staff nurse from a city to shift to a remote rural facility.
2. These nurses' practitioners in midwifery will work within the teams of doctors and other staff nurses. Clarifying task divisions and reporting relationships of the advanced midwives and the other staff nurses posted in the maternity sections are crucial for better team work.
3. Support of effective referral linkages are a must to ensure second level EmOC services
4. Establishing systems of monitoring and supervision

This initiative needs to be carefully nurtured and documented so that it can be scaled up for other provinces.

Strengthen existing midwifery pre-service education

The nodal centres established by the GoI provide an opportunity to strengthen midwifery education in both in the diploma and bachelor's programmes [76]. There are several steps which can be taken without huge investments in resources or bringing about major changes in syllabi, policies and regulations.

1. Designate clinical supervisors who can supervise the clinical experience of a group of students. These clinical supervisors should be given a short orientation on mentorship and supervision. They could be given extra compensation for their role as motivation.
2. Establish a system whereby the clinical supervisors and the tutors discuss and regularly assess the progress of the students.
3. Have dedicated tutors/lecturers/professors for midwifery who do not teach any other subject. They should attend a minimum number of births to retain their skills.

The colleges of nursing offering the bachelor's programme, are not included for reforms under the strategy of nodal centres. The findings of Paper-III have shown, that though the pre-service

midwifery education, is inadequate in both the diploma and bachelor's programme, it is more so in the bachelor's programme. The colleges of nursing should also be targeted for improvement, to make the efforts complete.

7.2 Long-term measures

India is committed to scale up Skilled Birth Attendance to achieve the MDGs 4 and 5. The challenges to achieve this goal are numerous. The way maternity services are presently organized, the system is overly dependent on specialist care. The choices for the women are either specialist care or care by a TBA, with a gap of qualified middle level providers. In the public health system, there is an acute shortage of obstetricians and anesthetists to provide EmOC services. At the same time the trend of increased caesarean section rates can be seen with increased dependence on specialists, in private urban facilities[216-219]. There are practices such as routine use of labour augmentation [172], and routine use of antibiotics for majority of the deliveries [115], which are likely to have adverse effects.

Developing a strong cadre of midwives would possibly be the solution to all these challenges as shown by experiences of other countries. The current piecemeal fragmented approach to scale up SBA being followed in India may not be the answer. Midwives need to be recognized as professionals separate from nursing. There needs to be a separate regulatory body for midwives or a section within the INC. The pre-service midwifery education should be standardized, and the scope of practice defined.

International recommendations for pre-service education of midwives need to be adhered to. The current system of training all nurses as midwives when a majority of them will not use these skills, is a waste of already scarce educational resources.

SOMI might have to play an active, visible and wider role in defining what is different in services by midwives compared to other professionals. SOMI's role is vital in collaborating with other professional associations such as the Federation of Obstetricians and Gynecological Societies of India (FOGSI), the TNAI and others to build a collaborative relationship between the midwives and other professionals. SOMI should help the governments to develop clarity on division of labour between different professionals in the team for maternity and newborn care.

Sri Lanka is cited as an example where a competent community based midwifery cadre could rapidly reduce maternal and neonatal mortality. However, midwifery is not professionalized in Sri Lanka like many parts of the world. Unlike Sri Lanka, Bangladesh has decided to start with creating a distinct cadre of midwives by initiating a direct entry midwifery programme already underway [220] and Nepal will soon follow [221]. All these countries share many of the social and cultural constraints prevalent in India, which may be one of the reasons why Sri Lanka could not go all the way to professionalize midwifery. These examples show that a strong political will is important, yet socio-cultural constraints still need to be resolved.

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I

RESEARCH ARTICLE

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The transition of childbirth practices among tribal women in Gujarat, India - a grounded theory approach

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Abstract

Background: Under the National Rural Health Mission, the current emphasis is on achieving universal institutional births through incentive schemes as part of reforms related to childbirth in India. There has been rapid progress in achieving this goal. To understand the choices made as well as practices and perceptions related to childbirth amongst tribal women in Gujarat and how these have been influenced by modernity in general and modernity brought in through maternal health policies.

Method: A model depicting the transition in childbirth practices amongst tribal women was constructed using the grounded theory approach with; 8 focus groups of women, 5 in depth interviews with traditional birth attendants, women, and service providers and field notes on informal discussions and observations.

Results: A transition in childbirth practices across generations was noted, i.e. a shift from home births attended by Traditional Birth Attendants (TBAs) to hospital births. The women and their families both adapted to and shaped this transition through a constant 'trade-off between desirable and essential'- the desirable being a traditional homebirth in secure surroundings and the essential being the survival of mother and baby by going to hospital. This transition was shaped by complex multiple factors: 1) Overall economic growth and access to modern medical care influencing women's choices, 2) External context in terms of the international maternal health discourses and national policies, especially incentive schemes for promoting institutional deliveries, 3) Socialisation into medical childbirth practices, through exposure to many years of free outreach services for maternal and child health, 4) Loss of self reliance in the community as a consequence of role redefinition and deskilling of the TBAs and 5) Cultural belief that intervention is necessary during childbirth aiding easy acceptance of medical interventions.

Conclusion: In resource poor settings where choices are limited and mortality is high, hospital births are perceived as increasing the choices for women, saving lives of mothers and babies, though there is a need for region specific strategies. Modern obstetric technology is utilised and given meanings based on socio-cultural conceptualisations of birth, which need to be considered while designing policies for maternal health.

Keywords: Childbirth practices, Medicalization, India, Grounded theory

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Background

Childbirth practices have been part of social, political, economic and hygienic reforms in India since the 19th century [1] in an attempt to combat infant and maternal mortality. From the 19th century to the beginning of the 21st century, reproductive reform was dominated by the ideas of overpopulation linked with general underdevelopment and poverty. The reforms for childbirth included providing a new setting for childbirth from home to hospital and a new attendant, replacing the Traditional Birth Attendant (TBA) with a qualified midwife or physician, otherwise known as a Skilled Birth Attendant (SBA) as is the current practice [2].

In spite of the emphasis on childbirth reforms, the progress in achieving institutional births and skilled attendance has been slower than desired; prior to 2006, there were 61% of homebirths in India and 45% in Gujarat, almost half of which were attended by a TBA [3].

Since the launch of the National Rural Health Mission (NRHM) in India in 2005, there has been an overwhelming emphasis on increasing institutional births by way of incentives [4]. The past five years have seen a phenomenal increase in institutional births from 39% in 2006 [3] to 73% in 2009 [5]. The emphasis on institutional births have been criticised by some grassroots organisations owing to the unpreparedness of the hospitals to receive women attracted to them through incentives [6]. These grassroots organizations see the government maternal health policies as coercive, negatively influencing the health of women.

Past research relating to childbirth has been focused on the framework of health systems, measuring compliance among women to the services offered and evaluating the services provided in order to make the health systems more robust and reduce mortality. For instance, there have been studies on the use of modern antenatal care [7,8], choice of birth place [9] and postnatal care as well as relevant determinants.

There have been a few ethnographic studies exploring childbirth practices in different parts of India [10-12]. This qualitative study complements such previous ethnographic studies adding the women's own perspectives. Our study explores the perspectives of women on childbirth; their choices, reasoning behind decisions and conceptualisations of good/bad and normal/complicated childbirth as moulded by modernity and general developments, state policies and changing biomedical technologies. The study was carried out in the western parts of India, in a close-knit tribal society where traditional practices are more common place than among women in the mainstream rural society of India.

International and national maternal health policies:

the context

The international maternal health policies have changed from 'Birth by trained Traditional Birth Attendants (TBA)', and 'Risk screening in the antenatal period' during the 1980's to Skilled Birth Attendance (SBA) and Emergency Obstetric Care (EmOC) from late 1990's onwards [13]. In congruence to this international policy, the Indian maternal health policies focused on antenatal care, risk screening and the 'five cleans' (clean hands, surface, blade, cord tie, and water) through the provision of safe delivery kits to trained TBAs until the late 1990's [14].

More recently, an important international discourse influencing national maternal health policies in developing countries was 'Every pregnancy is at risk'. As a consequence, all pregnancies should be attended by Skilled Birth Attendants (i.e. a qualified midwife or doctor) with backup being provided by health centres in case of complications. The national maternal health policy in India sees hospital births as safe births. Achieving universal coverage of births in institutions is the objective of Phase II of the Reproductive and Child Health Programme (RCH-II) [15].

Another discourse, i.e. 'TBAs are ineffective in reducing maternal deaths', has led to the redefinition of their role. During the decade 1987-1997, training of TBAs for safe births was part of the maternal health strategy of the Interagency Group (IAG) for Maternal Health [13]. In 1997, when reviewing the strategy progress during a meeting in Colombo, Sri Lanka, the IAG found little progress in the reduction of maternal and newborn mortality. Attention was drawn to the importance of skilled birth attendance and TBAs were not found to be skilled. The declaration of the millennium development objectives in 2000 and statement on skilled birth attendants in 2004 [2] clearly argued for a redefinition of the TBA role.

Responding to the international discourse against TBAs, the National RCH-II programme excluded TBAs as childbirth attendants and stopped TBA training, with the exception of certain districts where institutional births accounted for less than 30% of total births, p. 102 [15].

The international and national maternal health policies described briefly herein are examined later in this paper in the context of childbirth factors influencing the choices, preferences and practices of women.

Methods

Setting

Six districts out of total 25 in Gujarat are identified as high focus districts by the Ministry of Health, Government of India, with weak performance on health indicators including maternal and child health [16]. One such

district with a predominant tribal population was selected for this study.

The tribal population in India is 8-9% compared with 14.8% in Gujarat [17] and 72% in the selected district [18]. The tribal society is described as indigenous communities, their economy and life linked to natural ecosystems and resources, dependent on agriculture, forestry and hunting. As a result of settlements invading and taking control of natural resources during the pre-colonial period and into the early post-independence period, the tribal people have lost authority over their economic resources [19,20]. There is an out-migration of tribal people to larger cities for subsistence.

The Indian population is heterogeneous in terms of religion, languages, castes, making it difficult to carry out a study on women's childbirth perceptions and practices. The cultural homogeneity of the tribal population was one of the reasons for selecting the district in question. Unlike the Hindu population, there were no caste hierarchies. Being an indigenous community of special interest to the Government for childbirth reforms, a recent development shows women choosing to go to institutions for childbirth, with 30-40% of the women still opting for homebirths [21]. This fulfilled the objective of the study, of understanding the transition of childbirth practices from home to hospitals. The selected study district is generally less developed with an urban area of 13% compared to 48% in Gujarat, a total literacy rate of 60% compared to 81% in Gujarat and a female literacy rate of 49% compared to 71% in Gujarat [22].

The district consists of seven administrative areas or sub-districts called Blocks covering several villages, each with its own Block Health Office. Three Blocks, i.e. urban, semi-urban and rural, were selected in consultation with the District Health Office on the basis of their general development and geographic location. Table 1 describes the general development of the three blocks in terms of geographical characteristics, access by means of road, rail and other as well as the availability of modern allopathic (bio-medical or western) health facilities whether private or state-run. As seen in Table 1, the rural block was the worst off in terms of the general landscape, which was hilly and covered with forests and hence, difficult to cultivate. In addition, it was not served well by public transport and had fewer functioning healthcare facilities compared to urban and semi-urban blocks

According to government norms, there is one Primary Health Centre (PHC) for every 20,000 inhabitants. Each block has one PHC providing childbirth services, day and night. Two villages were selected in the area of the PHC providing day and night childbirth services, one adjacent to and the other further away from the PHC so as to provide basis for focus group discussions and in depth interviews on the assumption that having access to a functional government health facility may influence the childbirth practices of women.

Data collection and participants

Since the study aimed to explore childbirth perceptions, preferences and choices within a cultural context, focus group discussions with women were considered appro-

Table 1 Characteristics of the selected study blocks (sub-district)

General development characteristics	Urban	Semi-urban	Rural
Physical characteristics	<ul style="list-style-type: none"> • Largely flat terrain • Clustered housing pattern 	<ul style="list-style-type: none"> • Mix of hills & plains • Majority clustered housing pattern 	<ul style="list-style-type: none"> • Rocky steep slopes • Forest cover • Scattered houses spread over 4 sq kms.
Accessibility (approach road, distance from town, variety of transport available)	<ul style="list-style-type: none"> • Good roads • Situated along highway connecting other provinces • 30 kms from district headquarters • Connected by railways, buses, private transport 	<ul style="list-style-type: none"> • Good roads • Within 15 kms of two towns • Connected through buses and private transport 	<ul style="list-style-type: none"> • Good roads surrounding villages but kuccha roads inside the village • 30 kms. from block head quarters • Buses 2 times a day
Availability of childbirth services in Government health facilities	<ul style="list-style-type: none"> • Best performing round the clock government Primary Health Centre (PHC) • Non functional Community Health Centre (CHC) 	<ul style="list-style-type: none"> • Non functional round the clock PHC and CHC 	<ul style="list-style-type: none"> • Non functional round the clock PHC • Functional subdistrict hospital 30 kms. Away
Availability of Private facilities	<ul style="list-style-type: none"> • Majority of district private doctors enrolled in Chiranjeevi Yojana (CY) in city near block 	<ul style="list-style-type: none"> • Majority of private doctors enrolled in CY in city of adjoining district 	<ul style="list-style-type: none"> • Only two CY doctors at block town

appropriate. During the course of the fieldwork, the research team was given the chance of observing a birth both at the PHC and at home. Interviews with TBAs gave a deeper understanding of childbirth practices.

Data collection and analysis were simultaneous processes. For instance the questions during the initial focus groups explored childbirth practices in general; women's health seeking preferences during pregnancy, childbirth and post-pregnancy as well as their preference for place of birth. The women described measures taken by them and their family in the event of pregnancy, advice sought and clinical and any other procedures carried out during each stage of pregnancy and birth.

These initial focus groups were coded and tentative categories were identified which were further explored by the next focus groups and in depth interviews. For instance the initial focus groups indicated a transition in women's childbirth preferences across the old and new generation and also across urban, semi-urban and rural blocks which seemed to be influenced by multiple factors. This process of transition was probed in subsequent focus groups including the reasoning used by the women for choosing their preferred place of birth and their opinion on a good and poor childbirth.

The TBAs in the rural block were attending 6–7 homebirths a month although they were being discouraged by the Block Health Office as there is a thrust on 100 percent institutional deliveries by the state. TBAs were interviewed about their experiences and understanding of childbirth, their perceptions about changes in the women's practices from past to present and experiences with the public health system.

All in all, there were eight focus group discussions, five in depth interviews, two unstructured observations and many informal discussions. Eighty-five women participated in the eight focus groups with an average participation rate of 7–11 women engaged in each discussion. However, two of the focus groups had a participation rate of 15–18 women. With the exception of two focus groups with a constant level of participation, the other focus groups saw women coming and going, often halfway through a discussion. This is one of the reasons for missing data on background characteristics for some participants (Table 2).

Participating women were aged between 20 and 55 years, the majority of who were 20–35 years (Table 2) Thirty percent of the women had homebirths and 39% of them had 3 to 4 children while 5% had more than 4 children. Every woman had either a personal experience of childbirth or had been closely involved in the childbirth of a family member or neighbour.

Data was collected throughout the period of May 2011 to April 2012. The authors alternated between being moderator and note taker during the focus groups. The

Table 2 Background characteristics of participants

Background characteristics	Total %
Total 85 participants	
Age in years	
≥20	7.7
21-30 yrs	37.2
31-40 yrs	14.1
41-50 yrs	9
≤ 50	3.8
Missing data	28
Education	
Illiterate	26.9
1 to 5 yrs	6.4
6 to 10 yrs	35.9
≤ 12 yrs	11.6
Missing data	19.2
Place of last birth	
No child	1.3
Pregnant	3.8
Home	30.8
Govt	15.4
Private	26.9
Missing data	21.8
Number of children	
No child	7.1
Pregnant	9.0
1 child	14.1
2 children	24.7
3 to 4 children	38.5
more than 4 children	4.7
missing data	1.3

women were invited either through the contact of a local voluntary organisation or the Accredited Social Health Activist (ASHA) appointed by the Government under the National Rural Health Mission (NRHM). The ASHA is usually a local woman from the village appointed to mobilise and motivate the villagers to utilise the Government services on offer. The duration of each focus group was typically 1½ to 2 hours. The focus group meetings took place in common areas such as the village pre-school called the *anganwadi*. The choice of location was important as it was a neutral space and also familiar to the women seeing as antenatal clinics were held here once a month.

Field notes of informal interactions with health workers, doctors and district health managers were used in analysis. The field research team held regular meetings after each focus group and throughout the analysis process.

Two meetings were organised with the larger research team to discuss the emerging findings and plan for further data collection. Notes were maintained after each meeting, which helped the analytic process.

The research team had four women and one man (KVR). The first author (BS) has a background in child development and long experience of research in the area of maternal and child health. This paper is a part of her doctoral (PhD) project investigating professionalization of midwifery in India. The second author (GG) has a background in social science and public health with experience in research and work at grassroots level, in the areas of maternal and child health care. GG had spent eight years in the district selected for the current study, working on issues of gender natural resource management and women's health. The first and second authors have lived in the province since birth and are fluent in the local language and familiar with the local culture, which was an added advantage. The two women researchers from Sweden (KC, and EJ) are Professors at the Karolinska Institute, Sweden. Both are midwifery and nursing professionals with a doctoral education in public health and long experience of working in low and middle-income countries. Coming from the Indian Institute of Management, KVR has vast research experience in the field of public health research including maternal and child health.

Ethics

Verbal consent was taken from the women prior to participating in focus group discussions as well as for the purpose of recording and taking notes. Since the topics of discussion were deemed sensitive, it helped that the team members responsible for collecting data were all women. The Government of Gujarat gave permissions required for the study and the Ethical Committee of the Indian Institute of Management gave the ethical clearance.

Data analysis

We used a grounded theory approach [23] to understand the central organising process of changes in childbirth practices. Grounded theory approach is an analytical approach to construct a theory grounded in empirical data using constant comparison. All focus groups and in-depth interviews were tape recorded and transcribed verbatim in the vernacular. The N Vivo software was used to assist in analysis. Because the software did not support the Gujarati language while generating queries, the first author translated the transcripts to English for further analysis halfway through the study. Considering 'all is data' [24] the data collected through focus groups, in-depth interviews and field notes, additional insights from literature on international and national maternal

health policies have been used to construct the model (Figure 1) and to 'suggest other possible meanings' [23]. The perceptions and experiences of childbirth shared by the women have been analysed within the wider context of international and national discourses on maternal health, using the conditional matrix [23, p. 94].

The analysis process began soon after each focus group and more extensively once the transcripts were ready. The transcripts were read and an open and selective coding was performed. Codes were assigned line by line and/or to every meaning unit based on the importance of the text to the research question. Using constant comparison, codes were compared from one focus group to another and across the three blocks. During the selective coding, open codes were organised into clusters to facilitate re-reading of the material and a more focused coding. Codes were clustered to form sub-categories. The sub-categories were related and organised to represent the context, conditions and factors contributing to and the consequences leading to the transition of childbirth practices. By way of theoretical coding, this process later led to the identification of categories as sub-processes contributing to the transition of childbirth practices. An example of moving from text to category is explained in Figure 2. The process was aided by the writing of memos at each stage of the analysis, which helped in thick descriptions.

