School of Nursing and Midwifery

Equity in utilisation of maternal healthcare services:

a mixed methods investigation of antenatal, delivery, and postnatal care among squatter and non-squatter residents living in Ward 34, Kathmandu, Nepal

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This thesis is presented for the Degree of

Doctor of Philosophy

of

Curtin University

July 2015

DECLARATION

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ABSTRACT

Over the last three decades, Nepal has been urbanising at a rapid pace, albeit in an uncontrolled and unplanned manner. For Kathmandu, the country's capital and most modern urban centre, this rapid urbanisation has given rise to squatter settlements, the most visible signs of urban poverty. While an estimated 63% of females living in squatter areas are of reproductive age, knowledge of maternal healthcare practices is very limited, primarily because these communities are overlooked by local Governments. This gap in knowledge means that the national Government cannot begin to address their health.

Nepal is one of the world's newest democracies and is inhabited by people of over 100 diverse ethnicities and cultures. The country experiences multiple social, economic, political challenges which have consequences for the lives and health of its people, especially for women and their newborn babies. In general, Nepali women have lower social status, little economic autonomy, and a diminished role in decision making for health and healthcare seeking for themselves and their newborns. Although great improvements have been achieved in women's status and health, they continue to face multiple obstacles that have been linked to maternal mortality and morbidity. The cumulative effects of women's poor health and position within the household from childhood, makes becoming a mother in Nepal, one of the most dangerous and life threatening life experiences. Socio-demographic, economic, and health services related factors influence their health and health utilisation, especially in the rural and remote areas of the country. Due to poor maternal health and health practices, newborns in Nepal, are at particular risk for neonatal death or poor growth and development. Female newborns are at a greater disadvantage than their male counterparts. Those living in geographically remote areas are more likely to experience poor economic conditions, have uneducated mothers, and have a birth order of more than six. They are less likely than those born in urban areas to survive during the first month of life.

To better understand the healthcare practices of women living in Kathmandu during pregnancy, birth, and the postnatal period, a three-phase mixed methods research

project was undertaken. Together, these phases draw attention to problems related to maternal health utilisation in urban areas and highlight potential solutions.

The first phase consisted of a quantitative household survey of women to identify facilitators of antenatal, delivery, and postnatal care utilisation among squatter and non-squatter residents of Ward 34, Kathmandu. The second phase consisted of two studies, one looking at the utilisation of a clinic set-up especially for squatter populations; and the second looking at access to healthcare services. This phase was able to provide context to women's utilisation of maternal healthcare, by considering different dimensions of access, including physical availability, structure and maintenance, technical capacity, and affordability. This was particularly important given the different assets of women's communities, namely squatter and non-squatter areas of Ward 34. Factors that affect women's utilisation of maternal healthcare were further investigated in the third phase of this study using face-to-face semi-structured interviews and focus group discussions with women who had given birth in the last three years preceding the study. This phase, focused on providing context as to *how* the urban context of the study, can prevent or enable utilisation of maternal healthcare.

It was found that women from squatter settlements underutilised antenatal and delivery care compared to their non-squatter counterparts. Both squatter and non-squatter women reported preferentially seeking care from sophisticated hospital-level facilities with high technical capacity to provide comprehensive antenatal, delivery, and postnatal care. Although private care was perceived to provide higher quality care, and was more commonly accessed by women from non-squatter areas, good technical and affordable care, from clean, well-maintained facilities was in Ward 34. For women living in squatter settlements, their more traditional way of life, beliefs, attitudes, and family dynamics, were found to, at times, prevent them from accessing the necessary care during pregnancy. At the time of delivery, the implementation of the *Aama* policy was found to encourage women from squatter settlements to deliver in hospitals where the policy was implemented. However, for too many women, the government system provided the only chance of an institutional delivery and in light of the increased demand for care, the expectation of the type of care they would receive, was found to prevent the poorest women from giving birth in a health facility. Postnatally, many women were not given advice about the need for attending

postnatal care in accordance with the national policy. For many women, this lack of advice meant that between the first day and the first month of the newborn's life, women and their offsprings did not have contact with healthcare providers, as recommended by the national guidelines.

Overall, this research highlights the need to address the provision of maternal healthcare for the poorest women in Kathmandu. These women and their children have the most to gain from interventions provided during pregnancy, delivery, and the postnatal period. The removal of barriers that prevent women living in squatter areas from accessing appropriate care would contribute significantly to the improvement of human, social, and economic development in Nepal, because children are the country's greatest resource.

ACKNOWLEDGEMENTS

There are many people I would like to thank for helping me undertake this long PhD journey.

Firstly, this study would not have been possible without the financial support from 'The Healing Tree Foundation', Perth, Western Australia, the Australian Post-graduate Award (APA) from Curtin University, Perth Western Australia, and the Stan and Jean Perron Award through the Telethon Kids Institute, Perth, Western Australia.

I am also indebted to my wonderful supervisors, Dr Garth Kendall, Dr B-K Tan, and Professor Peter D. Sly, who have provided guidance and support throughout the different phases of this thesis. Their patience, understanding, and encouragement particularly in the final stages of the write up are invaluable.

To my old and new office mates, friends, Alan, family, and mentors who have been on this journey with me from the beginning, thank you for listening, your company, and encouraging words over the years. At times, I have neglected your phone calls to check if I was still alive (!). There are no words to describe my thanks for putting up with me, especially on the bad days (or months, even years!).

To the office, field, and clinic staff in Prayagmar, thank you for your efforts to ensure that everything was carried out to the highest quality. Baburam Bhusal, you were my 'go to' guy, and made things happen when it all seemed too hard. Mr MK Shrestha, Ramesh Bhatta, and Associate Professor Merci Kusel, thank you for all your support and advice, and also for linking me to your networks of researchers, organisations, and people that could make things happen in Nepal. Finally, I would especially like to thank the women and families that took part in this study. Without your consent, time, and responses to our research questions, this research would not exist.

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ABBREVIATIONS

ANC	Antenatal Care
aOR	Adjusted Odds Ratio
BC	Birthing Centre
BEOC	Basic Emergency Obstetric Care
CBS	Central Bureau of Statistics
CI	Confidence Interval
CS	Caesarean Section
CEOC	Comprehensive Emergency Obstetric Care
DHS	Demographic and Health Surveys
DoHS	Department of Health Services
HA	Health Assistant
HF	Health Facility
FCHV	Female Community Health Volunteer
FGD	Focus Group Discussion
FHD	Family Health Division
IS	Information Sheet
KMC	Kathmandu Metropolitan City
GoN	Government of Nepal
JMP	Joint Monitoring Programme
LBW	Low Birth Weight
MCH	Maternal and Child Health
MDGs	Millennium Development Goals
MMR	Maternal Mortality Ratio
MoHP	Ministry of Health and Population
NA	Not Applicable
NDHS	Nepal Demographic Health Survey
NLSS	National Living Standards Survey
NGO	Non-Governmental Organization
NMR	Neonatal Mortality Rate
NRs	Nepali Rupees
NSMP	Nepal Safer Motherhood Program
OPD	Outpatient Department
PHD Nepal	Public Health Development Nepal
PNC	Postnatal care
R-HFA	Rapid Health Facility Survey
SSI	Semi-Structured Interviews
SSMP	Support the Safer Motherhood Program
TT	Tetanus Toxoid
U5	(Children) Under Five Years of Age
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UN-HABITAT	United Nations
uOR	Unadjusted Odds Ratio
USD	US Dollar
WHO	World Health Organization

OPERATIONAL DEFINITIONS

Antenatal: Issues pertaining to events before or during childbirth.

Antenatal care attendance (at least one visit) is the percentage of women aged 15-49 years with a live birth in a given time period that received antenatal care provided by a skilled health personnel (doctors, nurses, or midwives) at least once during pregnancy, as a percentage of women age 15-49 years with a live birth in a given time period.

Antepartum: Issues pertaining to events before or during childbirth.

'Basic' antenatal care (ANC): Antenatal care provided at all government facilities free of charge. It consists of at least four visits; iron supplementation; Deworming tablet (at 3 months of gestation) (single dose); 2x Tetanus toxoid vaccines; Weight / Height check; Blood pressure check; lab investigation (haemoglobin estimation and blood grouping); Counselling (nutrition and weight gain during pregnancy, danger signs, birth preparedness plans, what happens during labour and delivery, postnatal care/hygiene and breast feeding, family planning).

Basic Emergency Obstetric Care (BEOC): covers management of pregnancy complications by assisted vaginal delivery (vacuum or forceps), manual removal of placenta, removal of retained products of abortion (manual vacuum aspiration), and administration of parental drugs (for postpartum haemorrhage, infection and pre-eclampsia/eclampsia), resuscitation of newborn and referral.

'Basic' postnatal care (PNC): consists of at three visits at 2nd, 3rd, and 7th day after delivery; blood pressure; family planning; iron supplementation; vitamin A supplementation; counselling (postnatal care/hygiene, breast feeding technique, family planning).

Child Mortality Rate: the probability of dying between exact ages one and five.

Comprehensive Emergency Obstetric Care (CEOC): covers management of pregnancy complications by assisted vaginal delivery (vacuum or forceps), manual removal of placenta, removal of retained products of abortion (manual vacuum aspiration), and administration of parental drugs (for postpartum haemorrhage,

infection and pre-eclampsia/eclampsia), resuscitation of newborn and referral and includes surgery (caesarean section), anaesthesia and blood transfusion.

Full immunization (Children under 1): refers to children under the age of one who have received 1x BCG; 3x DPT/hep B combo; 3x polio; 1x measles.

Gestational age: the duration of pregnancy from the first day of the last normal menstrual period. Gestational age is expressed in complete days or weeks.

Infant Mortality Rate (IMR): the number of deaths of between birth and the first birthday per 1,000 live births.

Intra-partum: Issues pertaining to events during labour and childbirth.

Live birth: the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached; each product of such a birth is considered live born.

Maternal death: the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

Maternal Mortality Ratio (MMR): the number of deaths (while pregnant or within 42 days of termination of the pregnancy) during a given time period per 100,000 live births during the same time period.

Neonatal mortality rate: calculated as the number of deaths in the first 28 days of life per 1,000 live births.

Neonatal period: begins with birth and ends 28 complete days after birth. Neonatal deaths may be subdivided into *early neonatal deaths*, occurring during the first seven days of life (0-6 days), and *late neonatal deaths*, occurring after the seventh day but before the 28th day of life (7-27 days).

Perinatal period: commences at 22 completed weeks (154 days) of gestation and ends seven days after birth.

Pre-term delivery: the birth of a child less than or equal to 37 weeks.

Recommended ANC visits: refers to attending at least four ANC visits as recommended by the WHO. Available survey data on this indicator usually do not specify the type of the provider, therefore, in general, receipt of care by ANY provider is measured.