Results

In the model (Figure 1), the phenomenon is presented juxtaposed with the larger context with the overall economic development over time (the bold arrow below the transition trajectory) and international and national maternal health context shown surrounding the model outside of the box and also as Sub-process 1. The core category 'trade-off between essential and desirable' represents the process through which the women and their families adapted and which also shaped the transition. Three categories are interpreted as sub-processes (underlined) in Figure 1. The sub-process itself is shown enveloped in four circles: Sub-process 1 titled 'External factors' represents the overall context and response of the national policies to the changing international discourses on maternal health and the impact of this locally. Sub-process 2 titled 'From home to hospital; childbirth as a status passage' and Sub-process 3 titled 'Cultural conceptualisations of childbirth' describe the influence of socio-cultural belief systems on childbirth practices. The circles have permeable overlapping boundaries representing interconnectedness. There were several sub-categories (italicised) explaining the consequences of these sub-processes, thus contributing to the trajectory of transition.

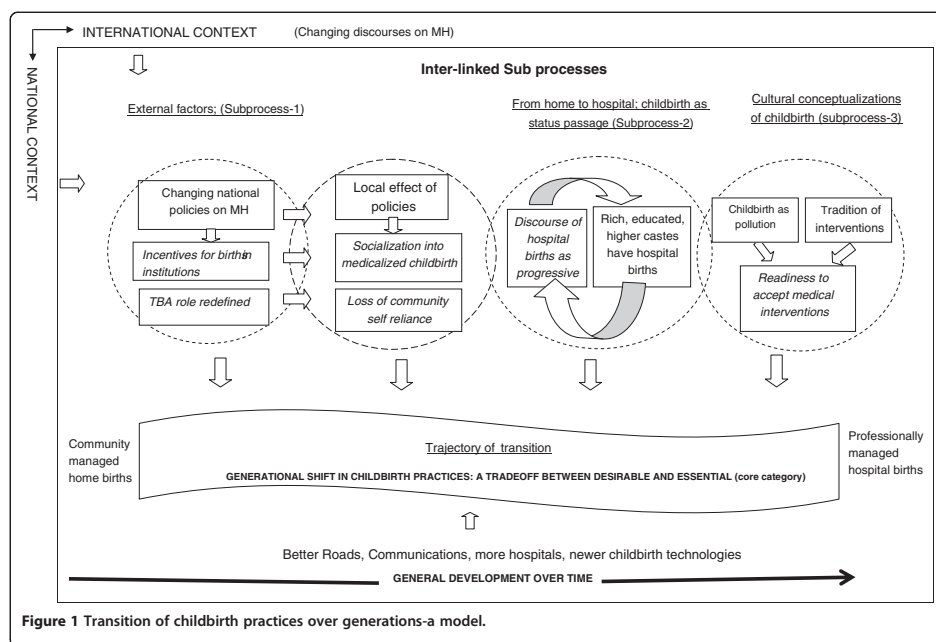


Figure 1 Transition of childbirth practices over generations-a model.

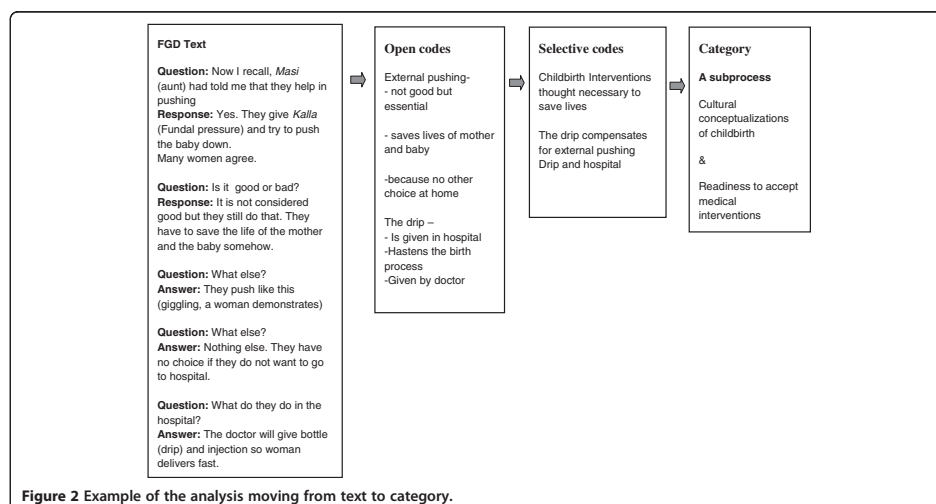


Figure 2 Example of the analysis moving from text to category.

The trajectory of transition of childbirth practices

The narratives of childbirth practices of women in the focus group discussions compared practices of the past and present and that of the older and younger generations. As presented in Figure 1, this change could be perceived as a trajectory, a route or movement through time and generations; a shift from home births (a community managed social event) to hospital births (a professionally managed medical event).

The women from the three selected study blocks could be placed at different points on the trajectory; the urban and semi-urban blocks to the right of the trajectory with more than 90% of childbirths taking place in institutions (Table 3) and the rural block towards the left of the trajectory with 23% of childbirths still taking place at home^a. Nevertheless, the women were all in the process of transition either through a natural process over time or hastened by government policies as explained later in this paper.

In the urban and semi-urban blocks where the majority of births occurred in hospitals, a small number of homebirths took place either because of uncomplicated labour or, or as so often was the case, because there was no time to reach a hospital as the women had waited too long for their labour to progress in order to minimise their hospitalisation time. Most women giving birth in hospital accepted medical interventions which accompany hospital births. Many of the women from the rural block favoured homebirths assisted by the traditional birth attendant and without medical interventions.

A generational shift in childbirth practices: A trade-off between desirable and essential

The core category, 'A trade-off between desirable and essential', was central to the reasoning used by the women and their families in choosing between a homebirth or hospital birth and their response to the factors/conditions contributing to the trajectory of transition. The women

actively adapted to these factors/conditions and made a conscious choice between the two alternatives by weighing up the advantages and disadvantages of homebirths and hospital births.

There was psychological comfort in giving birth at home, as they were managed within the community, in the presence of the birthing women's family, friends and neighbours. Homebirths were relatively economical and convenient because the older children and cattle were not left unattended. In the rural blocks, homebirths assisted by TBAs were still the traditional way.

Hospital births were described as being alone in the labour room with strangers such as nurses, doctors or other attendants. Family and friends were not allowed. The women felt uncomfortable with the at times non-courteous behaviour of the staff. Hospital births were costlier compared to homebirths. There was fear of unnecessary interventions like episiotomies and quick caesarean sections. As a result of such possible invasive procedures, the cost of delivery and healing time after birth increased. Women in the semi-rural province mentioned the cost of C-section births ranging from USD 150–300, which is a huge amount for rural families dependent on agriculture.

Amongst the advantages of hospitals, they were described as equipped with clean linen, equipment and staff to clean up after birth. There was constant monitoring in hospitals - '*they keep checking and giving us a probable time of birth*'. Complications were dealt with immediately, saving the lives of mothers and babies. The women were impressed by the competence of the doctors and nurses in hospitals.

With experience of home and hospital births over two generations and when weighing up the advantages and disadvantages with hospital births, the women found the advantages to outnumber the disadvantages. It was a trade-off between what they desired (comfort of home) and what they thought essential (appropriate

Table 3 Place and distribution of births in the study district and selected blocks from April 2010-March 2011 (source: District health office)

	Urban block		Semi rural block		Rural block		District	
	Number	%	Number	%	Number	%	Number	%
Total births	4949	-	6764	-	6061	-	54317	-
Institution	4636	94.0	6448	96	4754	77	50486	93
Public	881	19.0	803	12.8	175	3.7	9451	18.7
Private*	3755	81.0	5645	87.5	4579	96.3	41035	81.2
Home	313	6.3	293	4.3	1407	22.8	3831	7
TBA	312	99.6	284	96.3	1350	96	3679	96
ANM	1	0	9	3.7	45	3.1	152	3.9
Others	0	0	0	0	12	0.9	24	0.6

*Includes births in private hospitals enrolled in the Chiranjeevi Yojana and other private hospitals.

medical attention when needed, saving lives of mothers and babies). The women had to sacrifice one thing for another.

The childbirth context

The childbirth context is described as two categories: 'General development over time', see space below the trajectory in Figure 1, and 'External factors', Sub-process1, first and second circles from the left, explaining the contribution of changing national maternal health policies to the transition of childbirth practices. The trajectory of transition and constant adaptation as well as the 'trade-off between desirable and essential' made by the women and their families were enacted within this context.

The local effect of national and state maternal health policies

From discussions with the Programme Managers during the visits to the district as well as with the Block Health Office, it was clear that the priority for maternal health demanded by the state headquarters (as per the current national maternal health policy) was performance on achieving institutional births, more specifically the utilization of the *Janani Suraksha Yojana* (JSY) and the *Chiranjeevi Yojana* (CY), the two priority strategies for maternal health as explained in the following section.

Incentives for institutional births

Though aware, the women were confused about the Government's two maternal health initiatives; The JSY, a national scheme to promote institutional births under the Reproductive and Child Health programme Phase II and the CY, a state-run initiative. Under the JSY scheme, the women get INR 500 for childbirth in hospital, INR 200 for the cost of transport and INR 50 for the person helping them to get to hospital [4]. Under the CY scheme, the women categorised as living below poverty line, get free delivery services in certain private maternity hospitals enrolled in the scheme, for both normal and C-section births [25]. Fourteen of the obstetricians working in the district were enrolled in the CY scheme.

According to the statistics provided by the District Health Office (not validated), out of 93% births in institutions, 81% occurred in the private sector out of which 45% occurred in CY enrolled facilities which were private facilities approved under the CY scheme (Table 3).

Women from the urban and semi-urban blocks, with a wider acceptance of hospital births, were more aware and had taken advantage of the schemes available compared to their rural counterparts who said they had never heard of the schemes.

Women from all the blocks were clearer about the Emergency Ambulance Services introduced in Gujarat in 2007 and had called the '108' ambulance service number

[26]. This service is also available to transfer women in labour to hospitals. The '108' service facility was widely used in the urban and semi-urban blocks by families and functional PHCs for referral. In case of the rural blocks the women could not use the 108 service facility very often as although the ambulance would come to the end of the road, it meant the woman having to be carried 700-800 metres up and down the hills to reach the ambulance.

These initiatives, especially the emergency transport, has hastened the trend towards hospital births in the urban and semi-urban blocks by removing two important barriers that prevent women from going to hospitals, that is, the cost of transport and doctor's fee.

Redefinition of the role of TBA

With increased access to hospitals for childbirth, the women in the urban and semi-urban blocks said that there were very few active TBAs practicing in their villages. The current role of the TBA is not that of a birth attendant but a partner with the government health facility services to promote modern childbirth practices and motivate women for antenatal care, provide support to women during hospital births and facilitate modern practices of newborn and maternal postnatal care. Because the average TBA only attends a couple of births, she has lost or is in danger of losing her skills and the community is losing its self-reliance in childbirth. Shown as part of Sub-process1 in Figure 1, the redefinition of the TBA role has contributed to the shift towards the hospital and vice-versa. This is effectively what the women in the urban province said:

Response 1: Earlier there were no such facilities (hospitals). Now, no one is available to attend delivery at home. Earlier, elder people knew everything (how to deliver). Now people do not know.

Response 2: Also 108 (ambulance service) is available so there is no cost for transportation.

Response 3: Yes, what we mean is that we do not get skilled persons. So, in that situation (when people had the skill) they used to have home delivery. No one went to the hospital before.

The majority of homebirths in the rural block were attended by TBAs, which was both a necessity as she was the only choice available and preferred because she was known and trusted. The TBAs took the risk of assisting complicated births such as breech presentations at home. Under pressure from the Government to reduce maternal deaths, the Block Health Office is steadily

controlling the TBAs by giving them incentives to bring birthing women to the hospitals, that are four times more rewarding than the fees paid by the families to attend a birth. As described by one of the TBAs:

Q: Last time (8 months ago), when we came to see Kamla's (name changed) home delivery, her mother-in-law asked me not to take her to the hospital

A: Yes because you had arrived by car...

Q: Yes. She was scared of the hospital. Now, from what you have said, it seems the majority of women go to hospitals?

A: That is because we do not get anything for home deliveries. What can a poor family pay me? INR 25 or some corn at the most. If you take the woman to the hospital you get INR 100 per delivery.

The supply of safe delivery kits to the TBAs for added hygiene during home births has been discontinued. TBAs are registered and called to regular meetings by the block health office where they are given clear and repeated instructions to bring birthing women to hospitals. Thus the process of deskilling the TBAs has begun in this block. The natural pace of change from homebirths to hospital births is being 'fast tracked' or hastened, imposing hospital births on women through incentives and disincentives in an effort to reduce maternal and child mortality.

The TBAs in this block described how the younger generation does not want to learn from and take on the professional skills of existing TBAs because of this pressure to submit women to hospital.

Socialisation into medicalised childbirth

The process of modernising childbirth practices that has been part of the primary health care programme of the Government of India since post independence takes many forms with emphasis currently being placed on hospital births. As a result and as shown in the second circle of Figure 1, there is a 'Socialisation into medicalised childbirth'. The definition of socialisation here is 'the process of adapting to a social group', which in this case constitutes the entire health system channelled through doctors, nurses and midwives.

This socialisation happened with experiences of the self and peers within the medical system. The Indian Government's Maternal Health Programme has been offering free maternal health services since the time of independence in the form of antenatal and postnatal checkups in the village, health education by way of door

to door contacts and child immunisation through its outreach programme. The acceptance of medical childbirth practices is evident from the following response given by women in the urban block:

If one month and 10 days are gone we take her to the hospital to get a urine test.....the urine test will tell us whether she is pregnant or has just missed her period. Then the treatment begins. Then they call us every month and then once in 15 days or so we bring the woman for a checkup....to check her weight, and blood pressure.....They ask the woman to lie down and check her abdomen for the growth of the child.....

Repeated contacts with health workers have served as points of influence where the health workers, representing medicalised childbirth practices, counsel mothers to choose hospital births.

In the urban and semi-urban blocks, where hospital births are accepted to a greater extent (Table 2), one block had a functional primary health centre and a permanent and a trusted Auxiliary Nurse Midwife (ANM) with 15 years of experience in childbirths (Table 1). The other block had easy access to private hospitals run by obstetricians and the means to afford private services. Both blocks provided regular outreach services and thus, regular antenatal care programmes aiding the socialisation into medical childbirth practices. This socialization got further embedded when there was evidence that women who had hospital births were benefiting from the successful handling of life threatening complications.

At present, the incentive schemes and the free transport seems to contribute further to the process of socialisation as seen in the following excerpt from a focus group discussion in the semi-urban block:

Q. Did the women start to go to the hospital because of the Chiranjeevi Scheme or did they go anyway?

A. Because of Chiranjeevi (scheme). We get money.

Q. OK. What is your opinion on the scheme?

A. We consider it good.

All women: Yes it is good.We get good treatment. They give money as well as treatment to both mother and baby.

The women in the rural block had limited exposure to medicalised childbirth practices as the government facilities were a long way away and non-functional, the

antenatal care irregular and limited and there were fewer private facilities. In spite of the free transport and hospital services offered under the *Chiranjeevi Yojana*, the women could not, because of extreme poverty, afford the miscellaneous expense of going to the hospital. Consequently, the women in the rural block had less opportunity of getting socialised into medical childbirth practices.

From home to hospital; childbirth as a status passage

The category/Sub-process 2 'From home to hospital; childbirth as a status passage', shown as the fourth circle in Figure 1, borrows the concept of status passage from Glaser [27] p. 1–4. Status passages occur in societies and refer to a journey or mobility from one social status to another that may be desired or undesired by the passagee and may be either individual or collective. This sub-process/category shows childbirth as a terrain and part of the means needed to achieve a higher social mobility and change in social status.

Discourse of hospital births as progressive

The sub-category 'discourse of hospital births as progressive' captures the various elements that contribute to a status passage. Hospital births are viewed as part of a general socio-economic progress, as a normal course of development just like changing from a bullock cart to a motor vehicle for transport. 'With changing times comes a changing society and new practices'. Childbirth practices have in a way changed with the changing patterns of today's consumer markets.

Hospital births are also seen as intergenerational differences similar to the evolving differences in the fashion styles favoured by older and younger generations. 'The younger generation lives for the present moment while the older generation lives for yester years...' Hospital births are attributed to changing lifestyles. With mechanised household equipment such as the electric grinder, interior water taps, etc., women have less physical labour and hence, weaker muscles and lower levels of physical fitness. So, being weaker compared to the women of earlier generations, the modern woman is more likely to require a hospital birth.

The place of birth is related to social class and complex imagery of modernity and a rise in social status. As expressed by one TBA, the 'Sudhrela' or 'the improved ones' - i.e. educated rich women - have hospital births, reinforcing the discourse shown as a loop in Figure 1. Moreover, the rich women went to private hospitals while the poor and lower caste women went to the state-run hospitals. Using private facilities for childbirth, despite being more expensive, was seen as more progressive. The discourse 'hospital births as progressive' implies that if relinquished, the preferences of women normally shift

from home to hospitals as part of the general progress and intergenerational change.

Cultural conceptualisations of childbirth

Because parturition is considered a time of impurity, homebirths had to take place outside either in the cattle shed or a room outside the main home, on a cot woven with jute without any mattress, so that the cot could be washed and reused. The TBA or a relative attending the birth would clean up after the birth though this was considered a defiling task. Even if the tribes do not have a caste hierarchy like the Hindus, the TBAs still faced discrimination as they handled childbirth impurities, one of the reasons why the professional practice of TBAs is not expanding. While describing hospital births or discussing advantages of hospitals, the women invariably mentioned, 'we do not have to do anything, there is someone to clean', indicating that they were happy to shift the impurities from home to hospital.

The description of homebirth practices by women included interventions introduced during labour to shorten the duration of labour described by the sub-category 'long tradition of interventions' in Figure 1. The women believed that the birthing woman needed someone else to assist actively in pushing externally to get the baby out. Applying external pressure is called 'Kalla'. A gentle Kalla was given when the head of the baby was visible and a heavy Kalla when there was delay in birth or after the birth if the placenta was not expelled. This was practiced by nurses and doctors also in government and private hospitals also. In spite of being educated in western medical childbirth practices, 'kalla' is deemed a necessity among medical professionals.

The women equated the duration of labour with the pain intensity. So they felt that 'increasing the pain' would lead to a hastier birth. The women from the urban and semi-urban provinces saw 'the drip to increase the pain' or "injections to increase the pain" as part of a good childbirth as seen in the following excerpt from a village in the urban block:

Q: Do problems such as..... uterus coming out or leaking urine ...happen here?

Respondent 1: This used to happen when the practice was to push hard (external fundal pressure). Now they do not push anymore.

Respondent 8: Now they just do it with the bottle (drip)..... in the hospital they give the drip and injection so the delivery happens normally.

Respondent 4: Once the head appears, they just give a gentle push (externally)

Giving drip and injections to augment the labour as practiced by the hospitals seem to have replaced the use of *Kalla* or its importance in the minds of the women. The belief that it is necessary to intervene during labour either by using *Kalla* or increasing the pain meant that there was a 'readiness to accept medical interventions', which has also aided the acceptance of medicalised childbirths.

Invasive interventions such as episiotomy and C-sections were still unacceptable and part of the description of a 'bad' childbirth. Higher costs, a longer recovery period and a general fear of surgery were factors associated with such invasive interventions.

On the other hand, the women in the rural block, having a minimal exposure to medical childbirths, considered a good delivery to be 'one that happens on its own' although *Kalla* was practiced here too.