Skilled Birth Attendants (SBAs): refers to workers/attendants, which are accredited health professionals, including midwives, doctors or nurses, who have 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. Both trained and untrained traditional birth attendants (TBA) are excluded.

Stillbirth or **foetal death:** is death prior to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy; the death is indicated by the fact that after such separation the foetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles.

Under-five mortality: the probability of dying between birth and the fifth birthday

Under-5 mortality rate: the probability per 1,000 live births that a newborn baby will die before reaching age five.

1 INTRODUCTION

1.1 INTRODUCTION

Pregnancy, childbirth, and the weeks just after childbirth continue to represent periods of high risk to a woman's life in Nepal. Safe motherhood practices, such attending 'four or more' antenatal visits, institutional delivery care, and attending for check-up after delivery, have emerged as three of the most important indicators for tracking the status of maternal health around the world (Government of Nepal and UN country Team 2013). Despite concerted government and international efforts, national estimates indicated that in 2011, 50% of Nepali women attended fewer than the minimum of four antenatal visits recommended by the World Health Organisation (WHO) and the Nepal Ministry of Health and Population (MoHP) (MoHP, New ERA and ICF International 2012, WHO, Department of Making Pregnancy Safer and Department of Reproductive Health and Research 2006), 63% continued to give birth at home, while 53% did not seek postnatal care (PNC) in the 41 days after giving birth (MoHP, New ERA and ICF International 2012).

Although urban settings in Nepal have traditionally offered more choices and opportunities, ranging from better housing, healthcare, and employment opportunities (Muzzini and Aparicio 2013, UN-HABITAT 2010), accelerated in-migration of rural dwellers to urban centres in the 1990's and early 2000's, has brought rapid and chaotic urbanisation to Kathmandu, Nepal's capital (Muzzini and Aparicio 2013, UN-HABITAT 2010). Such rapid and uncontrolled population growth has been attributed to the classic 'push' and 'pull' factors and since 1996, the 10-year long armed conflict. In both cases thousands of rural residents seeking better education and job opportunities or refuge from violence, gave rise to squatter settlements around the city (Muzzini and Aparicio 2013, UN-HABITAT 2010). Despite this rise in squatter settlements and populations, the utilisation of maternal healthcare services among this population is not well understood. Research from countries that have long dealt with squatter populations, such as India (Sanneving, *et al.* 2013), Bangladesh (Kamal 2012), and Kenya (Fotso, Ezeh and Oronje 2008), suggest that squatter residents pay an 'urban penalty' in health and healthcare, whereby they often exhibit poorer health and healthcare utilisation than those in rural areas.

Research has convincingly shown that improving maternal health brings about important benefits not only to women themselves, but also to their offspring, community, and society (Alderman and Behrman 2006, Victora, *et al.* 2008). Many maternal care interventions have been proven to be both effective and cost-effective in reducing maternal and neonatal morbidity and mortality (Bhutta, *et al.* 2014). For example, during pregnancy, timely and adequate antenatal care (ANC) has the potential to not only identify women 'at risk' of adverse pregnancy outcomes, but also, in the longer term, improve her own health and the adult health of her children (Dowswell, *et al.* 2010, WHO 1978). In addition, micronutrient supplementation, vaccinations, and counselling are offered during ANC visits because they address the factors that are most likely to hinder the optimal growth, development, and survival of the foetus in utero, during birth, and in the days after birth (Bärnighausen, *et al.* 2014, Bhutta, *et al.* 2014, Forero-Ramirez, *et al.* 2014, Gajate-Garrido 2013, Maggi, *et al.* 2010, Noonan, *et al.* 2013). A recent study estimated that high coverage of interventions targeting the mother, beginning before she becomes pregnant, may prevent 48% of neonatal deaths (Bhutta et al., 2014). The remaining 52% of neonatal deaths can be prevented by interventions delivered directly to the newborn (Bhutta, *et al.* 2014). These estimates emphasise the importance of interventions during the period around birth. Globally, between 60–80% of maternal deaths occur during the intrapartum, and the immediate postpartum period (Li, *et al.* 1996, Ronsmans and Graham 2006), and 42% of all deaths in children younger than five years (here after stated as *under-5*) occur in the first month of life (Lawn, *et al.* 2009). Therefore, it is crucial that pregnant women have access to health facilities that are adequately equipped and staffed to handle obstetric and neonatal complications and emergencies, and provide effective care and support during the postnatal period (Wall, *et al.* 2010, WHO 2005). However, the full scale of the burden is not captured by deaths alone. Many children are at a greater risk of lifelong physical and cognitive impairments as a result of maternal death, economic hardship, and the environment in which they grow, live, and play (Aber, *et al.* 1997, Brooks-Gunn and Duncan 1997, Duncan, *et al.* 1998).

The following section describes how the health of mothers affects children's growth and development in-utero, and their subsequent health trajectory across the life cycle.