Discussion

A myriad of complex factors have facilitated the transition of childbirth practices from home to hospitals amongst the tribal women of Gujarat influencing their childbirth choices, preferences and practices. The model (Figure 1) explains the transition and its contributing factors in the context of changing childbirth markets and general overall development, newer obstetric technologies and international and national childbirth policies promoting western medical hospital births.

Though the use of focus groups was considered the most appropriate method for listening to women's voices and understanding their perspectives of childbirth in their cultural environment, there were certain limitations. The research team found it difficult to restrict number of women as many came out of curiosity and it would have been impolite to refuse their participation. It was also difficult to get the women to stay against their wishes as many had left their young children at home, or had to go out to work. Since participation was not constant from the beginning to the end, it was not always possible to follow the recommended semicircle sitting arrangement and maintain the identity of the respondents [28].

We were unable to separate the groups of younger and older women, as younger women are usually not permitted to participate in any activities involving outsiders without being accompanied by an elder relative or friend. It is likely that their responses especially those of the younger women got restricted. Most of the older women were either mother-in-laws or elder sister-in-laws of the younger women. We included an experienced moderator (the second author) in the team who could sense if there was some hesitation amongst the women and deal with it. We spent some extra time in explaining our purpose of the study and informing them about their right to refuse to participate. We focussed on individual experiences of women which they were eager to share and

also put them at ease. Questions seeking their opinions were woven in in-between. Hence we felt that all women participated actively. In-depth interviews and field observations also helped in triangulation of the FGD narratives during analysis.

Interpretations of medicalisation of childbirth

The medicalisation of childbirth is a global phenomenon viewed from different perspectives. Within mainstream discourses, a medicalised childbirth is viewed as a sign of economic, social and medical progress and an indicator of safe childbirth practices [29]. However, advanced technologies, monitored pregnancies and specialist intervention have also been subject to criticism. The medicalisation of childbirth has been criticised as a violation of the autonomy of women by feminist critics [30,31]. Sociologists compared childbirth in industrialized and unindustrialized societies and found contrasting negative aspects of medical hospital births and positive aspects of traditional homebirths [32]. Medical anthropologists associate medicalisation of childbirth with dehumanisation of birth [33]. The literature related to the underpinning ideology and philosophy of midwifery focuses on the autonomy of birthing women [34] and natural childbirth opposed to medical birth in addition to the discourse against medicalization of childbirth. With births becoming more dependent on technology, midwives perceive their role as either diminishing or in need of redefinition [35] in order to *give back the birthing power to women* [36,37]. In some countries such as Australia [38] and Ireland [39], women and midwives appeal for supportive policies for homebirths.

In India the poor women have limited choices, health centres and health providers are inequitably distributed [40], health systems are weak and the maternal and neonatal mortality rates are high. The homes of poor women lack basic facilities such as running tap water round the clock making it difficult to maintain hygiene during labour. The discourses against medicalization of childbirth in the western countries do not seem to be fully relevant for these women. As seen in this study, improved access to hospitals has increased the choices available to women. The women and their families welcome medical attention during childbirth, as lives are saved. However, this acceptance is partial as the women are against what they see as at times avoidable interventions such as C-sections and routine episiotomies.

Growth of health sector, maternal health policies and medicalisation of childbirth

The general economic development has led to growth in the health infrastructure. In India, the number of allopathic hospitals increased almost 300 fold from the 1970s

to 1990s [41]. The growth seen in the health sector has been taken over by the private sector. Wherever there is higher economic growth, the private sector - usually restricted to urban areas - also spread to rural areas [41] such as Gujarat. One of the reason for this growth in the private sector is the underfunding and underperformance of the public sector [42]. Gujarat has more than 2,000 obstetricians registered in the Gujarat section of the Federation of Obstetricians and Gynaecological Societies of India. With easy access to specialized obstetric care come new obstetric technologies such as ultrasound, fetal heart monitors and interventions like drugs to augment labour, episiotomies and Caesarean sections, which have penetrated to rural areas of Gujarat.

The emphases put on SBA and EmOC by the international maternal health strategy are interpreted as institutional births by the national maternal health policies, equating institutional births as safe births. The JSY and CY represent the interpretation of the Government that hospital births are safe births and the outcome of the underperformance of public health sector and the growth of the private health sector. In spite of the criticism [6], these policies have contributed to the transition of childbirth practices. The transition towards hospitals births found in the current study, was influenced by the inequitable distribution of health centres and providers [40]. For instance the rural block in the current study where majority of the births were still at home, had only two obstetricians enrolled through CY and none present in the government hospital during the period of data collection.

It is difficult to say whether the deskilling of the TBA has happened because of the emergence of medicalised hospital births or whether women have had no choice but to go to hospitals for births because of the TBA being deskilled. Either way, the role redefinition of the TBA has led to the loss of community self-reliance in childbirth and indigenous systems of knowledge [43]. Wherever there has been general economic development and access to modern medical facilities, hospitals have provided an alternative to women and contributed to the transition from home to hospitals. However, when the transition is hastened in the absence of general economic development and functional medical facilities, the deskilling of the TBA could take away the only choice available to women as seen in the case of the rural block in this study.

In spite of the many movements by voluntary organisations to integrate the knowledge of the TBAs into modern childbirth practices in order to make them safe and culturally appropriate birthing options for women, the health administration is making sure that the TBAs do not attend births as seen in this study. For example, the Maitrika Project [44] and the TBA Association in

Gujarat, mobilised by non-governmental organisations (NGOs), have specifically asked for the TBAs to be retained for underserved areas. The Jeeva Project challenges top-down TBA training and the exclusion of TBAs and their healing modalities from the health services system [45].

Hospital births as a status passage

The discourse of 'hospital births as progressive' found in this study is congruent with the argument that reproduction also provides an environment for people to conceive new cultural futures and re-organise and reconceptualise their world [46].

A study in south India exploring the impact of modernity on conceptualisations and practices of childbirth [11] concluded that bio-medical childbirth was accepted by women and viewed as 'a culture in the making'. Another study investigating childbearing and kinship in middle class women in the east of India, also concluded that middle class women perceived state-of-the-art medical treatment as part of their rights and privileges [12], just as hospital births was seen as a status passage in this study.

Cultural conceptualisations of childbirth and interpretations of medical interventions

Modern obstetric technologies are interpreted and consumed differently depending on the social conceptualisations of childbirth that exist in a culture. For example, the women in this study associated the intensity of their labour pains with the speed of progress in labour requesting labour augmentation in order to increase the pain. Receiving oxytocin injections was part of their perceptions of a 'good' delivery. The capacity to bear pain or the pain threshold reflects the women's reproductive power [11]. As expressed by the women in this study, the women of the older generations did hard physical labour, which increased their physical strength as well as their pain threshold.

A study in rural Rajasthan [47], a province adjoining Gujarat, involving the observation of 2,301 births found that external fundal pressure was applied 94% of the time at home and a little lesser in health institutions depending on the size of the health centre. Oxytocin was given 39% of the time at home if modern care providers were present during homebirths and 93-97% in health institutions. Similar unmonitored use of oxytocin, even during home births, was found in Uttar Pradesh [48,49] and in Tamilnadu [11]. The studies also found that women requested the drip to increase labour pains.

Oxytocin has been freely available as part of the skilled birth attendant policy of the Government of India [50]. The Auxiliary Nurse Midwife also known as the Female Health Worker at peripheral institutions were given permission and training to inject oxytocin as part of

managing the third stage of labour to prevent postpartum haemorrhage (PPH), one of the leading causes of maternal deaths in India.

However as described in this and other studies oxytocin is used during the 2nd stage of labour also to shorten the duration of labour. This may not really reduce maternal deaths. High dosages create hyper stimulation, which can lead to precipitate labour, perineal tears, uterine rupture and fetal distress [51].

Bringing together the desirable and the essential

The trade-off between desirable and essential elements of childbirth, which guide the women in their choice of birthplace, implies that although the women have shifted to hospitals for birth they are not fully satisfied with the quality of services provided, especially from a psychosocial perspective. In countries where midwives are autonomous and empowered, they have helped to preserve the 'women-centeredness' of childbirth services. The World Health Organization recommends "safe care close to the women" emphasizing community based midwife led care as most efficient for ensuring good quality and culturally sensitive maternal and newborn health services [52].

As early as 1946, the Bhole Committee report had suggested specialized education and a separate cadre of midwives [53] for more efficiency in training and retention of professional interest and skills of midwives in India. Even today midwifery is integrated into nursing in India not having professional midwives practicing midwifery to its fullest extent [54].

Investing in midwives would be a way to bring the desirable and essential together for India at both the community level and in hospitals, as illustrated by a Cochrane review of 11 clinical trials involving 12, 276 women randomly assigned to midwifery led care and that of medical professionals (specialists /family physicians). The review concluded that midwifery led care was in many ways beneficial to mothers and babies with no identified adverse effects [55]; a reduction in regional analgesia with fewer episiotomies and instrumental births, increased chances of woman being cared for by a midwife that she knows, women feeling in control during labour, having a spontaneous vaginal birth and initiating breast feeding. Midwives were more likely to favour and practice aspects of social and psychological support [56]. Therefore the way forward for India would be to recall and fulfill the promise of the Bhole committee and invest in producing fully qualified midwives.

Conclusions

In resource poor settings where choices are limited and where mortality is high, women easily accept hospital

births as a better option to save lives. Maternal health policies and strategies have been an important contributor towards the transition from home to hospital in regions with a good general economic development.

However, in difficult regions with poor economic progress and where it is not possible to ensure hospital births, the same strategies may not work. Instead of taking away the limited existing choices available to the women, in terms of homebirths by TBAs there is a need to understand, respect and integrate cultural interpretations of childbirth with the maternal health policies. The health system needs to find innovative and effective ways to strengthen midwifery and ensure the availability of and accessibility to midwives at community level.

Furthermore, this study finds that modern obstetric technology is interpreted, utilised and given meanings on the basis of socio-cultural conceptualisations of childbirth. These cultural interpretations should be considered in programme and policy designs for organising maternal health services. There is a need to pilot test strategies and create local evidence for policies prior to a wider implementation.

Endnotes

^aAlthough these statistics are not validated, there is no other source of information. The women in the urban and semi-urban blocks did seem to have stronger preference for hospital births compared to the rural block. The district level household survey 2007–08 puts the figure of institutional births for the entire district as 60.1% (DLHS-III, 2007–08), for which the data was collected between 2004–06.

Abbreviations

ASHA: Accredited social health activist; ANM: Auxiliary nurse midwife; CHC: Community health centre; CY: Chiranjeevi yojana; DLHS: District level household survey; EmOC: Emergency obstetric care; IAG: Interagency group; INR: Indian rupee; JSY: Janani suraksha yojana; NRHM: National rural health mission; NGO: Non government organization; PHC: Primary health centre; RCH: Reproductive and child health; SBA: Skilled birth attendant; TBA: Traditional birth attendant.

Competing interests

The authors declare that they have no competing interests.

Authors' contribution

BS drafted the manuscript and all authors contributed to subsequent drafts and revisions of the paper. KVR, BS and GG developed the study protocols with inputs from KC and EJ. BS and GG prepared tools for data collection and carried out the focus groups and in depth interviews. They also did the initial coding and were joined by KC and EJ for further analysis. The authors have read and approved the final manuscript.

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II



Midwifery scope of practice among staff nurses: A grounded theory study in Gujarat, India

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ABSTRACT

Background: midwifery is a part of the nursing profession in India. This current study explores and describes the midwifery scope of practice among staff nurses.

Methods: a grounded theory approach was used to develop a model. Twenty-eight service providers from the maternity sections of public health facilities, selected through purposive and theoretical sampling were interviewed in-depth. Unstructured observations in the labour wards were also used for developing the model.

Findings: the midwifery practice of staff nurses was limited in scope compared to international standards of midwifery. Their practice was circumstance driven, ranging from extended to marginal depending on the context. Their right to practice was not legally defined, but they were not specifically prohibited from practice. As a consequence, the staff nurses faced loss of skills, and deskilling when their practice was restricted. Their practice was perceived as risky, when the scope of practice was extended because it was not rightfully endorsed, the nurses having no officially recognized right to practice midwifery at that level. The clinical midwifery education of nursing and midwifery students was marginalized because the education of medical students was given priority, and the students only got exposed to the restricted practice of staff nurses.

Conclusions: unclear definitions of the right to practice and the scope of practice have led to the unutilized potential of staff nurses practising midwifery. This is detrimental because India faces an acute shortage of qualified personnel to meet the need in providing human resources for maternal health.

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Introduction

In many parts of the world, midwives are the primary providers of care for women during pregnancy and childbirth (Koblinsky and Matthews, 2006). However the education, competence, scope of practice and the *professionalization* of midwifery differ considerably across the world (WHO, 2006; UNFPA, 2011).

The underpinning philosophy of midwife-led care is normality, believing in the natural ability of women to experience birth with minimum intervention, the woman being the centre of the

birthing process, the decision maker of what, where, how and by whom she receives care (ICM, 2010). There is reciprocity between the woman and midwife, the midwife is seen as reassuring and described as a 'calm presence' during the turmoil of labour (Pembroke and Pembroke, 2008). This is characterized by interdependence and inter-connectedness between the woman and the midwife (Valerie, 1997). A Cochrane review of 11 clinical trials randomly assigned 12,276 women to either midwifery led or medical led care, the latter being provided by medical professionals including specialists and family physicians, concluded that midwifery led care was beneficial in several ways to mothers and babies with no identified adverse effects (Hatem et al., 2008).

Historically, midwives' have contributed significantly in reducing maternal mortality (Loudon, 1992). In Scandinavia women

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with the capacity to mobilize communities were selected and trained as midwives. Close attention was paid to observing hygiene and midwives acquired technical skills to assist in complicated births. Despite the difficult geographical and climatic conditions in Scandinavia, this helped to reduce maternal mortality ratios (MMR) to below 300 per 100,000 by 1920 (Marland and Rafferty, 1997). Today midwives are key professionals for child bearing women in Scandinavia. Reduction in maternal mortality was slower in USA (Loudon, 1992). The obstetricians and midwives were competing rather than complementing each other professionally, and the obstetricians were successful in marginalizing midwives in the USA (De Brouwere, 2005). Today midwives in the USA are not the lead providers for child bearing women (Goodman, 2007) attending only 10% of the total vaginal births (ACNM, 2006).

Sri Lanka and Malaysia are examples, where the strategy of posting clinically trained midwives in the community led to rapid reduction in maternal mortality (Pathmanathan et al., 2003) but midwifery as a profession remains similar to many other countries in South East Asia (UNFPA, 2011). Tamilnadu in India has a MMR of 111 per 100,000 live births (SRS, 2009) compared to the national MMR of 254. Although Tamilnadu has implemented midwifery led care in its Primary Health Centers (Padmanaban et al., 2009), its contribution to reduction of maternal deaths is unclear. Kerala, another province in India, has a MMR of 65, the lowest in India. In Kerala 98% of all antenatal care is provided by a doctor, all births are in institutions (National family health survey III (2005–2006), 2007), but 39% are caesarean sections (Thankappan et al., 2005).

Midwifery in India

Nursing and midwifery education and practice are standardized with some variations throughout the country. The term 'midwife' in India could mean an Auxiliary Nurse and Midwife (ANM) trained for 18 months after 10 years of school education. A staff nurse with 3½ years of diploma or a graduate nurse with a 4 years degree in nursing and midwifery after 12 years of school education is also considered a midwife. The midwifery component in both the diploma and the degree programme is roughly 6 months. All nurses have a dual registration by the Indian Nursing Council, as Registered Nurse (RN) and Registered Midwife (RM).

The ANMs provide community based services whereas the staff nurses are posted in health centres or hospitals. The maternity sections of general hospitals do not have specific posts for midwives. They work as generic 'staff nurses' in any department, one being midwifery. There are no managerial or administrative separate posts for midwives at the province or the national level. Furthermore, the midwifery work is supervised by senior nurse administrators.

Historical studies have traced the roots of nursing in India from the Vedic, colonial to modern period (Wilkinson, 1958) and that of midwifery (Forbes, 2005). There have been national situation analysis studies (Dileep Kumar, 2005) and some from selected provinces (Prakasamma, 2005; Bagga et al., 2010), highlighting the constraints in nursing and midwifery education, regulation, management structures and overall policies. There are to our knowledge no studies found on the midwifery practice of staff nurses.

The current policy thrust in India through its Reproductive and Child Health Programme phase-II is to reduce maternal deaths through promoting institutional deliveries and skilled attendance at birth (MoHFW, 2005). The government has launched an incentive scheme giving financial incentives to poor women for institutional delivery (MoHFW, 2005). There has been an increase in institutional births from 41% in 2005 (National family health

survey III (2005–2006), 2007) to 73% in 2010 (Coverage Evaluation Survey, 2009).

This study about the midwifery practice of staff nurses in health centres is an important contribution at a time when the shift is from home births to institutional births in the country. The study aims to explore and describe the scope of midwifery practice of the staff nurses in the maternity sections of public health facilities. It describes the context of practice and the factors which determine the scope.

Methods

Study setting

Gujarat is one of the most industrialized provinces of India. The population is 60 million (GoI, 2011), with roughly 1.3 million annual births. The estimated MMR of Gujarat is 160 per 100,000 live births (SRS, 2009). The neonatal mortality rate is 37 for Gujarat compared to the national average of 44 deaths per 1,000 live births.

In spite of a good health infrastructure, there is an acute shortage of skilled birth attendants in the rural areas of Gujarat and India (MoHFW, 2010). Strategies to overcome this shortage of staff have, for instance, been to involve private obstetricians through a voucher scheme (Bhat et al., 2009). Under this scheme the government pays private obstetricians to provide a service for poor women at both normal and complicated births. Another strategy has been to expand the scope of practice of physicians to include performing caesarean sections and anaesthesia (Mavalankar et al., 2009). Although staff nurses are active in assisting childbirths, their role has not been examined and enhanced as a human resource strategy for maternal health. The present study was carried out in the maternity sections of government hospitals (Table 1). Hospitals were selected purposively according to their size complexity and location in order to understand if the scope of practice of the staff nurses differed with these differences. The selected hospitals represent three levels of care within the public health system.

Participants

Staff nurses were selected as participants in the study rather than ANMs because the former most closely met the criteria of the duration and content of basic midwifery education as defined by ICM (ICM, 2011). The initial participants were purposively sampled to represent those who were familiar with the midwifery practice of staff nurses. In case of a community health centre and a district hospital usually the team looking after maternal and child health services; the obstetrician, physician, Sister-in-charge or matron and 1–3 staff nurses posted in the labour rooms were all interviewed. In case of the medical college hospital, staff nurses on day and night duties with their supervisors and the in-charge obstetricians of Ob Gyn units were interviewed. Data were collected from August 2008 to September 2009. Twenty-five interviews were conducted. The first round included 10 staff nurses, five obstetricians, four general physicians, an obstetric and a nursing student. Respondents for further data collection were selected through theoretical sampling (Strauss and Corbin, 1998). Two principals and two teachers of schools of nursing and midwifery were interviewed in the second round, using theoretical sampling as described by Strauss and Corbin (1998).

Four more interviews were carried out in the third round of data collection of specialized midwives. These specialized midwives had been trained in midwifery for 11 months after a 3.5 years diploma course in general nursing and midwifery and

Table 1
Description of the study sites.

Study site	Description	Workload	Types and number of staff in maternity sections
Tertiary hospital	<ul style="list-style-type: none"> • Located in large city • Training site for medical and nurse-midwife students • Multispecialty, emergency services—total 1,500 beds 	4,500–5,000 annual births	<ul style="list-style-type: none"> • 6 Obstetric units headed by obstetricians and having 2–3 professors of obstetrics in each • About 30 obstetric PG students • Seven staff nurses posted in labour rooms on rotation duty—one in outpatient department and 3 in the postnatal wards at a time • 2–3 Nurse-midwifery students • Three ayahs
District hospital	<ul style="list-style-type: none"> • Located in tribal district • Basic specialty services, 100 beds 	150–200 Patients in OPD per day	<ul style="list-style-type: none"> • One full time obstetrician • Three general physicians (MBBS doctors), one per shift. • Three staff nurses, one full time ANM for day duty • One ayah, and one ward boy
Community Health Centre-1	<ul style="list-style-type: none"> • Located near a large city • 30 beds, general OPD and inpatient services 	600–800 Annual births 80–90 Patients per day in OPD	<ul style="list-style-type: none"> • One full time obstetrician also the superintendent • 2 General physicians (MBBS doctors) • 7 Staff nurses performing generic duties including childbirth
Community Health Centre-2	<ul style="list-style-type: none"> • Located in remote rural tribal area • 30 beds, general OPD and inpatient services 	500–600 Annual births 90–100 Patients per day in OPD	<ul style="list-style-type: none"> • 2 Full time general physicians • 7 Staff nurses performing generic duties including attending childbirth • One ayah and one cleaning help
Community Health Centre-3	<ul style="list-style-type: none"> • Located in remote rural tribal area • 30 Beds, general OPD and inpatient services 	1,600–1,800 Annual births 80–90 Patients per day in OPD 2,000–2,400 Annual births	<ul style="list-style-type: none"> • 2 doctors—MBBS one trained in c-section and the other in paediatrics • 6 Staff nurses for generic duties in OPD/wards including childbirth • One staff nurse dedicated to labour room

5 years of experience as staff nurses. They are meant to be autonomous midwifery practitioners in public health facilities, where doctors are difficult to recruit.

Ethical considerations

The research and ethics committee at the Indian Institute of Management, Ahmedabad approved the study and the Government of Gujarat, gave permission. Each of the heads of the health facilities were informed through a letter. For individual informed consent a message was read out in vernacular and the informants gave oral consent. Confidentiality was maintained by using codes to identify participants.

Design and data collection

Grounded theory was deemed appropriate for the study as it explored midwifery practice, which can be considered a process. The goal was to build a model/theory (Denzin and Lincoln, 2000). The study followed an emergent design. The initial research question was to explore perceptions of the autonomy of staff nurses in midwifery practice. This seemed unrealistic as their midwifery practice was limited and varied across settings. It was therefore more relevant to describe their scope of midwifery practice and influencing factors.

Interviews were held in the workplace of the participants in the local language, during their free time. Most of the interviews were digitally recorded and transcribed verbatim in the vernacular. Three out of 25 respondents denied recording, so detailed notes were taken. The initial questions included; the typical day and night duties of the staff nurses, division of tasks between peers and medical colleagues, the tasks and procedures undertaken independently by the staff nurses and those requiring

permission of the doctor and so on. Questions about clinical midwifery education were later added when the category 'marginalization of midwifery education' needed further exploration.

Data analysis

A few interviews were translated into English for consultation with members of the research team. The transcripts were read several times followed by open, axial and selective coding facilitated by the Open Code software (version 3.4). The codes were clustered separately for different levels of facilities, and at the same time compared across facilities to understand the effect of context on midwifery practice. Once the categories and the core category were constructed the Paradigm model of Strauss and Corbin (1998) was used to relate categories and analyse factors influencing practice (Fig. 1). The model (Fig. 2) was simultaneously constructed from analysis of the properties and dimensions of the core category 'circumstance driven midwifery practice'.

Findings

The midwifery practice as described and defined in this study is specific to Gujarat and thus not as defined by the ICM. As seen in Fig. 1, one core category, nine categories (bold and underlined), 15 sub-categories (italicized) with several concepts were constructed and relationships identified using the paradigm model. The core category was identified as 'Circumstance driven midwifery practice'. The figure further describes the causal conditions, intervening conditions and context which shape this circumstance driven practice, the action/interaction strategies used by the staff nurses and the consequences.

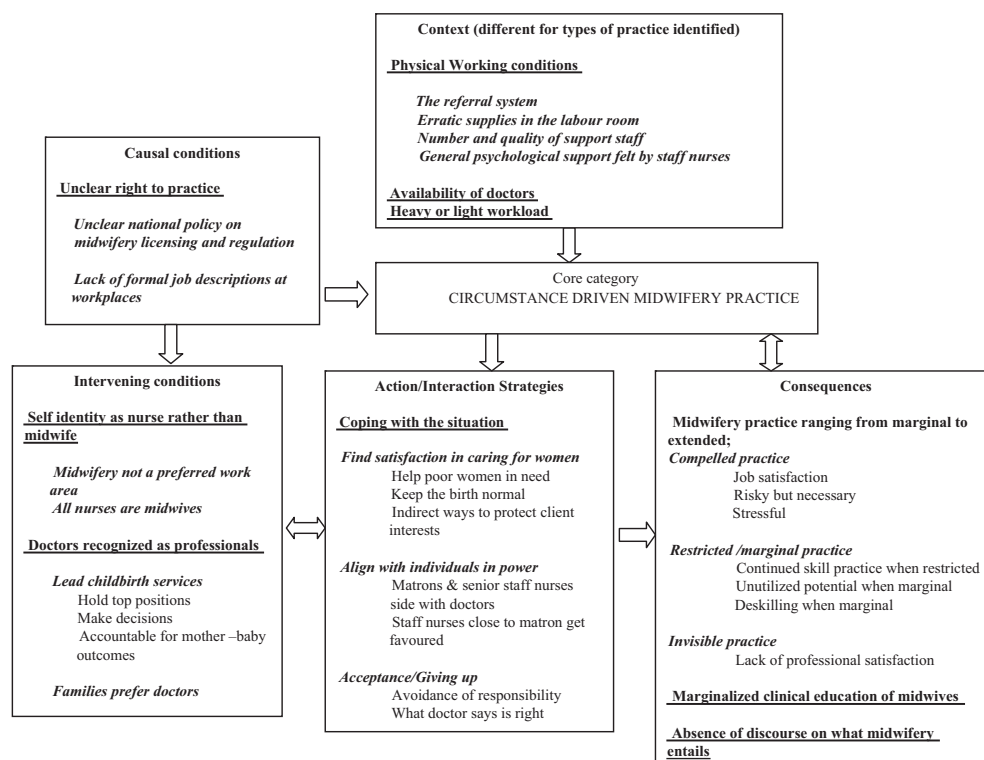


Fig. 1. Relationships constructed of core category and categories using the paradigm model (Strauss and Corbin, 1998).

The circumstance driven midwifery practice was further interpreted as having two dimensions or continuums (Fig. 2) namely, the scope of practice which ranged from marginal to extended practice, and the degree of right to practice ranging from circumstance driven to rightfully endorsed.

The 'scope of practice' in this study is defined by the clinical procedures the staff nurses were allowed to perform independently in the antenatal clinics, labour rooms and postnatal wards. In all facilities the doctor was in charge of antenatal care. The staff nurses assisted the doctor in physical checkups, gave tetanus toxoid injections, recorded height and weight, and gave health and nutrition counselling. In interior rural facilities the mothers were discharged a few hours after birth. In cases when the mother was admitted for postnatal care, the staff nurses assisted when mothers were breast feeding, and watched for signs of complications.

Therefore extended practice in the study meant attending normal labour including performing episiotomy and suturing, removal of placenta, and postnatal care. A 'marginal practice' meant only preparing the mother for birth, help her to change into hospital clothes, give enema, shave perineum, place the woman in the lithotomic position and assist the doctor in managing normal and complicated labour.

The descriptions given by respondents of tasks performed by the staff nurses were plotted on these two continuums giving rise to four situations. The lower half of Fig. 2 denotes low

endorsement or right to practice even though the scope of practice could range from marginal to extended practice. The upper half denotes higher endorsement yet the scope of practice could still range from marginal to extended. The midwifery practice of the same staff nurses could change depending on their place of work and the contextual conditions.

The situations led to three types of midwifery practice of staff nurses described by the categories **compelled practice**, **restricted practice** and **invisible practice**. These three types of practices are not absolute situations but are a range. The fourth category **ideal practice** is non-existent; an ideal practice still to be achieved.

Context

Context is defined according to the Paradigm model as specific sets or patterns of conditions in which action/interaction strategies taken by the staff nurses. As seen in Fig. 1, three categories describe the conditions influencing midwifery practice; 'physical working conditions', 'availability of doctors', and 'workload' (Table 2).

Compelled practice

Compelled practice describes unendorsed yet extended practice, undertaken due to the circumstances and could involve

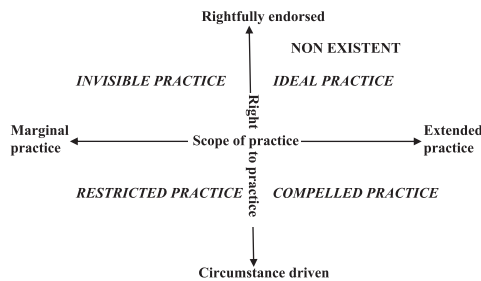


Fig. 2. Situation of midwifery practice in Gujarat.

complex procedures. The staff nurses in this CHC undertook independent practice during the most difficult circumstances (Fig. 2). A CHC has 6–7 staff nurses irrespective of the workload (Table 2). A staff nurse on duty in the night expressed the following.

When the patient comes, we admit the patient, take her directly to the labour room, examine her and also conduct the delivery and then inform sahib (the doctor). If we see something abnormal then we call him earlier otherwise we handle everything. In the night sometimes there are 8 deliveries at a time.

Interviewer: And there is only one staff nurse?

Yes! We have a lot of work! We get cases every 5 to 10 minutes. And there are other patients also to be seen!

As they were generic staff nurses they had nursing as well as midwifery duties. They also filled in for absent staff, maintained records in registers and managed supplies. The district health

managers and the staff nurses perceived their midwifery practice as risky as it was unclear whether attending normal deliveries independently was within their scope of practice.

Restricted practice

Restricted practice ranged from marginal (very little role in direct care) to restricted (extended role under instructions of the doctor) (Fig. 2). The practice of staff nurses of two community health centers (CHC) and one district hospital were plotted here. The staff nurses of the large medical college hospital assumed **marginal practice** (Table 2).

The staff nurses with restricted practice had good backup support in terms of doctors on call and referrals for complications (Table 2). The availability of doctors influenced their scope of practice. In the CHCs the staff nurses were allowed to manage the 3rd stage of labour, remove the placenta, repair episiotomies and tears only in the night or when the doctor was busy with the outpatients.

Doctor of CHC: If the patient has normal labour pain and we are busy in OPD then the sister (staff nurse) checks and even can conduct the delivery with ease. First time delivery and episiotomy is done jointly by us.

Interviewer: So the sisters conduct normal delivery?

Doctor: Yes. Definitely

Interviewer: Is the policy clear?

Doctor: It differs from patient to patient. All nurses know how to assess dilatation, when to start oxytocin, ...to conduct delivery. If it is a breech or some abnormality then we conduct it. We do episiotomy. This is team work!

In the district hospital the staff nurses attended normal cases, screened by the doctor, but their scope of practice expanded to handling minor complications during the night. The doctor was on call. Risk was used as an argument to restrain the practice of staff nurses as explained by a CHC doctor.

Table 2
Contexts for the types of practice identified.

Type of practice identified	Description of practice	Context
1. Compelled practice	<ul style="list-style-type: none"> Independently attend normal childbirth Repair perineal tears Perform episiotomy when required Conduct antenatal checkup in absence of doctor Provide immediate postnatal care 	<ul style="list-style-type: none"> Location in undeveloped rural area Heavy workload (> 100 births/month) Doctors unavailable or busy Caesarean Section unavailable Lack of referral facilities
2a. Restricted practice	<ul style="list-style-type: none"> Attend labour of low risk mothers screened by the ObGyn or GP Not allowed to repair perineal tears Not allowed to perform episiotomy Do not manage 3rd stage of labour No role in antenatal care Give postnatal care under supervision of doctor 	<ul style="list-style-type: none"> Medium workload (< 100 births/month) Doctor on call but unavailable at night or too busy Caesarean section available Referral within reach Staff nurses functioning as both nurses and midwives
2b. Marginal practice	<ul style="list-style-type: none"> Prepare mother for labour Assist doctors in normal and complicated labour Provide essential newborn care No role in antenatal and postnatal care 	<ul style="list-style-type: none"> Heavy workload Many doctors and obstetric students Caesarean section available Large tertiary care hospital Vacant posts for staff nurses and support staff Irregular and inadequate supplies in the labour room
3. Invisible practice	<ul style="list-style-type: none"> Independently attend normal labour Perform episiotomy and repair perineal tears Provide first level care for complications Provide essential newborn care Give postnatal care 	Could be restricted or marginal depending on the place of posting

The staff nurse cannot handle deliveries alone. They need a doctor. Here we take the risk and allow them to do. I keep sleeping and she conducts the delivery. But this is only possible if a doctor is on call. If he says I am going and you carry on, who will take the risk? If a complication occurs, she will lose her job.

In all three facilities the staff nurses were competent team members, led by the doctors, who took decisions and were accountable for patient outcomes.

Marginal practice was observed in a medical college hospital which was large, complex and with hierarchical management structures. There were several units of obstetrics, headed by professors and their assistants. There was one matron, a few assistant matrons, and several Sisters-in-charge. The staff nurses in this situation had little involvement in the process of childbirth.

Junior staff nurse—We start with preparations for the day—prepare delivery sets, autoclave them, the instruments etc.... Sahib (doctor) takes his round at 9.00 am so we have everything ready by then. When the patient comes, we have to shave (the perineum), and if she is full term and she has been taking iron tablets then she is likely to be constipated, the fetus may not move smoothly, so we give an enema. We help her to change into a hospital gown.

Interviewer: Do you monitor labour also?

Respondent: That is done by the doctor.

The staff nurses had tasks divided among senior and junior staff nurses and students. The senior staff nurses managed the supplies and maintained records, while the junior staff nurses and the nursing students assisted the doctor. The midwifery practice of staff nurses was also constrained because of vacant positions for staff nurses, and inadequate supplies and equipment in the labour room. As expressed by a staff nurse;

Staff nurses do not have the right to perform delivery, even if they know, because there is a shortage of staff nurses. 'Who will prepare the trays and equipment then?'

This was a clinical training site for both undergraduate and postgraduate medical students and nurses. In spite of high case loads (4,000 births per year) the obstetric students attended all births. The staff nurses had a chance only in the night. The staff nurses confirmed a similar situation in other medical college hospitals in the province. Those nursing students who wanted to learn, had to negotiate with medical students or learn in the night. The clinical experience of students in midwifery was not so strictly monitored by their schools. Their tutors had little control over the clinical sites as they did not practice themselves, unlike the professors of obstetrics who had both clinical and academic responsibilities. The senior staff nurses, who were supposed to supervise the nursing students, were busy and not trained to be clinical teachers. There was inadequate communication and coordination between the schools of nursing and the clinical sites.

Invisible practice

The staff nurses who had completed an additional 11 month course to qualify as specialized midwives were plotted as having **Invisible practice** (Fig. 2). They had more right to practice compared to the other staff nurses, because the course is implemented by the government. In spite of higher endorsement, the scope of practice of these specialized midwives ranged from marginal to somewhat extended depending on which level of facility they were posted to after training and the availability of physicians and obstetricians in that facility.

The scope of practice of the midwife in a medical college hospital was 'marginal' like other staff nurses. Two were in a district hospital where their higher competence was recognized by the obstetrician and other medical colleagues. The obstetrician trusted their competence which had reduced his workload. The midwives were happy for now but wanted formal recognition and a separate identity due to their higher competence and additional responsibilities.

Causal conditions

In the Paradigm model, causal conditions are a set of events that influence phenomena, which in this current study is midwifery practice. The right to practice was the main category constructed under causal conditions with two sub-categories, the national/provincial policy in terms of licensing and regulation of midwives and the hospital level policies.

It is unclear as per the Indian Nursing Council Act, whether midwives can practice independently (INC, 1947). Their practice seems to be not legal through judicial interpretation or statutory inference, but not specifically prohibited from practice. The principals and the teachers of the schools of nursing thought attending normal labour independently lies within the scope of practice of staff nurses, but the staff nurses and the doctors were unsure.

The federal and the provincial governments have not clarified the role/task division of various medical professionals. None of the respondents had a written job description at the time of joining duties. No employing facility had written service protocols defining the task allocations between professionals.

Intervening conditions

Intervening conditions are defined as broad—general conditions bearing upon action/interactional strategies. Two categories 'Self identity as nurse rather than midwife' and 'Doctors recognized as professionals' were identified as intervening conditions with four sub-categories (Fig. 1).

Since all nurses were midwives having some education in midwifery and they were general staff nurses their identity was that of a nurse. Midwifery was not always the first choice. Working in an emergency unit was preferred because the staff nurses experienced more autonomy there. In the large teaching hospital, out of four staff nurses with 25–30 years of work experience, two had just been shifted to the labour room from the operation theatre. This practice of transfers within specialties further undermined identity formation.

The staff nurses, who had taken the course in midwifery, identified themselves as midwives more clearly. They expressed demands for change in policies concerning responsibility. They expressed a need for the right to admit, refer and discharge mothers, and to screen mothers through antenatal care for timely referral.

Midwife respondent: We will work under the medical officer, so whether he will allow us to run OPD or not.... Even referral should be with our signature. If the medical officer decides for referral and if something happens to the mother or child then the midwife will be in trouble. There should be such laws and legal aspects that we can do our work independently.

These midwives faced resistance from their peers, the other staff nurses, who had not taken this special course. As expressed by one of them

Staff nurse trained in midwifery—We are here since 11 years, we are their peers.... but yet after we have returned from training we have become strange creatures for everyone...

Interviewer—Why is that?

Respondent—They feel threatened. They think that one of us will be made the matron some day or a tutor and will dictate...

The role of doctors leading the care provided during the childbirth process is clear from Table 2 and Fig. 1. All the top management positions are held by the doctors in hospitals. They have the recognition by the state, law and society.

Action/interaction strategies

Action/interaction strategies are defined as purposeful or deliberate acts or absence of strategies designed to resolve problems, which shape the phenomenon. The category 'coping with the situation' (Fig. 1) represented the action/interaction strategies of staff nurses. Fig. 1 further shows that these strategies or lack of them were closely related to the intervening conditions.

The staff nurses, who had an extended but compelled practice found fulfilment in caring for poor women in need. They forgot the risk (in practice) while caring for the poor women when they were faced with limited choices. They felt proud to be able to maintain the normalcy of birth compared to childbirth in large hospitals, where doctors gave routine episiotomies, and applied fundal pressure to push the baby out.

Many staff nurses with restricted practice working under the doctors' instructions accepted the situation as their identity was that of a nurse. A nurse is not supposed to make independent decisions. They avoided responsibility because of this prescribed role of a nurse, the constant reminder of the risk involved, and the fear of blame.

The staff nurses assuming marginal practice, who worked in hierarchical large institutions, coped with the situation by either aligning with individuals in power, or just accepting the situation. As shared by a staff nurse,

Suppose a nurse makes a mistake, all the nurses including the matron, sides with the doctor. The matron works under the superintendent who is a doctor. You are dependent on the higher authority for all your personal adjustments (leave, adjusting duty shifts etc), they write your Confidential Report (performance appraisal) then one has to respect them. At least one cannot go against them.