1.2 WOMEN'S HEALTH

The link between a mother's health and that of her offspring has been captured by different theories of health and disease. These theories broadly suggest that early life events, including those that occur during pregnancy, may have long-term effects on the health of the offspring during later adult life (Bronfenbrenner and Ceci 1994, Gluckman, Hanson and Buklijas 2010, Hanson and Gluckman 2008, Shonkoff, Boyce and McEwen 2009). More importantly however, these concepts acknowledge the transmission of disease risk from exposure and adverse contexts over the mother's own lifespan (Braveman and Barclay 2009, Bronfenbrenner and Ceci 1994, Gluckman, Hanson and Buklijas 2010, Shonkoff, Boyce and McEwen 2009). For example, in Nepal, household beliefs and practices surrounding gender roles and food allocation limit women's consumption of food, which places them at risk of nutritional deficiencies from childhood (Gittelsohn, Thapa and Landman 1997). Under-nutrition among women is one of the most important risk factors for foetal and child survival (Save the Children 2012, Subramanian, *et al.* 2009), premature birth (Christian, *et al.* 2009, Save the Children 2012), poor anthropogenic and cognitive outcomes in the child (Adair 2007, Christian, *et al.* 2010, Forero-Ramirez, *et al.* 2014, Han, *et al.* 2011, Victora, *et al.* 2008), and poor mental and physical health in adulthood (Khanal, Zhao and Sauer 2014, Maggi, *et al.* 2010, Robinson, *et al.* 2008, Stein, *et al.* 1996). Commonly in Nepal, women also begin childbearing at a young age, before their bodies are fully matured. Such physical immaturity not only makes young mothers susceptible to obstetric complications (Kumar, Kumar and Kumari 2012), but their offspring have an increased risk of mortality (Crump, *et al.* 2011, Ramakrishnan, *et al.* 2012, Sharma, *et al.* 2008), and poor anthropogenic and mental development (Farris, *et al.* 2011, Fraser, Brockert and Ward 1995, Katz, *et al.* 2008, Levine, Pollack and Comfort 2001, Robinson, *et al.* 2008, Victora, *et al.* 2008).

Between 1990 and 2013, Nepal recorded a 76% reduction in the number of women dying from causes associated with pregnancy and childbirth (WHO, *et al.* 2014). Despite this reduction, many women continue to be at risk for obstetric complications and problems during childbirth. For example, in addition to widespread underutilisation of maternal healthcare services, in 2011 52% of women aged 15-49 years were married by the age of 18, 12% were shorter than 145cm,

reflecting their inadequate nutrition during childhood and adolescence, 7% had a body mass index of less than 17 kg/m^2, 35% were anaemic, and 39% had no formal education (MoHP, New ERA and ICF International 2012). As stated above, these maternal factors cannot only prompt children to begin life at a distinct disadvantage, but can also hinder healthy growth and development into adulthood (Braveman and Barclay 2009, Gluckman, Hanson and Buklijas 2010, Hertzman and Wiens 1996).

1.3 CHILDREN'S HEALTH AND DEVELOPMENT

The events and contexts in which a child grows and develops, particularly in the first 1000 days of life, have the potential to not just increase a child's chances of survival, but also prevent a lifetime of lost potential (Bronfenbrenner and Ceci 1994, Gluckman, *et al.* 2008, Save the Children 2012, Shonkoff, Boyce and McEwen 2009). For example, several studies undertaken in low-resource countries show that short stature in childhood, caused by malnutrition over a long period of time, is associated not only with an increased risk of severe and persistent stunting in later life (Adair and Guilkey 1997, Mendez and Adair 1999, Rivera, *et al.* 1995), but also an increased risk of spending fewer years at school and having poor performance in school (Alderman, Hoddinott and Kinsey 2006, Daniels and Adair 2004, Maluccio, *et al.* 2009, Mendez and Adair 1999, Moock and Leslie 1986). Fewer years of education and poor performance in school are in turn associated with subsequent reduced adulthood productivity (Alderman, *et al.* 2001, Grantham-McGregor, *et al.* 2007, Haas, *et al.* 1995) and income (Hoddinott, *et al.* 2008, Thomas and Strauss 1997).

However, early deficits such as these do not have to lead to long-term health losses. As proposed by the Developmental Origins of Health and Disease (DOHaD) concept, the health and development of children can be shaped through structural and functional adaptations, partly as a result of opportunities offered by the child's environment (Gluckman, Hanson and Buklijas 2010, Grantham-McGregor, *et al.* 2007). Unfortunately, poor children and those living in hazardous environments, such as slum and squatter settlements, are the least likely to overcome early life disadvantages as they are often exposed to under-nutrition, poor sanitation and hygiene, frequent illness, reduced healthcare, and education (Brooks-Gunn, *et al.*

1995, Gluckman, *et al.* 2008, Grantham-McGregor, *et al.* 2007, Haveman, Wolfe and Spaulding 1991, Shonkoff, Boyce and McEwen 2009).

In Nepal, national interventions targeting mothers and children achieved a 67% decrease in the under-5 mortality rate (death between birth and five years of age) between 1990 and 2011 (Government of Nepal and UN country Team 2013). Nevertheless, many children continue to be at risk of a lifetime of lost potential. In 2011, although only 12% of children weighed less than 2.5kg at birth, 41% of children under-5 were stunted, 11% were wasted, reflecting recent inadequate food intake or illness, 29% were of normal weight-for-height but under-weight for their age, and 46% were anaemic (haemoglobin blood level <11.0 g/dl), (MoHP, New ERA and ICF International 2012). According to models of human development, these figures can have a substantial public health and economic impact on Nepal's future (Bronfenbrenner and Ceci 1994, Gluckman, *et al.* 2008, Save the Children 2012, Shonkoff, Boyce and McEwen 2009)..

1.4 SOCIETY

Investments in improving the health of mothers and children yield real advantages for households, communities, and the wider society, not just in terms of lives saved, but also in the benefits that come from avoiding long-term mental and physical deficiencies, and disease in later adulthood (Alderman and Behrman 2006, Bhutta, *et al.* 2014, Save the Children 2012). For example, it has been estimated that improving coverage of available pre-conception, antenatal, intra-partum, and post-natal interventions by 2020, could prevent more than 84% of maternal deaths and 77% of neonatal deaths (Bhutta, *et al.* 2014). These potential deaths have long term consequences for national productivity, with the United States Agency for International Development (USAID) recently estimating that maternal and newborn mortality leads to US$15 billion in lost potential productivity globally every year (Pellegrom, *et al.* 2014).

Importantly, these interventions need an enabling environment, especially for countries where existing gender inequalities and traditional household dynamics limit women's access to resources, and decision-making power (Andersen 1995, Bronfenbrenner and Ceci 1994, Kendall and Li 2005, WHO 2005). In particular, empowering girls and women through increased opportunities in education and

labour-force participation, have been found to have direct and indirect implications for the health and economic growth of nations (Grantham-McGregor, *et al.* 2007). For example, in Nepal, Hussain and colleagues (2011) and Shresta and colleagues (2014) proposed that Nepal's impressive reduction in maternal mortality has been the result of important national investments in directly addressing not only maternal and child healthcare coverage, but also by making education widely and freely available (Hussein, *et al.* 2011, Shrestha, Bell and Marais 2014).

1.5 BACKGROUND TO THE STUDY

Nepal's capital, Kathmandu, has long ranked among South Asia's fastest growing cities, consistently recording urbanisation rates between 4% and 5% per annum between 1990 and 2010 (UN-HABITAT 2013). This rapid population growth has given rise to various problems that impact on the health of urban dwellers, including environmental degradation, overcrowding, rise and expansion of squatter and slum areas, as well as wide disparities in living conditions and access to public services (Lumanti Support Group for Shelter 2008, Rademacher 2009, Shrestha 2013, UN-HABITAT 2010). Nevertheless, like other low-resource countries, urban health has received little attention from the Government. There are two main reasons for this. First, Nepal remains a predominantly rural country, with 83% of its population living in rural areas (CBS 2012). Second, the Government has assumed that the availability of and proximity to education, and better water, sanitation, and healthcare infrastructure would automatically take care of the increasing population (Kathmandu Metropolitan City 2009).

While in general the socio-economic and health condition of urban dwellers is better than those living in rural areas, rapid and uncontrolled urbanisation driven primarily by rural-to-urban migration, has put enormous pressure on the provision of social services in Kathmandu (Kathmandu Metropolitan City 2009, MoHP, New ERA and ICF International 2012). This has left a growing number of individuals and families struggling daily to meet their basic needs for shelter, water and sanitation, education, and health (UN-HABITAT 2010). Although small by any international comparison, it is estimated that around 50,000 people or 5% of Kathmandu's population, live in squatter settlements, with unofficial figures suggesting that it continues to increase in size annually by 12-13% (Sengupta and Sunjeet 2012). Like *slum* residents in Nepal

and around the world, *squatter* residents experience a generalised level of poverty and are exposed to factors that contribute to poor health. These include substandard overcrowded housing, low educational status, lack of regular employment, poor access to water and sanitation, and exclusion and discrimination (Bhattarai and Conway 2010, CARE 2008, Khatiwada 2013, Lumanti Support Group for Shelter 2008, Moffat and Finnis 2005, UN-HABITAT 2010). Unlike *slum* areas however, houses in squatter settlements have been built illegally on publicly owned land (Lumanti Support Group for Shelter 2008, Moffat and Finnis 2005, UN-HABITAT 2010). This is an important distinction that has far-reaching implications for the provision of public services and consequent health risks (UN-HABITAT 2010). For the purposes of this study, the focus will remain on urban squatter populations and settlements.

Notably, the increase in urban population has increased pressure on already lagging healthcare infrastructure in Kathmandu (CARE 2008, Child Health Division, Family Health Division and Save the Children Nepal 2014, Karkee, Lee and Pokharel 2014, Kathmandu Metropolitan City 2009, MoHP 2014). Nevertheless, there are limited data on the health of squatter population groups. Given that maternal health plays such a crucial role in the transmission of physical, cognitive, and economic disadvantage, the health of pregnant women and mothers living in disadvantaged communities demands more attention.

1.6 JUSTIFICATION FOR THIS PROJECT

A country's health system is widely recognised as an important determinant of and means to improve the health and productivity of a population (Marmot, *et al.* 2008, WHO 2005). Encouraging healthcare utilisation, equity in healthcare access is one of the major objective of healthcare policies worldwide (Goddard and Smith 2001, Marmot, *et al.* 2008, Obrist, *et al.* 2007, WHO 2005). Governments work towards achieving equitable access to healthcare by eliminating barriers in healthcare utilisation (Goddard and Smith 2001, Obrist, *et al.* 2007). To realise this goal, assessing inequities in utilisation of healthcare services provides guidance in identifying the points of policy intervention that can reduce the inequity in access to healthcare.

In Nepal, inequalities in women's utilisation of maternal healthcare have been widely reported. For example, women living in rural areas, those with no formal education, and those who are poor, utilise healthcare resources less than their urban, educated, and wealthier counterparts (MoHP, New ERA and ICF International 2012). To date, efforts to understand and address inequalities have traditionally focused on bridging the gap between urban and rural residents, largely overlooking potential intra-urban or 'neighbourhood-level' differences arising from rapid urbanisation (CARE 2008). Until recently, urban residents were assumed to have better health and healthcare utilisation practices than their rural counterparts, simply because health facilities were nearby. However, it is now recognised that urbanisation is reshaping population health problems (Gupta, Arnold and Lhungdim 2009, Marmot, *et al.* 2008), with international research suggesting that urban populations living in deprived environments, have poorer maternal healthcare practices than 'average' urban residents (Fotso, Ezeh and Oronje 2008, Kamal 2012, Rice and Rice 2009, Sanneving, *et al.* 2013).