The staff nurses with advanced training in midwifery indicated readiness to take action for change but were waiting for government orders for specific midwifery posts. They found it difficult to act from their current position of staff nurses perceived as low in power hierarchies.

Consequences

Resulting from the action interaction strategies the consequences could be related to people, places, things, actual or potential events, in the present or future (Straus and Corbin, 1998). In this study the three types of practice: compelled, restricted/marginal and invisible were consequences of the circumstance driven practice environment.

Further consequence of *compelled practice* was job satisfaction because they were able to use their skills (Fig. 1). The staff nurses were proud to meet the needs of poor women. As a negative consequence there was a higher perceived risk compared to the other types of practice, making it stressful.

The staff nurses with restricted practice could utilize their skills but did not get formal recognition of their work like the staff nurses with special training in midwifery. Marginal practice led to deskilling. The senior staff nurses have shared that they have been made to give up many tasks which were earlier within their scope of practice.

A further negative consequence of this marginal practice of staff nurses in teaching hospitals was and continues to be the marginalization of pre-registration midwifery education of students. The students did not get adequate clinical practice. Since they were only able to observe the marginal midwifery practice of their seniors, they missed the exposure to autonomous midwifery practice.

There was a lack of discourse on the philosophy, the scope of the practice of midwifery and its benefits to the mother and child. The debate about the difference between the midwifery and medical model of childbirth is missing. This discourse is being initiated though, by the staff nurses trained in midwifery.

Midwife respondent: 'The doctors are in a hurry. We have seen in our department that they induce (labour) pain (by giving oxytocin injection).This (childbirth) is a God given gift. So as a midwife we just have to support. We do not have to push the baby out, but let the baby take birth in its own time, like we die when the time comes'.

Discussion

The primary source of information for the study was in-depth interviews supported by unstructured observations. The descriptions of practice situations, though matching the observations, are largely perceptions of staff nurses and their colleagues. However, findings were triangulated by regular peer debriefing and through sharing findings with respondents and other staff nurses during workshops. Data from only one province could be viewed as limiting the transferability of findings of the current study. However when the results were presented to group of midwives from countries in the South East Asia, they were of the opinion that the situation of midwifery was not very different in their countries.

The study describes midwifery practice of staff nurses in Gujarat as 'circumstance driven' practice because of an unclear right to and a loosely defined scope of practice. The important actors for defining midwifery practice are the Indian Nursing Council, the employers including the governments and the hospitals, the educational institutions offering basic education to nurses and midwives, and the professional associations.

The Indian Nursing Council was established in 1947 to standardize and maintain the quality of nursing and midwifery education (INC Act, 1947). This role has not expanded to include practice regulations. The council has limitations in human resources, infrastructure and the autonomy to take on this responsibility (Sharma et al., 2010). Since the council does not have a branch for midwifery, the midwifery issues are not adequately represented, discussed and resolved.

Since there are only generic staff nurses in India the governments and the hospitals see them as generalists, who can be assigned to any department and can work in any setting. The practice of transferring staff nurses between departments in large hospitals is a strategy of employers to cope with staff shortages. The dual skills of the staff nurses as nurses and midwives are used depending on the availability of staff, workload and the need for specific departments like maternity.

If the path to midwifery is through nursing, the duration of midwifery training should be 18 months and if it is direct entry then the education should be 3 years (WHO, 2005). The diploma and degree courses implemented in India for RN and RM registration have roughly 6 months of midwifery education. In this short duration, the students are supposed to be trained to the level of competence to provide pregnancy, childbirth and postnatal care. The educational institutions face challenges in securing adequate clinical hands on practice for the students especially for midwifery. The clinical practice of students is not adequately supervised

(Prakasamma, 2005). As shown in this study midwifery education is marginalized because it is a part of nursing and the clinical training sites are controlled by obstetricians. Theoretically normal childbirth is within the scope of practice of staff nurses as defined by their education, but that may not be the case in practice. Those staff nurses who choose midwifery, or are assigned to maternity sections; learn by negotiating training space with doctors or as apprentices to doctors after registration. The doctors and hospital management either pretend to or really are unaware that normal birth is within the scope of the practice of staff nurses. It could be discussed if it is efficient and effective to train all nurses in midwifery skills, which many may not ever use? This could be viewed as a waste of precious educational resources (Fullerton et al., 2011).

Part of the confusion seems to stem from these multiple actors defining midwifery practice and their lack of co-ordination. This confusion is increasingly apparent in childbirth, because of many overlaps in scope of practice between doctors and staff nurses. The boundaries of the scope of practice of the staff nurses expand or contract depending on the geography, the need, and staff shortages. This overlap and confusion results in role confusion, competition among providers, workplace tension, a lack of trust across professionals, a diminishing of professional identity and both under and over utilization of professionals (Baranek, 2005) as also seen in the present study.

Midwives in many parts of the world have similar experiences like midwives in Gujarat. The scope of practice of Chinese midwives differs in different health facilities because of the lack of hospital protocols (Harris et al., 2009). As found in the present study, midwives in China learn skills after registration, as apprentices to doctors. In Jordan, midwifery clinical education is less supervised; the midwives have other nursing duties and spend a lot of time in documentation (Shaban et al., 2011). In Jordan, like in this study, the doctors were in-charge of the antenatal care, the midwives attended low risk labour, but they were still assistants to the doctor. Comparing models of midwifery education in Ghana, Malawi and Ethiopia (Fullerton et al., 2011) found the countries had difficulty in securing access to clinical practice experiences for the midwifery students, both general skills and skills required to handle complications.

From observations of midwifery practice in the USA, where there are certified midwives, certified nurse midwives and obstetricians competing for professional space in childbirth, Schuiling and Slager (2000) postulates that scope of practice has: (1) inflexible boundaries set by legal governing bodies and professional organization and (2) flexible clinical parameters (e.g. practice setting, community needs), that give depth and breadth to scope of practice. Scope of practice according to Schuiling is dynamic and changes if any of the parameters or boundaries is changed either for the profession, the individual or both.

Probably in countries, where midwifery is firmly established like in many parts of Europe, the inflexible boundaries (definition of scope by legal and professional bodies) are clearly defined, widely communicated and accepted by related professions. Nevertheless there are differences still, in the pathways to midwifery and its curriculum between countries in Western and Eastern Europe (Fleming and Holmes, 2005).

As interpreted in the present study, because the inflexible boundaries of midwifery are not clearly defined and there is no consensus among various related actors, the flexible boundaries are driving the midwifery practice of staff nurses in Gujarat. For this reason the staff nurses' collective identity (Kitzinger, 1979) is that of nurses and not midwives (Fig. 1). According to Kitzinger, this affects the way midwives relate to their clients, to the medical profession, to those who administer health services and to those who pass the laws which govern professional practice in

the sphere of maternity care, the action/interaction strategies shown in Fig. 1.

Historically other social factors might have restricted a collective identity of midwives in India. The midwife in India has been and still is the Traditional Birth Attendant, the *Dai* in the minds of many. The doctor respondents in this study used the word midwife and *Dai* interchangeably while the staff nurse was a nurse. The role of Auxiliary Nurse Midwife once strong in midwifery was eroded making her a multi-purpose worker due to programme priorities (Mavalankar and Sriram, 2009). Thus, the services of the *Dai* continued. The period of childbirth and immediately after is considered a time of pollution, when both mother and baby are in a state of defilement (Nandi, 1981). A majority of the *Dais* in India come from lower castes as they deal with this period of defilement (Jeffery et al., 1989). Probably these factors have prevented modern midwifery growing as a profession.

Professional identity is closely linked with professional confidence (Brown et al., 2003) and one underpinning factor for professional confidence is competence (Holland et al., 2011). Professional confidence has its genesis during basic education and continues during a professional's practicing of a chosen vocation (Hecimovich and Volet, 2009). The supervising midwives are role models for the student midwives (Currie, 1999) during basic education. This is a part of socialization into a profession (Pollard, 2003). Prescriptive role models, who follow doctor's orders, do not prove to be good role models (Bluff and Holloway, 2005). About 20% of the students in Gujarat get their clinical experience in medical college hospitals, where staff nurses have a marginalized practice, as shown in this study. Another large proportion go to district hospitals and some go to the Community Health Centers, where they get to observe only restricted practice of staff nurses. The marginalization of midwifery education as found in this study jeopardizes professional identity, competence and professional confidence of the midwives.

Improved quality of education has positive effects on professional identity. There is a beginning of a discourse on midwifery being distinct from medical birth. This needs to continue as at present it only exists as an ideology. The practice of staff nurses with advanced midwifery training like other staff nurses mirrors that of the obstetricians. This discourse is crucial if midwives want to carve a niche and want to improve the quality of maternal and newborn services.

Education alone is not enough for a profession to gain visibility as in the case of the respondents with advanced training as 'nurse practitioner in midwifery' in this study. Clear definition of inflexible and flexible boundaries of the scope of practice, should accompany the efforts to improve education.

In spite of the circumstance driven midwifery practice of staff nurses, the role played by midwives in meeting the needs of women and communities where choices are limited, cannot be overlooked. The practice of the midwives should be unambiguously legitimized. They need a professional identity to evolve a practice which is beneficial for the mothers and babies without a fear of risk in taking full responsibility and being accountable as professionals. Extricating midwifery from the umbrella of nursing and improving basic midwifery education, as well as negotiating professional space by clarifying professional boundaries with that of obstetricians and nurses are important steps that need to be taken.

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III

Do the pre-service education programmes for midwives in India prepare confident Skilled Birth Attendants? A survey from one district in India.

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Abstract

Objective: The graduates of the diploma and degree programmes of nursing and midwifery in India are Skilled Birth Attendants, crucial to save maternal and neonatal lives. This paper aimed to assess the confidence of final-year students in selected midwifery skills from the list of midwifery competencies of the International Confederation of Midwives (ICM) and compare confidence levels of students from the diploma and bachelor's programmes.

Design: a cross-sectional survey

Participants: 633 final-year students, from 25 educational institutions randomly selected, stratified by the type of programme (diploma/bachelor), and ownership (private/government) in Gujarat.

Data collection and analysis: Students assessed their confidence (4-point Likert scale) in four midwifery competency domains-antepartum, intrapartum, postpartum, and newborn care. Explorative factor analysis was used to reduce skill statements into subscales separately for each domain. Crude and adjusted odds ratios with 95% CI were calculated for students with high confidence (≥ 75 th percentile on each subscale) and not high (all others) between diploma and bachelor students.

Findings: Overall, 25-40% of students scored above the 75th percentile and 38-50% below the 50th percentile of confidence in all subscales for antepartum, intrapartum, postpartum, and newborn care. The majority had not attended the required number of births prescribed by the Indian Nursing Council. The diploma students were 2-4 times more likely to have high confidence on all subscales compared to the bachelor students.

Conclusion: The pre-service education offered in the diploma and bachelor's programmes in Gujarat, does not prepare confident midwives, as measured on selected midwifery competencies of the ICM. A serious examination of the content, pedagogy, and regulation of midwifery pre-service education is needed, if India wants to continue reductions in maternal and neonatal mortality.

Key words: Midwifery skills, Confidence, Pre-service education, Nurses, India.

Introduction

India is one of the two countries accounting for one third of global maternal deaths according to the World Health Organization estimates of deaths per 100,000 live births for 2010; India is at 19% (56 000), followed by Nigeria at 14% (40 000) [1]. Retrospective studies have attested that skilled birth attendance (including midwifery) is crucial to achieve success in saving lives and promoting health of women and newborns [2-5]. The studies seem to assume that the midwifery workforce across countries has uniform competence, scope of practice and identity which is regrettably not the case [6]. Basic or core sets of competencies are needed to achieve the results described in these studies [7].

The International Confederation of Midwives (ICM) provides a list of the basic competencies expected from a pre-service midwifery education programme to qualify as a midwife, within the scope of practice defined by the ICM [8]. There are many pathways to midwifery across countries; a direct entry curriculum, post- registration (nursing) curriculum, or embedded within a nursing curriculum [9]. India follows the integrated education pathway. Programmes that combine nursing and midwifery education are not supported by ICM because they limit the focus on the entire set of competencies needed for either profession. Committed to achieving the Millennium Development Goals (MDGs) 4 and 5, India is striving to ensure that all births are attended by a skilled birth attendant (SBA). The obstetricians, general physicians, Auxiliary Nurse Midwives (ANMs)/ Multipurpose Workers (MPWs) and staff nurses are all considered SBAs. The pre-service education of these health professionals varies from 18 months in case of the ANMs/ MPWs (after 10 years in school) to 8 years in case of an obstetrician. Needless to say there

are variations in the midwifery competencies of these professionals.

India has two formal integrated programmes of nursing and midwifery adhered to by all provinces; a 3.5-year vocational training awarding a Diploma by the schools of nursing, and a university-based 4-year programme awarding a Bachelor's degree by the nursing colleges. The Indian Nursing Council (INC) has fixed requirements for awarding a midwife license when at least 35 births are attended for the diploma and 20 for the bachelor students, and other procedures such as episiotomies, observing abnormal labour, have been achieved. All the graduates get a joint registration as Registered Nurse (RN) and Registered Midwife (RM) absorbed as general staff nurses in hospitals, who could change departments/specialities several times during their career.

The objective of this study was to assess the confidence of final-year students in their skills in antepartum, intrapartum, postpartum, and newborn care from the list of midwifery competencies of the ICM and compare confidence levels of students from the Diploma and Bachelor's programmes.

Confidence and competence

Concepts of confidence and competence may be linked but are not synonymous. Increased level of confidence is not in direct proportion to increased competence, although decreased confidence may be linked to a reduction in skilled performance [10]. 'Self-efficacy' or self-regulation is an important attribute of competency having three dimensions; confidence, level (magnitude, or difficulty of tasks the individuals think they can perform) and generalizability (extent of transfer to other areas of functioning) [11]. Confidence is the strength of self-efficacy. When applied to the midwife, confidence would concern task performance and perseverance when

confronting difficulties and setbacks in the work situations.

Butler et.al (2006) identified 'being a safe practitioner' as one of the essential competencies required of a midwife at the point of registration [12]. Being a safe practitioner include having a reasonable degree of self-sufficiency, use of up-to-date knowledge in practice, and having self and professional awareness. Butler's definition of self-sufficiency was similar to Bandura's concept of self-efficacy, but also included the ability to detect deviations and take appropriate action, and respond to emergency situations [13].

These definitions and concepts imply that midwifery education needs to develop high levels of confidence amongst the students in personal ability, with awareness of personal limitations and the need to ask for appropriate help [10], more so when they are expected to assist women in difficult circumstances with limited resources at their disposal.

Design and Method

A cross-sectional survey design was used for the study. The government of Gujarat gave permissions to perform the study. Appointments for data collection were taken from the Principals of the selected institutions through letters. The students were assured of confidentiality, were free to refuse participation or leave midway if they so wished and were assured that their responses would not influence their final results.

Setting

This study was carried out in the Gujarat province situated in the northwest of India. The maternal mortality ratio of Gujarat is lower, 122 per 100,000 live births compared to the whole of India with 178 per 100,000 live births [14]. The proportion of

births in institutions in Gujarat is 78%, also higher than in India as a whole at 73%. Eighty-five per cent births in Gujarat are attended to by skilled birth attendants compared to 76% in India as a whole [15].

There are 2,670 Diploma schools and 1,578 Bachelor's colleges of nursing in India out of which more than 90% are private institutions [16]. Gujarat had 134 educational institutions for nursing and midwifery at the time of this study. Out of 92 Diploma schools, 71 (77%) and out of 42 Bachelor's colleges 34 (81%) were privately owned.

Sample

From a list of 134 institutions provided by the Gujarat Nursing Council, 79 were excluded as they were newly established and therefore did not have final year students. The remaining 55 institutions were divided into four strata according to their ownership (government/private) and type of programme (Bachelor's/Diploma). We aimed to select 30% of students from each stratum. We picked names of institutions randomly until we could get at least 45% of students from each stratum (considering the possibility of dropouts). Twenty-five institutions were thus selected; 17 schools (out of 38) and 8 colleges (out of 17). All final-year students from these institutions participated in the study.

Data collection

A questionnaire was designed for the study. The list of skills under four selected ICM competency domains was reviewed by a group of six senior midwifery teachers rating each skill statement on a three-point scale, for relevance to the Indian context and technical terms. The content and language of the ICM was retained as far as possible. Skills, which were out of scope of nurse-midwives practice in India, were removed (such as 'using Doppler to monitor foetal heart rate'). Skill

statements, which included more than one skill, were divided into separate statements.

The tool was translated into Gujarati and pilot tested with both the Bachelor's (n=9) and Diploma students (n=15); to check the students' understanding of statements and the response time. The final tool included 19 skill statements for antepartum, 38 for intrapartum, 14 for postpartum, and 19 for newborn care. Background questions such as age, sex, religion, and qualification on admission were included as well as total number of births attended. Self-confidence was assessed on a 4-point scale ranging from 'I do not have skill' to 'I am confident'. The question read "Suppose you are posted at a rural primary health facility without a doctor, how confidently will you be able to perform this skill?"

The data were collected between February and March from diploma students and between April and July 2013 from the bachelor students to coincide with their term ending. The students answered the questionnaires independently, but the first author was available to clarify any items. However, the presence of the first author could be the reason for few (0.1% to 4%) missing data.

Statistical methods

For the analysis of associations between confidence and explanatory variables, first principal component analysis (PCA) with Oblimin rotation [17], were performed separately for the four domains to identify subscales and to reduce the number of statements.

The factorability of data was assessed through the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO), which should be above 0.6 [18], and Bartlett's Test of Sphericity [19] to be significant ($p \leq .05$). The Kaiser-Meyer-Olkin values were 0.92- 0.95 for the four

domains (antepartum, intrapartum, postpartum, and newborn care), all exceeding the recommended value of 0.6 [18], and Bartlett's Test of Sphericity [19] reached statistical significance in all domains, supporting the sample adequacy and the factorability. The number of retained subscales was guided by Kaiser's criterion (eigenvalues > 1), and Catell's scree test [20] with inspection of the scree-plot. All components with an eigenvalue >1 and statements loading above 0.40 were retained. The internal consistency reliability for each of the subscales was measured using a Cronbach's alpha coefficient [21].

Three subscales were identified out of 19 statements for the domain of antepartum care. Each component explained 38%, 8%, and 7%, respectively, and 53% of the total variance. The internal consistency reliability for each subscale under antepartum care measured by Cronbach's α , ranged from 0.77 to 0.84.

The four subscales identified from 39 statements for Intrapartum care explained 38%, 7%, 5%, and 4% respectively, and 53% of the total variance, and the Cronbach's α for each subscale ranged from 0.6 to 0.8.

The two subscales identified from 14 statements under the domain of postpartum care explained 47.8% and 10.4% of the variance respectively, and 58% of the total variance. The Cronbach's α for each subscale for postpartum care ranged from 0.85 to 0.9.

The three subscales identified for newborn care explained 50%, 8.6% and 6.5% of the variance respectively, and 64.5% of the total variance. The Cronbach's α for each subscale for newborn care ranged from 0.86 to 0.9.

The confidence responses for each subscale were summed up and dichotomized based on 75th percentile as 'High confidence' (75th percentile or above) versus 'Not high confidence' (Lower than 75th percentile).

Crude and adjusted odds ratio with 95% confidence intervals were calculated for students with high confidence from the Bachelor's and Diploma programmes. The variables adjusted for were: total number of births attended, type of clinical site, and ownership (private/government). The background variables were not adjusted for because of fewer variations found. The analysis was performed using the Statistical Package of Social Science (SPSS) Version 20 (SPSS, Inc., Chicago, USA)

Findings

Ninety-eight per cent of the students from the selected institutions participated, as 2% were absent on the day of data collection. From the total 1525 final-year students available in the province at the time of data collection, we could cover 633 (41%), and at least 30% from each stratum (Table 1). The variations in proportions of students selected from each stratum reflect the variations found in class size ranging from 15 to 65.