There are only two published studies that have focused on maternal healthcare utilisation among women living in squatter settlements in Kathmandu,. The first was carried out in 2008 by the country office of the non-governmental organisation CARE (CARE 2008), while the second was carried out as part of a Master's degree at Tribhuvan University in Kathmandu, Nepal (Tiwari 2012). Both studies found that the prevalence of utilisation of antenatal and delivery care was lower among women living in squatter settlements compared to 'average' urban residents as reported by national estimates. While the findings are noteworthy, they are contestable because the healthcare utilisation of squatter women was not compared directly with those living in non-squatter population in Kathmandu. This study addressed this gap in the methodology by comparing the maternal healthcare utilisation of 'squatter' versus 'non-squatter' residents.

1.7 AIM AND OBJECTIVES

Against this backdrop, the overall aim of this study was to increase knowledge of maternal healthcare utilisation among women living in squatter and non-squatter areas in Ward 34, Kathmandu Metropolitan City, Nepal. More specifically the study

investigated women's utilisation practices during pregnancy, delivery, and postnatal periods.

In order to obtain a comprehensive understanding as to how and why inequalities arise in the utilisation of maternal healthcare in Kathmandu, three specific objectives were developed as follows:

1. To compare the utilisation of maternal healthcare among women living in squatter and non-squatter areas of Ward 34;
2. To compare the accessibility of maternal healthcare among women living in squatter and non-squatter areas of Ward 34;
3. To explore the contextual and explanatory factors associated with the underutilisation of maternal healthcare during pregnancy, delivery, and postnatal periods women living in squatter and non-squatter areas of Ward 34.

The aims and objectives of this thesis were addressed using a three-phase mixed methods approach. The *first* phase addressed objectives 1 and 3 (partly). This phase used a quantitative cross-sectional survey to investigate factors that are associated with underutilisation of maternal healthcare. The *second* phase addressed objective 2. This phase consisted of two separate studies exploring access to maternal healthcare services. The first study investigated the utilisation of newly established clinic through the analyses of patient charts. For the second study, a Rapid Health Facility Assessment (R-HFA) was carried out on 13 health facilities commonly accessed by women living in squatter and non-squatter areas of Ward 34. The *third* phase addressed objective 3 and used qualitative methods to explore 'how' and 'why' differences in utilisation might arise.

1.8 SIGNIFICANCE OF RESEARCH

The findings from this research have been guided by the bioecological theoretical framework and have implications for healthcare policy and programme development in squatter communities in Kathmandu and other urban settings facing rapid and uncontrolled urbanisation. The research is significant because direct comparisons have been made between squatter and non-squatter residents in maternal healthcare utilisation. More specifically, it will: (i) help to increase knowledge about how the

current pattern of urbanisation is affecting women's utilisation of maternal healthcare services; (ii) help to increase knowledge regarding differences in healthcare accessibility in Kathmandu; and (iii) provide a demand-side perspective on the Community Urban Basic Health Service Programme and its role in addressing the health of urban poor populations living in Kathmandu. For squatter residents, who are exposed to altered risks of disease by way of their living environments, the findings have the potential to lead to interventions that can in turn improve maternal and child health in the long-term. For Nepal as a whole, these findings have consequent gains in human and social capital, which can translate into long-term economic benefits. .

1.9 OVERVIEW OF THESIS

The current chapter has provided the background of the study, together with its aims and objectives. Chapter 2 provides an overview of maternal health system in Nepal, and discusses the international literature concerned with maternal healthcare utilisation among slum and squatter populations and the factors that affect it. The purpose of the chapter is to highlight the special vulnerability of Nepali women living squatter settlements and the potential costs to society that underutilisation of antenatal, delivery, and postnatal care among this rapidly growing community, may have on future generations. This chapter introduces Bronfenbrenner's bio-ecological theory of development as the overarching theory. The conceptual framework that underpins the analyses is also described.

Chapter 3 presents the study's research methodology, design, and rationale. It also details the objectives of the studies carried out under each of the three phases. Chapter 4 present the results of each phase of the study. Chapter 5 begins with a summary of the principal findings drawing on the complementarity of the qualitative and quantitative methods. The chapter also presents the strengths, limitations, and recommendations for future studies.

The appendices A-O include the survey and interview schedules (English and Nepali versions), as well as well as a copy of the information sheet and consent forms, letters of support from the host organisation, and ethics approvals obtained from both the Curtin Ethics Committee and Nepal Ethics Board. The references section contains all the references used in the thesis.