Insert table-1 here

Clinical skills of the graduates can be partly attributed to the size, caseload and the capacity of clinical sites assigned to them for clinical practice. The bachelor's programmes have multi-speciality teaching hospitals and the diploma programmes have either district hospitals or teaching hospitals for clinical practice of students. The private institutions could either have their own hospital or pay the government hospitals for clinical practice, which in the majority of the cases are teaching hospitals with high maternity workloads. We could get between 35-45% of students from all types of medical sites (table-1).

The median age of the students was 21 years ranging from 20 to 23 years, 93% were females, 92% were unmarried, and 91% were Hindus. Sixty-four per cent students said

nursing education was their first choice, while 8% preferred to work as midwives after their graduation.

Insert figure-1 here

Maximum students (50%) reported attending 0-15 births, 30% between 16-30 and 18% more than 30 births (Figure-1). Twenty-six percent of the Diploma students and 15% of the Bachelor's students have reported attending the required number of births for registration. The students from both programmes had low confidence in a majority of the intrapartum skills, though the Diploma students were more confident compared to the Bachelor's students.

Insert figure-2 here

For instance as seen in figure-2, 61% of the bachelor and 25% of the diploma students either did not know/needed a lot of practice in performing a pelvic examination, 44% of the bachelor and 26% of the diploma students said they did not know /needed a lot of practice in calculating the time of uterine contractions. Similarly 55% of the bachelor and 24% of the diploma students said they did not know/needed a lot of practice in assessing the effectiveness of uterine contractions.

High confidence compared between Diploma and Bachelor's programmes

Antepartum Care

The three subscales under the antepartum domain identified through PCA were labeled as:

1. *Assess maternal and foetal health* contained the following skills: take antenatal history, make a physical examination of the mother, assess, understand, and explain to the mother about foetal growth and activity.

2. *Identify antepartum risks* contained the following skills: identify and manage high risk pregnancies based on national and local guidelines and maintain records.
3. *Provide health education to women and families* contained the following skills: identify and interpret maternal vital signs and communicate them to the mother, advice on expected delivery date and nutrition, and provide guidance for common discomforts and birth preparation.

Insert table-2 here

Between 38% and 40% of the students were below the 50th percentile of confidence and 15% to 49% were above the 75th percentile for the three ante partum subscales (Table 2). The Diploma students had 2-3 times higher odds for high confidence for all the three subscales, compared to the Bachelor's students, after adjusting for all other variables (Table 3).

Insert table-3 here

The students from private institutions had higher odds for high confidence in all the subscales compared to those from government institutions in 'assessing foetal and maternal health' (OR 2.6; 95% CI 1.7-4.0), in 'identifying risks' (OR 1.9; 95% CI 1.3-2.8), and in 'giving health education to families' (OR 1.7; 95% CI 1.1-2.6).

Intrapartum care

The four subscales identified under Intrapartum care were labelled as:

1. *Manage and monitor the first stage of labour* contained the following skills: take history and vital signs, perform physical examination, perform vaginal examination, monitor and assess uterine contractions, use partograph, identify

abnormal labour patterns for taking action, and encourage normal labour.

2. *Manage the second and third stage of labour and its complications* contained the following skills: augment and monitor labour, perform version, administer anaesthesia to perineum, perform episiotomies and repair tears, actively manage third-stage labour including uterotonic drugs, apply fundal massage, inspect the placenta and membranes, assess for perineal and cervical lacerations and tears and take action, manage postpartum bleeding, perform aortic compression, manually remove the placenta, identify and manage shock, and manage timely referral.
3. *Perform routine procedures during labour* contained the following skills: cut and clamp cord, administer prescribed drugs per guidelines, insert intravenous line, draw blood for laboratory, provide environment for mother and child bonding immediately after birth, and manage documentation.
4. *Support women during labour* contained the following skills: provide physical and psychological support for the woman and her family, promote normal birth, facilitate the presence of birth companion, ensure hydration and nutrition of mother during labour, and provide choices to mother during labour.

There were 41-49% students below the 50th percentile and 26-33% above the 75th percentile of confidence in the four subscales of intrapartum care (Table 2). The Diploma students had almost 2-4 times higher odds for high confidence on all subscales compared to the Bachelor's students (Table 3). The number of births attended was associated with higher odds for high confidence in the three subscales; attending >30 births was associated

with higher odds for high confidence in 'managing the first stage of labour' (OR 3.8; 95% CI 2.2-6.6), in 'managing the second and third stage of labour' (OR 2.3; 95% CI 1.3-3.9), and in 'supporting women during labour' (OR 2.0; 95% CI 1.2-3.4). No other variable showed a significant association with high confidence.

Postpartum care

The two subscales identified in postpartum care were labeled as:

1. *Postpartum physical examination and treatment* contained the following skills; perform physical examination of mother, assess uterine involution and healing of lacerations, provide contraceptive services, detect and manage complications before referral, provide emergency treatment for late postpartum haemorrhage, and support families in case of bereavement and loss.
2. *Postpartum health education and information to parents* contained the following skills; take a routine history of the birth, support immediate breastfeeding, educate mothers for self-care and care of the newborn at home, educate the mother about contraception, nutrition, hygiene, signs of infections, rest, and exercises.

Between 46%-47% students were below the 50th percentile and 26-28% were above the 75th percentile of confidence for the two subscales under postpartum care (Table 2). The Diploma students had 2-4 times higher odds for high confidence compared to the Bachelor's students, which remained significant after adjusting for all independent variables (Table 3). The students were more likely to have high confidence in 'postpartum physical examination' if they had a teaching hospital for clinical practice (OR 1.6; 95% CI 1.0-2.4).

Newborn care

The three subscales identified for newborn care were labeled as:

1. *Initiate essential newborn care* contained the following skills: cutting and clamping cord, drying, clearing airways and establishing respiration, assessing the immediate condition of the newborn, maintaining body temperature (skin to skin included), caring for low birth weight newborn, and initiating breastfeeding.
2. *Identify and treat newborn complications* contained the following skills: emergency measures for hypothermia, hypoglycemia, respiratory distress, measures for complications of low birth weight and referral, screening for congenital anomalies and referral.
3. *Educate parents about newborn care* included the following skills: educating parents about newborn care of normal, multiple, and newborns with complications, supporting them during separation from a sick newborn, caring for the newborn of an HIV positive mother, and documenting and keeping records.

There were 43-50% students below the 50th percentile and 27-33% above the 75th percentile of confidence for the subscales for newborn care (Table 2). The Diploma students had 2-4 times higher odds for high confidence in all three subscales compared to the Bachelor's students, which remained significant after adjusting for all independent variables (Table 3). Attending > 30 births was associated with high confidence in 'identifying and treating newborn complications' (OR 1.7; 95% CI, 1.0-2.8). No other variable was associated with high confidence for any of the subscales under newborn care.

Discussion

The findings of this study are disturbing, raising several questions for the safety of mothers and newborns, and the structure and quality of clinical education within the integrated nursing and midwifery education programmes implemented in India. Nearly half of the students from both programmes had confidence below the 50th percentile while less than 40% had high confidence in all the subscales under the four selected domains of competencies. A majority of them had not attended the required number of births prescribed by the Indian Nursing Council. Students from both programmes were not 'fit to practice' (fulfilling all requirements for registration) [22] going by even the national requirements.

The staff nurses are an important human resource for maternal and newborn care, recognized as Skilled Birth Attendants (SBA) under the National Health Mission (NHM) [23]. To scale up skilled attendance at birth, India has introduced a 2-3 weeks in-service SBA training for Staff Nurses to upgrade their midwifery skills [24]. The SBA training is meant to develop competence for obstetric and newborn complications; to use uterotonic drugs for prevention of postpartum haemorrhage, use drugs prior to referral for stabilizing the patient, and to perform basic procedures at community level in emergency situations [25]. This study shows that newly registered staff nurses are not 'fit for purpose' (defined as meeting the expectations of the mothers and communities, employers and other stakeholders) [22]. They do not measure up to the expectations of the government of India of being SBAs even if they take the 2-3 weeks in-service training, because they lack confidence in even basic skills for normal labour leave alone deal with complications.

Because the education for nurses and midwives is integrated in India, the students

are required to develop competence in several nursing domains and also in maternal and child care. Proportionately fewer hours (11.6%) are allocated to midwifery in the Bachelor's programme [26] compared to the Diploma programme (18.6%) [27]. Reasons for this difference between the two curricula are unclear albeit all graduates from both the programmes are awarded midwifery license. Both programmes fall short of the international recommendations of 18 months of midwifery education in addition to three years of nursing education or three years of direct entry midwifery education for fully competent midwives [28].

The diploma students were 2-4 times more likely to have high confidence for all domains compared to the bachelor's students, which are at the university level and therefore at a higher level. The bachelor's graduates qualify for both clinical and academic roles usually becoming tutors for the diploma students eligible for admission for postgraduate education. The diploma graduates fulfil the need for clinical nurses in hospitals, needing two additional years of education to get the Bachelor's degree for an academic career. It is not clear from the curriculum documents whether the objective of the Diploma programme is to prepare competent clinical midwives and that of the Bachelor's programme is to prepare teachers and researchers. Even if that is the case, the Bachelor's programme is producing clinically incompetent midwifery teachers, as the first qualification for teaching midwifery amongst many other qualifications, is clinical competence [29].

The INC and/or the respective State Nursing Councils are the licensing bodies for nurses and midwives. Their role is limited to inspection of educational institutions when the institutions are established and every 3-5 years thereafter with respect to infrastructure,

staffing, and other norms. The Councils do not have a separate section for midwifery and therefore midwifery has less visibility and significance [30]. Since midwifery is not an autonomous profession it is unregulated with an undefined scope of midwifery practice of staff nurses [31] which is also reflected in the priority given to midwifery education within the integrated pre-service educational programmes.

Just as in other parts of South East Asia [32], India does not have national standards for midwifery education and lack accreditation systems to monitor the quality of education to ensure that students being awarded the midwifery license are competent and fit to practice. Because confidence is associated with the learning environment [33], further research is needed to understand the basic structure, content and pedagogical approaches used for midwifery education such as structured learning experiences for students, systems for clinical supervision and mentorship, and existing methods of assessment of student's clinical skills for both the programmes. The overall lack of confidence amongst students seen in this study could be seen as an indicator of their future performance as midwives since self-confidence has a mediating effect on performance and could be one of its predictors [34].

Methodological considerations

Other studies measuring confidence have used methodologies such as; analysis of responses to vignettes [35], in-depth interviews with midwifery students during basic education [12], and diaries of key events maintained by newly qualified midwives [36]. Like this current study, studies in the past have also used self-reported confidence for evaluating effectiveness of midwifery and nursing programmes [37,38] or comparing two tracks of midwifery programmes [38,39].

Defining high confidence as above the 75th percentile, as was done in this study, has its limitations. It is relative to the respondent groups participating rather than being a standard. This means 'high confidence' as measured in this study would most likely be lower than if compared to a standard. A fairly large sample size with good representation of nursing education institutions spanning almost all geographic regions of Gujarat is strength of this study.

The confidence of students is not measured on the full set of competencies required for a fully qualified midwife as defined by ICM. Four domains out of seven of the ICM list and only skills are included leaving out the 'knowledge' and 'professional behaviors' (for the practical reasons of reducing the tool length). Since the skills included in the study are 'basic or core, i.e., those that should be an expected outcome of midwifery pre-service education' [8], it is reasonable to expect that all graduating students should have confidence in at least these core skills.

Though the study is from only one province, its findings might hold relevance to the entire country because the curricula for the Diploma and Bachelor's programmes are the same all over India. This study successfully informs the policy-makers in charge of maternal and newborn health and teachers of midwifery about the specific skills needing urgent attention and the overall differences between the Diploma and Bachelor's programmes. Given the still high maternal and neonatal mortality in India, and India's commitment to ensure skilled care at every birth, the current study is an important contribution towards developing an effective policy to scale up midwifery services in India. It appears to be the first published study related to confidence in midwifery skills of graduates to be licensed as midwives.

Conclusions

The students from the Diploma and Bachelor's programmes in Gujarat do not feel confident in the core midwifery skills listed by the ICM. Considered as SBAs they do not measure up to the expectations of the Governments that of providing safe first level care to mothers and newborns. The structure, duration, content, and pedagogical methods for both programmes need an urgent investigation. Considering that the Diploma programme is below the university level, the higher confidence of the students from the Diploma programme compared to the Bachelor's programme found in this study, also needs investigation.

Author's Contribution

BS drafted the manuscript and all authors contributed to subsequent drafts and revisions of the paper. BS, KC, PM and KVR developed the study protocols with inputs from EJ. BS, PM and KC designed the questionnaire and BS collected and managed the data. BS and IJ did the analysis with regular inputs from KC. BS, EJ and KC with the help of IH, KVR and PM drafted the manuscript. The authors have read and approved the final manuscript.

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Competing Interests

The authors declare they have no competing interests

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Type of Institution		Diploma Students		Bachelor's Students		Total	
		Selected/Available		Selected/Available		Selected/Available	
		n/N	%	n/N	%	n/N	%
Government	Attached to teaching hospital	143/312	45.8	85/185	45.9	228/497	45.9
	Attached to district hospital	80/235	34.0	0	0	80/235	34.0
Private	With own hospital	73/239	30.5	87/115	75.7	160/354	45.2
	Without own hospital	68/134	50.7	97/305	31.8	165/439	37.6
Grand Total		364/920	39.6	269/605	44.5	633/1525	41.5

	<50th Percentile		50 to 75th Percentile		>75 Percentile	
	n	%	n	%	n	%
Antepartum Care						
1. Assess maternal and fetal health	253	40.0	182	29.0	171	27.0
2. Identify ante partum risks	253	40.0	213	33.6	149	23.5
3. Assess maternal health and provide health education	244	38.5	179	28.3	177	28.0
Intrapartum Care						
1. Manage and monitor 1st stage of labour	299	47.2	164	25.9	170	26.9
2. Manage 2nd and 3rd stage of labour and its complications	312	49.3	157	24.8	164	25.9
3. Support women during labour	270	42.7	130	20.5	233	36.8
4. Routine procedures during labour	261	41.2	161	25.4	211	33.3
Postpartum Care						
1. Postpartum physical examination and treatment	296	46.8	170	26.9	167	26.4
2. Postpartum health education and information to parents	300	47.4	157	24.8	176	27.8
Newborn Care						
1. Initiate essential newborn care	275	43.4	150	23.7	208	32.9
2. Identify and treat newborn complications	314	49.6	126	19.9	193	30.5
3. Educate parents for newborn care	314	50.0	141	22.4	175	27.6

Table-3. The association between program type and high confidence (>75 quartile) in identified subscales for antepartum, intrapartum, postpartum and newborn care (N=633)				
Skill sets identified through PCA	Group	Students with high confidence N (%)	Crude OR (95% CI)	Adjusted OR# (95% CI)
A. Antepartum care				
1. Assess maternal and fetal health	Diploma	129/364 (37.2)	3.0 (2.0-4.5)***	3.3 (2.1-5.1)***
	Bachelor	42/269 (15.6)	Reference	
2. Identify antepartum risks	Diploma	178/364 (48.9)	2.7 (1.9-3.8)***	2.4 (1.6-3.6)***
	Bachelor	68/269 (25.3)	Reference	
3. Assess maternal health and providing health education	Diploma	125/364 (34.3)	2.2 (1.5-3.3)***	2.9 (1.9-4.2)***
	Bachelor	52/269 (19.3)	Reference	
B. Intrapartum Care				
1. Manage and monitor 1st stage of labour	Diploma	131/364 (36.0)	3.3 (2.2-4.9)***	2.5 (1.6-3.9)***
	Bachelor	39/269 (14.5)	Reference	
2. Manage 2nd and 3rd stage of labour and its complications	Diploma	137/364 (37.6)	5.4 (3.4-8.5)***	4.0 (2.5-6.4)***
	Bachelor	27/269 (10.0)	Reference	
3. Support women during labour	Diploma	159/364 (43.7)	3.2 (2.2-4.6)***	2.6 (1.7-3.8)***
	Bachelor	52/269 (19.7)	Reference	
4. Routine procedures during labour	Diploma	160/364 (44.0)	2.1(1.5-3.0)***	1.6 (1.1-2.3)*
	Bachelor	73/269 (27.1)	Reference	
C. Postpartum Care				
1. Postpartum physical examination and treatment	Diploma	135 (37.1)	4.4 (2.8-6.6)**	4.0 (2.5-6.3)**
	Bachelor	32 (11.9)	Reference	
2. Postpartum health education and information to parents	Diploma	124 (34.1)	2.1 (1.5-3.1)**	1.8 (1.2-2.7)**
	Bachelor	53 (19.3)	Reference	
D. Newborn Care				
1. Initiate essential newborn care	Diploma	149 (40.9)	2.4 (1.7-3.5)**	2.0 (1.3-3.0)***
	Bachelor	59 (21.9)	Reference	
2. Identify and treat newborn complications	Diploma	157 (43.1)	4.9 (3.2-7.3)**	4.1 (2.7-6.4)***
	Bachelor	36 (13.4)	Reference	
3. Educate parents for newborn care	Diploma	122 (33.8)	2.1 (1.4-3.0)**	1.9 (1.3-2.9)**
	Bachelor	53 (19.7)	Reference	
# Adjusted for; Total number of births attended, Type of medical site, and Private/Government *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$				

Figure 1 Total number of births attended by type of programme

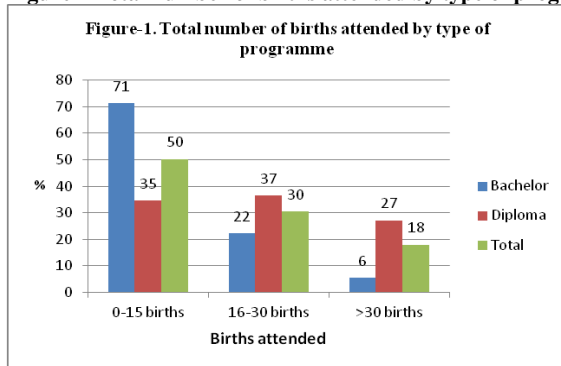
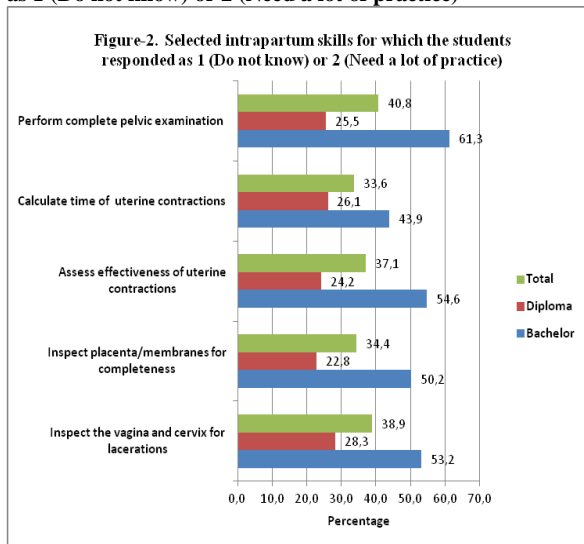


Figure 2 Selected intrapartum skills for which the students responded as 1 (Do not know) or 2 (Need a lot of practice)



IV

What are the teaching-learning methods which contribute to the confidence of midwives during pre-service education? A survey from Gujarat, India.

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Abstract

Background: The Government of India has taken up reforms for basic education of nurse-midwives to ensure competence of graduating students. This paper aims to study the association between the self-confidence of final-year students in selected midwifery skills and teaching-learning methods used in the diploma and bachelor's programs for nurse-midwives using the list of midwifery competencies by the International Confederation of Midwives (ICM).

Methods: This was a cross-sectional survey of 633 final-year students from randomly selected, 25 educational institutions, stratified by the type of programme (diploma/bachelor), and ownership (private/government) in Gujarat. The students assessed their confidence (on a 4 point Likert scale) and reported teaching-learning methods used for antepartum, intrapartum, postpartum, and newborn care through a questionnaire. The subscales identified for each competency, through a previous principle component analysis, were used to study the association of teaching-learning methods and high (≥ 75 th percentile) and not high (all others) confidence by calculating crude and adjusted odds ratios with 95% confidence intervals for each subscale.

Results: Laboratory demonstrations, practice on manikins, demonstrations at clinical sites, hands on clinical practice, and supervision at clinical sites were practiced less than classroom sessions. All teaching-learning methods were practiced more in the diploma compared to the bachelor's program. Twenty-six per cent of the diploma students and 15% of the bachelor's students attended the required number of births for being awarded the midwife license. High confidence was associated with number of births attended, practice on manikins, and being satisfied with supervision during clinical practice for all subscales.

Conclusions: Hands on skills practice in the laboratory and supervised clinical practice during clinical placements were associated with high confidence in students for basic clinical midwifery skills. The diploma program followed better pedagogical approaches than the bachelor's program. Pedagogical approaches of pre-service midwifery education for nurses-midwives in India should include more supervised hands on practice for preparing confident nurse-midwives to provide safe maternal and newborn services.

Key words

Midwifery skills, Teaching-learning methods, Confidence, Nurses, India.

Background

With high maternal and neonatal mortality, limited resources, and lack of robust health systems, low-resource countries are faced with a dilemma of whether to invest in increasing the quantity or quality of skilled birth attendants (SBAs) including midwives, to achieve Millennium Development Goals (MDGs) 4 and 5 [1]. To scale up the number of births attended by SBAs, professionals and semi-professionals with varied designations, durations of education, competencies, and regulatory authorities are considered SBAs [2,3]. Though nurse/midwives are included in the definition of SBA, too few countries appropriately plan for, authorize, and support them to deliver essential maternal, newborn, and child health care and interventions that could save lives [4]. Moreover, many health professionals included as SBAs may not have the essential competence to deliver maternal and newborn services [5].

There is a movement toward competency-based education in the medical field in general [6-8] including education for midwives in resource-rich countries [9]. Competency-based education focuses on the outcome of education, in which the process, though important, is flexible and suited to the learner's need and pace of learning [6]. Competency-based education has the ability to align educational programs with health system priorities in resource-poor countries as well [6]. However, at present, the priority for these countries is to prepare health professionals with the basic knowledge and clinical skills in the context of high maternal and neonatal mortality. There are many pathways to midwifery across countries; a direct entry curriculum, post-registration nursing curriculum, or coursework embedded within a nursing curriculum [10].

India follows the integrated education pathway for nursing and midwifery, which is not supported by ICM because it compromises developing competencies from both professions [11]. There are two integrated pre-service education programs of nursing and midwifery in India that are adhered to by all provinces; a 3.5-year diploma and a 4-year university level bachelor's degree. Educational institutions are registered and licensed by the Indian Nursing Council (INC) and/or respective State Nursing Councils for infrastructure, staffing, and other norms [12].

The admission eligibility for both programs is 12 years of school. The bachelor's program admits only students with science backgrounds, including mathematics, biology, physics, and chemistry, while the diploma program admits students of science, humanities, or commerce. Both graduates are dual registered as Registered Nurses and Registered Midwives. The requirements for students who attend the bachelor's program are to attend 30 antenatal examinations and 20 normal births and to care for 20 women postpartum. Those who attend the diploma program are to attend 30 antenatal examinations, observe 15 normal births, attend 20 independent births, and care for 30 women postpartum.

Midwifery education in many resource-poor countries currently follows a didactic curricular model where students learn through classroom lectures with little opportunity for skills practice, simulation, and role play, which are needed to develop critical thinking, clinical decision making abilities, and values for effective practice [9]. Many midwifery students graduate having attended a limited number of women in labor [13]. In addition, the assessment of student progress and readiness for practice may not be adequate, effective, or linked to the intended outcomes of

learning and targeted clinical competencies [14]. These shortcomings in clinical teaching, learning, and assessment can lead to a lack of confidence among graduating students [15].

The present study is part of a cross-sectional survey of 633 final-year students of nursing and midwifery from the bachelor's and diploma programs in the Gujarat province. The study found that students in the diploma program were 2-4 times more likely to have high confidence in their abilities in all four selected ICM competencies than bachelor's students (unpublished).

In this paper, we report the associations between confidence final-year students have in their competence in selected ICM midwifery skills and various teaching-learning methods practiced in the two nursing and midwifery programs in Gujarat and to further understand the variables contributing to confidence.

Methods

The Department of Health and Family Welfare, Government of Gujarat, and the head of the nurse-midwife schools gave permissions for the study. The students were assured of voluntary participation, complete confidentiality, and that their participation would not influence their final results.

Participants

From the list of 134 institutions provided by the Gujarat Nursing Council, 79 were excluded because they were newly established and did not have final-year students. The remaining 55 were divided into four strata according to their ownership (government or private) and type of program (bachelor or diploma). We aimed to select at least 30% of the students from each stratum. Institutions were randomly chosen until 45% of the students were included, thus accounting for dropouts. Twenty five

institutions were ultimately selected, and included 17 of 38 schools and 8 of 17 colleges. All final-year students from these institutions were included and participated in the study.

The tool

A questionnaire, specially designed for the study, consisted of skill statements from four ICM competency domains. The lists of skills were reviewed by a group of six senior midwifery teachers for relevance, technical terminology, and their interpretation to the Indian context, rating each skill statement on a three-point scale. The content and language of ICM was retained as much as possible. Skills that were clearly out of the scope of nurse-midwives in India were rated low on relevance and removed. An example is 'using Doppler to monitor fetal heart rate.' Skill statements that included more than one skill were divided. The tool was translated into Gujarati and pilot tested once with bachelor's students (n = 9) and once with diploma students (n = 15) to check students' understanding of the statements and to determine response time. The final tool included 19 skill statements for antepartum care, 38 for intrapartum care, 14 for postpartum care, and 19 for newborn care. Background questions such as age, sex, religion, and qualification on admission were included.

Confidence was assessed on a 4-point Likert scale ranging from *I do not have the skill* to *I am confident*. The question for each skill statement read, "Suppose you are posted at a rural primary health facility without a doctor, will you be able to perform this procedure independently?"

In consultation with midwifery teachers, questions related to structured experiences for students at three learning sites: learning theory in the classroom, learning in the skills laboratory (observing demonstrations on

manikins and practicing on manikins), and learning in the clinical settings (observing practice on mothers and newborns carried out by senior nurses and doctors, or supervised practice by the student herself). In addition, we asked the total number of births attended. The question on supervision at the clinical site (4 point Likert scale from no supervision to good supervision) read, "When you were practicing on the mothers and newborns, how was the supervision/guidance given to you?"

Data collection

The students answered the questionnaires independently, but the first author was available to clarify any items. However, the presence of the first author could be the reason for few (0.1% to 4%) missing data. The data were collected from diploma students during February and March, 2013 and from the bachelor's students during April-July, 2013 to coincide with the ending of their final term.

Statistical methods

To find associations between confidence and explanatory variables, principal component analysis (PCA) had previously been performed for the four domains and subjected to oblimin rotation [21] to identify subscales and reduce the number of statements [16](unpublished).

The confidence responses for each subscale were summed and dichotomized based on the 75th percentile where *high confidence* was defined at the 75th percentile or above, and all others were defined as *not high confidence*. Crude odds ratios with 95% confidence intervals (CIs) were calculated separately for each explanatory variable between students with high confidence and not high confidence. Thereafter, each teaching-learning method was adjusted for type of medical site, type of ownership (private or government), and type of program (bachelor's or diploma). It was

previously found that diploma students had 2-4 times greater odds for high confidence in all subscales in all four domains (unpublished). Theory sessions and background variables were excluded from the analysis because there were fewer variations. All analyses were performed using the Statistical Package for the Social Sciences (SPSS) version 22.0 (SPSS, Inc. Chicago, IL, US).

Findings

Sample size and distribution

A total of 1525 final-year students were available in the province at the time of data collection. We included 633 (41%), which represented at least 30% from each stratum (Table 1). Ninety-eight percent of the students were included because 2% were absent when data was collected. The variations in proportions of students selected from each stratum reflect the variations found in the class size, which ranged from 15 to 65.

Insert Table 1 here

The type of clinical site was thought to be important for hands-on clinical practice. Subsequently, 35-45% of the students from each type of medical site, teaching hospitals attached to institutions, district hospitals, and private hospitals, were included (Table 1).

Background of participants

The median age was 21 years (range, 20-23 years). Most were female (94%), unmarried (92%), and Hindu (91%). Sixty-four percent ranked nursing as their first choice while 8% preferred to work in maternity sections as midwives after graduation.

Teaching-learning methods practiced

Twenty-six percent of the diploma students and 15% of the bachelor's students attended the required number of births for registration.

Half reported attending 0 to 15, 30% between 16 and 30, and 18% more than 30 births (Figure 1).

Insert figures 1 to 6 here

As seen in Figures 2-6, the most frequently reported teaching-learning method was theory sessions or lectures in the classroom, followed by practice on manikins, and demonstrations in the skills laboratory. All the methods had higher frequencies in the diploma program than the bachelor's program. Fewer bachelor students (38-85%) than diploma students (82-95%) were satisfied with supervision during clinical practice.

High confidence in antepartum care and teaching-learning methods

Three subscales were identified in antepartum care:

1. *Assess maternal and fetal health* included five skills: take antenatal history, conduct a physical examination of mother, assess understanding and explain fetal growth and activity to the mother.
2. *Identify antepartum risks* included four skills: identify symptoms of risk, take up first-line management of high risk pregnancies based on national and local guidelines, administer life saving drugs and maintain records.
3. *Provide health education to women and families* included eight skills: take maternal vital signs such as blood pressure etc, interpret maternal vital signs, communicate with the mother about her vital signs, advise on expected delivery date, assess mothers' nutritional status, educate the mother on nutrition, guide her concerning common discomforts and guide her for birth preparation.

Insert Table 2 here

With some differences across subscales, high confidence in all the subscales under antepartum care was associated with attending higher number of births, satisfaction with supervision and practice on manikins (Table-2). Students in private institutions compared to government institutions, were more likely to have high confidence in the subscales 'assess maternal and fetal health', (adjusted Odds Ratio (OR), 2.4; 95% CI, 1.5-3.6), in 'identifying antepartum risks.' (OR: 1.5; 95% CI, 1.0-2.2), and 'assessing maternal health and providing health education to mothers and families,' (OR: 1.5; 95% CI, 1.0-2.2).

High confidence in intrapartum care and teaching-learning methods

Four subscales were identified in intrapartum care through PCA:

1. *Manage and monitor the first stage of labor* included eight skills: take history and vital signs, complete a physical examination, complete a vaginal examination, monitor uterine contractions, assess them, use the partograph, identify abnormal labor patterns for taking action, and encourage normal labor.
2. *Manage the second and third stages of labor and their complications* included sixteen skills: augment and monitor labor (2 skills), perform version, administer anesthesia to the perineum, perform episiotomies and repair tears, actively manage 3rd stage of labor including use of uterotonic drugs (2 skills), give fundal massage, inspect placenta and membranes, assess for perineal and cervical lacerations and tears and take action (2 skills), manage post-partum bleeding, perform aortic compression, manually remove placenta, identify and manage

shock (2 skills), and manage a timely referral.

3. *Perform routine procedures during labor* included six skills: cut and clamp cord, administer prescribed drugs as per guidelines, insert intravenous line, draw blood for the laboratory, provide an environment for mother and child bonding immediately after birth, and maintain records.
4. *Support women during labor* included five skills: provide physical and psychological support for the woman and family, promote normal birth, facilitate the presence of a birth companion, ensure hydration and nutrition of the mother during labor, and provide choices to mother during labor.

Insert Table 3 here

High confidence in all four subscales of intrapartum care was associated with almost all teaching-learning methods (Table 3). Though the unadjusted odds for type of institution showed students in government institutions had higher confidence in all subscales, they were not significant after adjusting for all other variables.

The odds for satisfaction with supervision had wide confidence intervals in the subscale 'managing the 2nd and 3rd stages of labor' because there were only 3 students who were not satisfied with supervision and yet had high confidence.

High confidence in postpartum care and teaching-learning methods

Two subscales were identified in postpartum care:

1. *Postpartum physical examination and treatment* included six skills: perform

physical examination of the mother, assess uterine involution and healing of lacerations, provide contraceptive services, detect and manage complications before referral, provide emergency treatment for late postpartum hemorrhage, and support families in case of bereavement and loss.

2. *Postpartum health education and information for parents* included seven skills: determine routine history of birth, support immediate breast feeding, educate mothers for self-care and care of the newborn at home, educate on contraception, nutrition, hygiene, signs of infections, rest and exercises.

Insert Table 4 here

With the exception of demonstrations on mothers, in 'postpartum health education and information for parents,' all other teaching-learning methods were associated with high confidence in both the subscales in postpartum care (Table 4).

High confidence in newborn care and teaching-learning methods

Three subscales were identified in newborn care:

1. *Initiate essential newborn care* included five skills: cut and clamp cord, dry and clear airways and establish respiration, assess immediate condition of newborn, maintain body temperature (skin to skin included), care for low birth weight newborn, and initiate breastfeeding.
2. *Identify and treat newborn complications* included six skills: take emergency measures for hypothermia, hypoglycemia, and respiratory distress, take measures for complications of low birth weight and

refer, screen for congenital anomalies and refer.

3. *Educate parents about newborn care* included seven skills: educate parents about newborn care of normal and multiple newborns and those with complications, support them during separation from a sick newborn, care for the newborn of an HIV positive mother, document, and keep records.

Insert Table 5 here

Except for demonstrations on newborns in case of 'essential newborn care,' all teaching-learning methods were associated with high confidence for the three subscales in newborn care (Table 5). The type of ownership (private or government) was not associated with high confidence in any subscale.

Discussion

This study shows that high confidence in skills listed by the ICM for antepartum, intrapartum, postpartum, and newborn care was associated with three teaching-learning methods consistently: the number of births attended, practice on manikins, and being satisfied with supervision during clinical practice.

Further this study shows that theory sessions in the classroom were commonly practiced in both the types of programs, while demonstration in the laboratory, practice on manikins, demonstrations on mothers and babies, and hands-on clinical practice in the form of attending births were practiced less. Such hands-on teaching-learning practices, though few in both types of programs, were fewer in the bachelor's program than in the diploma program. More students from the diploma program expressed satisfaction with supervision during clinical practice than in the bachelor's program. The findings of the

current study further explain the 2-4 times higher likelihood for high confidence among diploma students found in our earlier study (unpublished).

Hands-on skill practice

Practice on manikins in skills laboratories is preparation for the students to experience attending a real childbirth, initially under supervision. Clinical skills laboratory was found to be a safe environment for students to learn skills before beginning practice on patients [17]. Simulated practice in the laboratory built their confidence and helped them to integrate theory with practice during their first clinical practice placement [18]. Despite the fact that the skills laboratories referred to in these studies might be of better quality compared to those in India, our study shows that practice on manikins contributed to the confidence of students in clinical skills.

The fewer opportunities for demonstration and practice on manikins in both programs found in our study could be because of the unavailability of manikins and shortages of teachers to demonstrate and provide feedback during practice. Educational institutions across India are found to have an inadequate number of teachers, infrastructure, and facilities [19].

Awarding a midwife license without adequate clinical practice is detrimental to both the safety of the mother and baby and for the safe practice of the midwife herself, when placed in a situation where she is expected to attend normal births independently. The reasons for not attending the minimum number of births required for registration could be because a majority of the students were not interested in taking up midwifery as a profession, as shown in this study. This study also shows that there was less supervision of clinical practice because there is no designated supervisor at the clinical sites to ensure that students fulfil the

clinical requirements. It might also be the case that the midwifery students had to compete for cases with the obstetric students in the teaching hospitals and there might be lower maternity workload in district hospitals [20].

Supervision and mentorship

There is an abundance of literature emphasizing the roles of the clinical role models, preceptors, or supervisors in shaping the next generation of nurses and midwives for their clinical competence and professional roles [21-25]. Clinical teaching lies at the heart of midwifery. The contribution that clinical preceptors make to students' professional developments cannot be overestimated [22]. When evaluating the two models for clinical placement, it was concluded that regardless of the program and the clinical placement model, the major learning impact for students was related to the midwife they worked with each day on the placement rather than the model [26]. Each of these authors describes ways in which the preceptor's unique position influences the way in which the student forms a basic framework for practice.

Because clinical supervisors are not formalized in the pre-service education for either program in India, the students are supervised by whoever is present rather than a designated supervisor, such as resident doctors, senior staff nurses, or senior students or by tutors who make rounds to guide students. Without fixing responsibility of mentoring and assessing the clinical competence of students coming to their clinical sites, the staff at the clinical sites have limited interaction with the tutors from the educational institutions, most of the time utilizing students as an extra hand [20]. After accepting the teacher's role, the tutors of midwifery lose their clinical skills as they stop practicing [27]. The experienced staff nurses, who might supervise the clinical practice of

students, do not have any preparation for clinical supervision. Assuming that a good clinician is automatically a good clinical teacher has been challenged by many researchers [21,22,28]. The minimum standards of midwifery education of the ICM recommend that the midwife teacher has formal preparation in midwifery, demonstrates competency in midwifery practice, is generally accomplished with two years full scope practice, holds a current license/registration or other form of legal recognition to practice midwifery, has formal preparation for teaching, and maintains competence in midwifery practice and education [29].

Comparing the diploma and bachelor's Programs

Our study shows that diploma students have higher confidence than the bachelor's students, and there are better teaching-learning approaches in the diploma program. The diploma program seems to have better structure and design. For example, more time is allocated for midwifery; 11.6% of the total hours in the bachelor's program [30], compared to 18.6% of the total hours in the diploma program [31]. In addition, there are greater requirements for clinical practice registration, such as the numbers of births and other procedures, and more opportunities for development of skills through hands-on clinical experiences for students, as found in this study.

The Maternal Health Division of the Government of India is establishing nodal centers of excellence to strengthen the pre-service education of the Auxiliary Nurse Midwife (ANM) who is a community based worker, and the General Nurse and Midwife (GNM) from the diploma program [32]. It is unclear from the governmental guidelines whether the pre-service education under the

bachelor's program is also included in the interventions of the nodal centers. One nodal center is planned in each province, and will be established in a selected college of nursing (bachelor's program). Housing the nodal center in colleges of nursing and not including them for interventions could be a result of the government assuming that at the University level, the bachelor's program follows better pedagogic approaches and has better student learning outcomes than other programs, whereas we have shown the opposite is true.