2 LITERATURE REVIEW

2.1 OVERVIEW OF CHAPTER

The aim of this chapter is to provide the background to the study. This chapter begins with a brief account of the methods used in reviewing the literature presented in this chapter. The chapter then provides a description of key interventions that are recommended from pregnancy through to the weeks after birth, paying particular attention to the benefits offered by these interventions to not only women but also their offspring. To emphasise the importance of healthcare utilisation behaviours from pregnancy through to childbirth and beyond on child growth and development, Bronfenbrenner's theory of human ecology is then introduced as the overarching paradigm or metatheory for this study. The Family and Community Resource conceptual framework is also described as a means of taking a closer look at the influences the family unit and the community have on women's maternal healthcare utilisation. These complimentary theories emphasise the important role that families and neighbourhoods, as well as the socio-cultural and political-economic environments play in influencing health and development, and the health behaviours of individuals. The chapter then proceeds to present an overview of the maternal healthcare system in Nepal and the initiatives and interventions established to improve the health of women in Nepal. Two models of healthcare use, Andersen's behavioural model and the Three Delays model that illustrate the complex nature of healthcare utilisation, are introduced and discussed. Drawing from the international literature, the challenges faced by women in slum and squatter settlements around the world are then discussed. The review is focused on literature in two specific domains. The first is about community-level factors and it describes how the characteristics of a community or 'neighbourhood', such as the concentration of healthcare services and the physical environment, influence maternal healthcare utilisation. The second domain is about individual or household-level factors and it describes how factors that are most immediate to the individual, such as age, education, and household wealth, can affect women's utilisation practices. The chapter concludes by highlighting gaps in the current evidence-based literature that this study aims to address.

2.2 LITERATURE REVIEW STRATEGY

An integrated review of the international literature was conducted to gain a better understanding how society, community services and infrastructure, and households facilitate or prevent maternal healthcare utilisation. The purpose of an integrated literature review is to review, critique, and synthesise the literature and contribute to theory development, practice and policy (Russell 2005, Torraco 2005, Whittemore and Knafl 2005).

Literature was sourced using keyword searches accessed through electronic databases through Curtin University Library: Science Direct, Medline, Proquest and Scopus. Google Scholar was also used. The reference lists of the articles obtained during the search were reviewed. The search was undertaken using terms associated with healthcare utilisation in squatter settlements. The search terms included various combinations of the following: slum, squatter settlements, informal settlements, *sukumbasi*, *sukumbasi basti*, poor, poverty, disadvantage, hazardous environments, urban health, health, healthcare utilisation, healthcare use, maternal health, obstetric care, institutional deliveries, home birth, antenatal, pregnancy, postnatal, postpartum, intrapartum, child health, life cycle, growth and development, Nepal, Kathmandu, urbanisation.

Literature in languages other than English was excluded or if they did not address the specific topic of the review. In addition to scientific literature, grey literature was sourced from government sources, non-government organisations known to be active in the field of maternal and child health including the WHO, UNICEF, UNFPA, UNDP, UN-Habitat, Save the Children, CARE, and the World Bank. Lumanti Support Group for Shelter was an addition local non-government organisation concerned with the condition of the squatter settlements and residents. Specific programme websites and reports were also considered sources of literature. For example, the Nepal Health Sector Support Programme (NHSSP) and the Millennium Development Goals (MDGs) websites were regularly checked for new reports.

Full articles and reports were retrieved and evaluated. All suitable literature was included regardless of the study design or year published. The use of literature from the 1970s is attributed to the relevance of early concepts and theories underpinning the study. A total of 444 individual pieces of literature were included in this thesis.

2.3 INTRODUCTION

Since the early 1990's, maternal and child health has been a political priority of the Government of Nepal (GoN) (His Majesty's Government of Nepal 2002). However, it was only until 1998, through the formulation and endorsement of the Safe Motherhood Policy, that a national concerted effort was implemented towards addressing the health of women in the country (Basnet, *et al.* 2004, WHO 2007). The policy placed emphasis on strengthening the maternal healthcare system, including the technical capacity of healthcare givers, to provide adequate family planning options, and antenatal and delivery care (Basnet, *et al.* 2004, WHO 2007). Since its implementation, this national investment in women's health and well-being, has yielded great improvements in the coverage and quality of maternal healthcare services, as well as increased their utilisation (MoHP 2014, MoHP, New ERA and ICF International 2012, MoHP, New ERA and Macro International Inc. 1997). Nonetheless, maternal and child health remains a significant problem for Nepal. In 2013, it was estimated that 1,100 women died during pregnancy and childbirth, with a maternal mortality ratio (MMR) of 190 maternal deaths per 100,000 live births, while the neonatal mortality rate has remained stagnant at 33 death per 1,000 live birth between 2006 and 2011 (MoHP, New ERA and ICF International 2012).

Evidence shows that the health of mothers and children are closely linked. As such, many of the interventions known to prevent avoidable maternal deaths, can also prevent neonatal deaths and bring about benefits to the postnatal growth and development of the offspring (Bhutta, *et al.* 2008, Bhutta, *et al.* 2014, Lassi, *et al.* 2013, Lawn, *et al.* 2009, McCaw-Binns and Hussein 2012, UNICEF, *et al.* 2014, Weiner, *et al.* 2003, WHO 2005). Healthy mothers are not only needed as a basis for healthy children, but also indirectly, for economic growth and productivity of future generations, through raising healthier and more productive adults (Bhutta, *et al.* 2008, Bhutta, *et al.* 2014, Gluckman, Hanson and Buklijas 2010, Hoddinott, *et al.* 2013, Save the Children 2009, Victora, *et al.* 2008, WHO 2005).

Evidence also suggest that health is linked to the wider contexts in which individuals grow, work, and live (Andersen 1995, Bronfenbrenner and Ceci 1994, Gluckman, Hanson and Buklijas 2010, Kerber, *et al.* 2007, Lassi, *et al.* 2013, Lawn, *et al.* 2009, Sverdlik 2011, Thaddeus and Maine 1994, Unger 2013, WHO 2005). The social and physical environments to which individuals belong, the neighbourhoods

in which they live; the public services provided, the workplace, the policies, and norms and culture that govern societies do not exist independently of each other (Bronfenbrenner 1979, Bronfenbrenner and Ceci 1994). Any context is the result of the continuing interactions between these components, social processes, and the relationships between individuals and groups (Bronfenbrenner 1979, Bronfenbrenner and Ceci 1994).