The role of the nodal centers and their effectiveness in bringing about change remains to be seen. Piecemeal standalone interventions without addressing the wider policy, and organizational challenges may not yield sustainable changes, as shown by Evans et al (2013) [27]. The International Confederation of Midwives (ICM) provides a list of basic competencies expected from a pre-service midwifery education program to qualify as a midwife within the scope of practice defined by the ICM [33]. The ICM also provides global standards for midwifery education [29] and guidelines for designing a competency-based curriculum for educating midwives [29,34]. These are ready resources for India to aid in its efforts to reform pre-service education for nurses and midwives.

Methodological considerations

Defining high confidence above the 75th percentile rather than against a standard makes it relative to the participating respondent group (unpublished). Therefore, 'high confidence,' as measured in this study, would most likely be lower than if compared to a standard. However this under-estimation of high confidence does not detract from the importance of associations

between confidence and hands-on skill practice and clinical supervision found in this study.

Because the content for midwifery is mostly covered before the final year, especially in the case of the bachelor's program, there may be some recall bias; students may not recollect accurately the teaching-learning methods used for each domain of competency. Moreover, there would be other pedagogic approaches important for building confidence, which have not been included in this study, such as community placements. The systems for assessment of skills and feedback to students also play an important role in building confidence, but are not included in this study.

The strength of this study is its fairly large sample size and good representation of nurse-midwife educational institutions spanning almost all geographic regions of Gujarat and its representation of important groups. Both private and government institutions, and both diploma and bachelors programs are well-represented. Though the study is from only one province, its findings could be assumed to hold relevance for the entire country, because the curricula are standardized across India, and by and large, similar pedagogic approaches are used. This study comes at an opportune time, when the government of India, with the help of the Indian Nursing Council, is planning to strengthen the pre-service education of nurses and midwives through the nodal centers for excellence.

Conclusions

The pedagogic approaches followed during the pre-service education of midwives are associated with the confidence of students to perform basic clinical midwifery skills. Though further studies are needed to examine in depth the various pedagogic approaches practiced in the two types of programs and their contributions to the competence and

confidence of students, this study has shown that hands-on skills practice in the laboratory and at clinical sites are important for confidence building. However, the study further shows that hands-on skills practice alone is not enough, but guidance and supervision of clinical mentors who demonstrate correct performance also contribute to the self-confidence of students. This is the minimum any midwifery educational program should offer to its students.

This study has implications for the pre-service clinical education of midwives. It calls for wider educational reforms to create formal structures and systems to ensure adequate hands-on clinical experience for students and also develops midwife teachers who are practitioners and practitioners who can teach and mentor students not only for clinical skills but also professional values.

Authors' Contributions

BS drafted the manuscript and all authors contributed to subsequent drafts and revisions of the paper. BS, KC, and KVR developed the study protocols with inputs from EJ. BS and KC designed the questionnaire and BS

collected and managed the data. BS and IJ did the analysis with regular inputs from KC. BS, EJ, and KC with the help of IH and KVR drafted the manuscript. The authors have read and approved the final manuscript.

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Table 1 Sample distribution across all categories of institutions							
Type of Institution		Diploma Students		Bachelor's Students		Total	
		Selected/Available		Selected/Available		Selected/Available	
		n/N	%	n/N	%	n/N	%
Government	Attached to teaching hospital	143/312	45.8	85/185	45.9	228/497	45.9
	Attached to district hospital	80/235	34.0	0	0	80/235	34.0
Private	With own hospital	73/239	30.5	87/115	75.7	160/354	45.2
	Without own hospital	68/134	50.7	97/305	31.8	165/439	37.6
Grand Total		364/920	39.6	269/605	44.5	633/1525	41.5

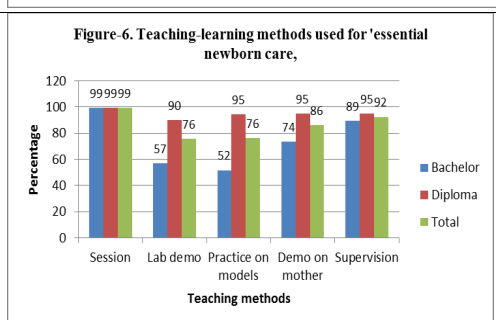
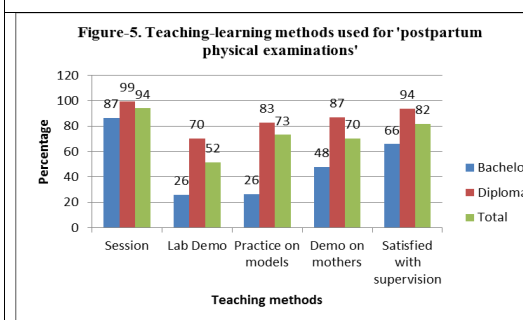
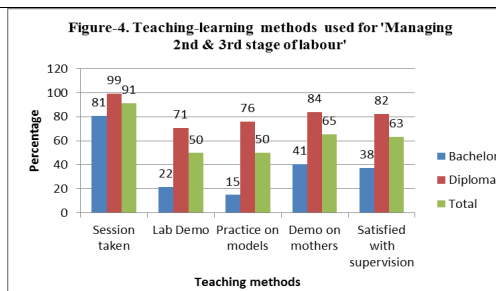
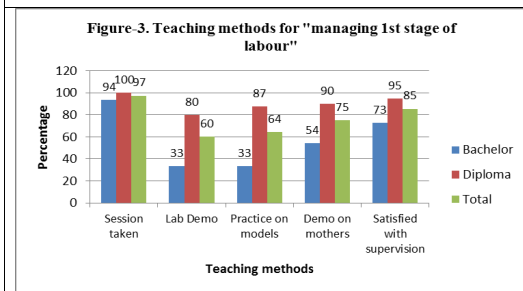
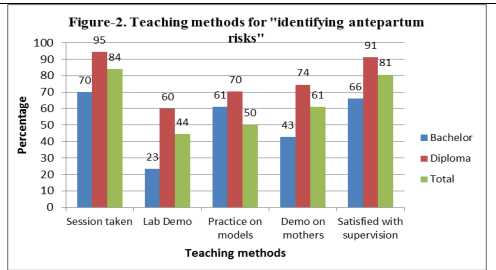
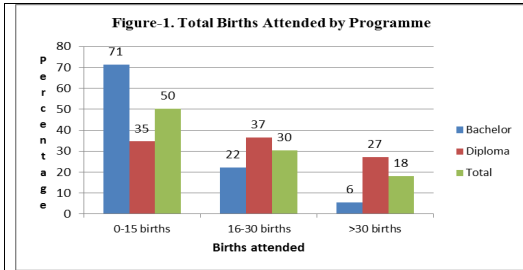
Table 2 Associations between high confidence and teaching-learning methods for subscales under antepartum care(N = 633)[#]					
	Crude measures			Crude OR (95% CI)	Adjusted OR (95% CI) ⁺
	Level	n/N	% with high confidence		
1. Assess maternal and fetal health(6 skills)^{##}					
a. Demonstration given in laboratory	Yes	490/606	154 (31.4)	2.7 (1.5-4.6) ^{***}	1.5 (0.8-3.0)
b. Practice on models	Yes	448/606	143 (32)	2.1 (1.4-3.4) ^{**}	1.0 (0.5-1.6)
c. Demonstration at clinical site	Yes	552/606	165(30.0)	3.4 (1.4-8.1) ^{**}	1.2 (0.4-3.2)
d. Satisfaction with supervision	Yes	557/606	167(30.0)	4.8 (1.7-13.6) ^{**}	3.8 (1.1-13.1) [*]
e. Births attended	>30	110	38(34.5)	1.7(1.0-2.8) [*]	2.2 (1.3-3.8) ^{**}
	16-30	186	62 (33.3)	1.7 (1.1-2.5) [*]	1.6 (0.7-1.7) [*]
	0-15	302	70(23.2)	Reference	
2. Identify antepartum risks^{##}					
a. Demonstration given in laboratory	Yes	273/615	149 (54.6)	3.0 (2.1-4.2) ^{***}	1.2 (0.8-2.0)
b. Practice on models	Yes	308/614	177 (57.5)	4.7 (3.3-6.7) ^{***}	3.0 (1.9-4.8) ^{***}
c. Demonstration at clinical site	Yes	380/617	187(49.2)	3.0 (2.0-4.1) ^{***}	1.2(0.7-1.9)
d. Satisfaction with supervision	Yes	498/615	229 (46.0)	5.0 (2.9-8.6) ^{***}	3.6(1.9-6.7) ^{***}
e. Births attended	>30	111	57 (23.6)	2.0 (1.3-3.2) ^{**}	1.4 (0.8-2.5)
	16-30	188	81 (43.1)	1.5 (1.0-2.1) [*]	1.0(0.7-1.5)
	0-15	308	104 (33.8)	Reference	
3. Provide health education to women and families^{##}					
a. Demonstration in laboratory	Yes	406/600	133 (33.0)	1.6 (1.1-2.5) [*]	1.2(0.7-2.0)
b. Practice on models	Yes	437/631	148 (34.0)	2.3 (1.5-3.7) ^{**}	1.7(1.0-3.2) ^{**}
c. Demonstration on mothers	Yes	504/600	152 (30.2)	1.2 (0.7-2.0)	0.68(0.3-1.3)
d. Satisfaction with supervision	Yes	565/600	167 (29.6)	1.0 (0.5-2.2)	0.9 (0.4-2.1)
e. Births attended	>30	106	42 (39.6)	1.8 (1.1-2.8) [*]	1.4(0.8-2.5)
	16-30	189	52 (27.5)	1.0 (0.7-1.5)	0.9 (0.6-1.4)
	0-15	299	80 (26.8)	Reference	
[#] Odds Ratios calculated separately for each subscale. ⁺ Adjusted for all teaching methods (a to d) and births attended, program type (bachelor's/diploma) and Private/Government. ^{##} Reference group for a to d are those who said 'No.' ^{***} P < 0.001, ^{**} P < 0.01, [*] P < 0.05.					

Table 3. Associations between high confidence and teaching-learning methods for subscales under intrapartum care(N = 633)[#]					
	Level	Crude measures		Crude OR (95% CI)	Adjusted OR (95% CI) ⁺
		n/N	% high confidence		
1. Manage and monitor first stage of labour (8 skills)^{##}					
a. Laboratory demonstration	Yes	381/633	140 (37%)	4.3 (2.8-6.6) ^{***}	2.43 (1.36-4.3) ^{**}
b. Practice on models	Yes	408/633	146 (36%)	4.6 (2.9-7.4) ^{***}	2.31 (1.2-4.2) ^{**}
c. Demonstration at clinical site	Yes	474/633	149 (31.4%)	3.0 (1.8-4.9) ^{***}	0.75(0.38-1.5)
d. Satisfied with supervision		541/633	163 (30%)	5.2 (2.4-11.5) ^{***}	2.48 (0.9-6.3) [*]
e. Births attended	>30	114	52 (16.4)	4.4 (2.7-7.1) ^{***}	3.27 (1.9-5.4) ^{***}
	16-30	193	64 (33.2)	2.5 (1.6-3.9) ^{***}	1.94 (1.2-3.0) ^{**}
	0-15	318	52(16.4)	Reference	
2. Manage 2nd/3rd stage of labour (16 skills)^{##}					
a. Laboratory demonstration	Yes	315/633	127 (40.3%)	5.1 (3.4-7.7) ^{***}	1.9 (0.9-3.0) [*]
b. Practice on models	Yes	317/633	136 (43%)	7.7 (4.9-12.0) ^{***}	2.3 (1.3-4.0) [*]
c. Demonstration at clinical sites	Yes	414/633	147 (35.5%)	6.5 (3.8-11.16) ^{***}	0.9 (0.4-1.9)
d. Satisfied with supervision	Yes	400/633	161 (40%)	51.6 (16.0-164.0) ^{***}	36.9 (8.0-90.0) ^{***}
e. Births attended	>30	114	47 (41.2)	4.14 (2.7-7.1) ^{***}	1.7 (1.0-2.9) [*]
	16-30	193	70 (36.3)	3.36 (2.2-5.1) ^{***}	1.6 (1.0-2.7) [*]
	0-15	318	46 (14.5)	Reference	
3. Perform routine care during labour (6 skills)^{##}					
a. Laboratory demonstration	Yes	423/633	170 (40.2%)	1.5 (1.1-2.2) [*]	1.0 (0.5-2.3)
b. Practice on models	Yes	441/633	187 (42.4%)	2.3 (1.6-3.4) ^{***}	1.7 (1.1-2.8) [*]
c. Demonstration at clinical sites	Yes	501/633	200 (40%)	2.0 (1.3-3.0) ^{**}	1.3 (0.7-2.4)
d. Satisfied with supervision	Yes	583/633	221 (38%)	1.9 (1.0-3.8) [*]	1.0 (0.5-2.4)
e. Births attended	>30	114	56 (49)	2.5 (1.6-3.8) ^{***}	1.6 (1.0-2.7) [*]
	16-30	193	86 (44.6)	2.0 (1.4-3.8) ^{***}	1.6 (1.1-2.4) [*]
	0-15	318	89 (28.0)	Reference	
4. Support women during labour (5 skills)^{##}					
a. Laboratory demonstration	Yes	340/633	142 (42%)	2.3 (1.6-3.3) ^{**}	0.81 (0.5-1.4)
b. Practice on models	Yes	379/633	171 (45%)	4.4 (2.9-6.5) ^{**}	2.8 (1.7-4.7) ^{***}
c. Demonstration at clinical sites	Yes	444/633	173 (39%)	2.5 (1.6-3.8)	1.0 (0.6-1.7)
d. Satisfied with supervision	Yes	489/633	196 (40%)	5.7 (3.2-10.1) ^{**}	3.2 (1.7- 6.2) ^{***}
e. Births attended	>30	114	72 (22.6)	3.6 (1.9-4.8) ^{**}	1.8 (1.0-3.0) [*]
	16-30	193	82 (42.5)	2.5 (1.7-3.7) ^{**}	1.7 (1.2-2.7) [*]
	0-15	318	72 (22.6)	Reference	
[#] Odds Ratios calculated separately for each subscale.					
⁺ Adjusted for all teaching methods (a to d) and births attended, program type (bachelor's/diploma) and Private/Government.					
^{##} Reference group for a to d are those who said 'No.'					
^{***} P < 0.001, ^{**} P < 0.01, [*] P < 0.05.					

Table 4 Association between high confidence and teaching-learning methods and for subscales under postpartum care(N = 633)[#]

	Level	Crude measures		Crude OR (95% CI)	Adjusted OR (95% CI) ⁺
		n	% high confidence n (%)		
1. Perform physical examination and treatment (6 skills)^{##}					
a. Demonstration in laboratory	Yes	326/633	127(39.0)	4.2 (2.8-6.3)***	1.9(1.1-3.3)*
b. Practice on models	Yes	372/633	143 (38.4)	6.1(3.8-9.8)***	2.0(1.1-3.7)*
c. Demonstration on mothers	Yes	445/633	147(33.0)	4.1(2.5-6.8)***	1.0(0.5-1.7)
d. Satisfaction with supervision	Yes	518/633	165(32.0)	26.4 (6.4-108.2)***	10.8(2.5-46.0)**
e. Births attended	>30	114	44(38.6)	2.8(1.7-4.5)***	1.3(0.8-2.3)
	16-30	193	63(32.6)	2.1(1.4-3.3)***	1.2(0.7-1.9)
	0-15	318	58(18.2)	Reference	
2. Education and information to parents (7 skills)^{##}					
a. Demonstration in laboratory	Yes	410/633	128(31.2)	1.6(1.1-2.4)*	1.3(0.6-2.0)
b. Practice on models	Yes	459/633	143 (31.2)	1.9(1.3-3.0)**	1.1(0.6-2.2)
c. Demonstration on mothers	Yes	528/633	153(29.0)	1.45(0.9-2.4)	0.7(0.34-1.3)
d. Satisfaction with supervision	Yes	459/633	143(31.2)	7.2(1.7-30.3)**	6.4(1.4-27.8)*
e. Births attended	>30	114	40(35.1)	2.1(1.3-3.4)**	1.6(1.0-2.6) **
	16-30	193	69(35.8)	2.2(1.4-3.2)**	1.85(1.2-2.8)*
	0-15	318	65(20.4)	Reference	
[#] Odds Ratios calculated separately for each subscale. ⁺ Adjusted for all teaching methods (a to d) and births attended, program type (bachelor's/diploma) and private/government. ^{##} Reference group for a to d are those who said 'No.' *** $P < 0.001$, ** $P < 0.01$, * $P < 0.05$.					

Table 5 Association between high confidence and teaching-learning methods for subscales under neonatal care (N = 633)[#]					
	Level	Crude measures		Crude OR (95% CI)	Adjusted OR (95% CI) ⁺
		n/N	High confidence n (%)		
1. Initiate essential neonatal care (5 skills)^{##}					
a. Laboratory demonstrations	Yes	480/633	169 (35.2)	1.6 (1.0-2.4)*	0.9 (0.5-1.6)
b. Practice on models	Yes	483/633	179 (37.1)	2.4 (1.6-3.8)***	1.88 (1.0-3.5)*
c. Demonstration on newborns	Yes	544/633	182 (33.5)	1.2 (0.7-1.98)	0.46 (0.2-0.9)
d. Satisfied with supervision	Yes	585/633	204 (34.9)	5.9 (2.0-16.6)**	5.3 (1.8-15.7)**
e. Births attended	>30	114	53 (46.5)	2.7 (1.7-4.2)***	2.0 (1.2-3.3)*
	15-30	193	76 (39.4)	2.0 (1.4-2.9)***	1.7 (1.1-2.6)*
	0-15	318	77 (24.2)	Reference	
2. Identify and treat neonatal complications (6 skills)^{##}					
a. Demonstration in laboratory	Yes	357/633	137 (38.4)	2.4 (1.7-3.5)***	0.6 (0.4-1.1)
b. Practice on models	Yes	347/629	154 (44.4)	5.1 (3.4-7.6)***	2.8 (1.6-4.7)***
c. Demonstration on newborns	Yes	438/633	163 (37.4)	3.3 (2.1-5.1)***	0.9 (0.5-1.7)
d. Satisfied with supervision	Yes	505/625	189 (37.4)	18.5 (6.7-51.0)***	9.0 (3.1-26.2)***
e. Births attended	>30	114	53 (46.5)	3.1 (2.0-5.0)***	1.5 (1.0-2.4)
	15-30	193	69 (35.8)	2.0 (1.4-3.0)***	1.2 (0.8-1.9)
	0-15	318	68 (21.4)	Reference	
3. Educate parents for newborn care (7 skills)^{##}					
a. Demonstration in laboratory	Yes	340/630	112 (32.9)	1.8 (1.2 - 2.5)**	1.0 (0.6-1.7)
b. Practice on models	Yes	394/630	127 (32.2)	1.8 (1.3-2.7)***	1.1 (0.6-1.9)
c. Demonstration on newborns	Yes	470/630	146 (31.1)	2.0 (1.3-3.1)**	1.2 (0.7-2.2)
d. Satisfied with supervision	Yes	550/630	167 (30.4)	3.9 (1.8-8.3)**	3.5 (1.4-8.4)**
e. Births attended	>30	113	45 (39.8)	2.6 (1.6-4.2)***	1.9 (1.2-3.1)*
	16-30	191	63 (33.0)	1.9 (1.3-2.9)**	1.5 (1.0-2.3)**
	0-15	318	64 (20.1)	Reference	
[#] Odds Ratios calculated separately for each subscale. ⁺ Adjusted for all teaching methods (a to d) and births attended, program type (bachelor's/diploma) and private/government. ^{##} Reference group for a to d are those who said 'No.' ***P < 0.001, **P < 0.01, *P < 0.05.					



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