To better understand Nepal's different contexts or 'layers of environment', Bronfenbrenner's Bio-ecological model of human development has been used throughout this thesis as an overarching meta-theoretical framework. The thesis also draws on the Family and Community Resource Framework which has been developed by Brooks-Gunn and her colleagues, to better understand how the family and community environments influence health and healthcare utilisation (Brooks-Gunn, *et al.* 1995). According to Bio-ecological theory and the Family and Community Resource Framework, the family is the most influential context for the growth and development of an individual, as its influence on health and well-being persists throughout the life-course (Bronfenbrenner 1979, Bronfenbrenner 1993, Brooks-Gunn, *et al.* 1995). As a follower of Bronfenbrenner's work, Brooks-Gunn proposed that the four types of capital are cumulative over the life course and across domains, and that one type of capital can be used in the creation of other types of capital (Bronfenbrenner 1993, Brooks-Gunn, *et al.* 1995, Coleman 1988, Kendall 2003). An adaptation of the framework by Kendall (2003), conceptualised the four kinds of capital as 'resources' pertaining to families and communities, namely *human*, *financial*, *physical*, and *social* (Brooks-Gunn, *et al.* 1995, Kendall 2003).

In addition, two models specific to healthcare utilisation are considered in this thesis: the 'Three Delays' model by Thaddeus and Maine (1994), and the Behavioural Model of Healthcare Use by Andersen (Andersen 1995) will be used to better understand underlying cultural, social, and economic challenges in utilising healthcare services, across family and community domains.

The following sections expand on the concepts and themes introduced above and critically reviews evidence-based literature that focuses on the vulnerability of women of childbearing age who live in squatter communities.

2.4 HEALTH: SOCIAL CONTEXT MATTERS

There is a clear relationship between social disadvantages and health status (Bronfenbrenner and Ceci 1994, Gluckman, Hanson and Buklijas 2010, Maggi, *et al.* 2010). In broad terms, economic opportunity, physical infrastructure, and social conditions influence the health of individuals, communities, and societies as a whole (Bronfenbrenner and Ceci 1994, Gluckman, Hanson and Buklijas 2010, Maggi, *et al.* 2010). These factors manifest in measures such as education, employment, income, housing, access to services, and social networks (Becker and Tomes 1986, Brooks-Gunn 1995, Coleman 1988).

In the following section, Bronfenbrenner's bio-ecological model has been used to give an overall picture of the societal, community, and household environments experienced by Nepali women and their children. The model describes how different 'layers of environment' have the potential to hinder or enhance the health and development of individuals (Bronfenbrenner and Ceci 1994). Following an overview of the bio-ecological model, the cultural context, public services provided by the government, and the community and household environments traditionally experienced by the urban poor in Nepal are described and discussed. Although there is limited data available for urban health and public infrastructure, including slum and squatter settlements, where possible, insights into their specific situation have been provided.

2.4.1 The bio-ecological model of human development

Bronfenbrenner's bio-ecological model of human development attempts to capture the dynamic, interactive, and synergistic relationship between genes and the environment in which growth occurs and the development of individuals (Bronfenbrenner 1979, Bronfenbrenner and Ceci 1994). In his model, Bronfenbrenner describes the environment in four 'layers' or contexts, namely microsystems, mesosystems, exosystems and macrosystems (Figure 2.1) (Bronfenbrenner 1979, Bronfenbrenner and Ceci 1994). The *microsystem* is described as an environment in which a person repeatedly engages in direct personal interaction with others, including the family, friendship networks, and schools (Bronfenbrenner and Ceci 1994, Bronfenbrenner and Morris 2006). In microsystems, individuals form interpersonal relationships, develop social roles, and share

activities. *The mesosystem* is made up of the relationships and interactions between those closest to the developing individual, such as the relationships between mum and dad, or between parents and schools (Bronfenbrenner and Ceci 1994, Bronfenbrenner and Morris 2006). *The exosystem* refers to one or more settings that do not involve the developing individual, but in which events occur that affect (or are affected by) what happens in the setting containing the developing individual (Bronfenbrenner and Ceci 1994, Bronfenbrenner and Morris 2006). For example, if a parent loses his or her job, it may prompt the parental decision to withdraw the child from school due to competing financial necessities. Finally, the *macrosystem* consists of the larger cultural world surrounding the individual together with any underlying belief systems, and includes cultural values, economic conditions, political systems, and laws (Bronfenbrenner and Ceci 1994, Bronfenbrenner and Morris 2006).

To conceptualise how changes in any one layer, including the individual, can have a ripple effect throughout other layers over time, the most recent revision of the model included a fifth layer, the *Chronosystem* (Bronfenbrenner and Ceci 1994, Bronfenbrenner and Morris 2006). According to Bronfenbrenner, the chronosystem is in itself a function of four properties: process, person, context, and time. *Processes* can be either proximal or distal. Proximal processes are the relationships and interactions that are closest to the individual, and are the primary mechanism through which human potential is actualised (the microsystem and mesosystem). Distal processes on the other hand are those less immediate to, but still affect the person (the exosystem and macrosystem). However, the power of proximal and distal processes to influence development varies substantially as a function of the inherent biology of the developing *Person*, of the immediate and more remote *Contexts*, and the duration of the interaction or *Time* (Bronfenbrenner and Morris 2006).

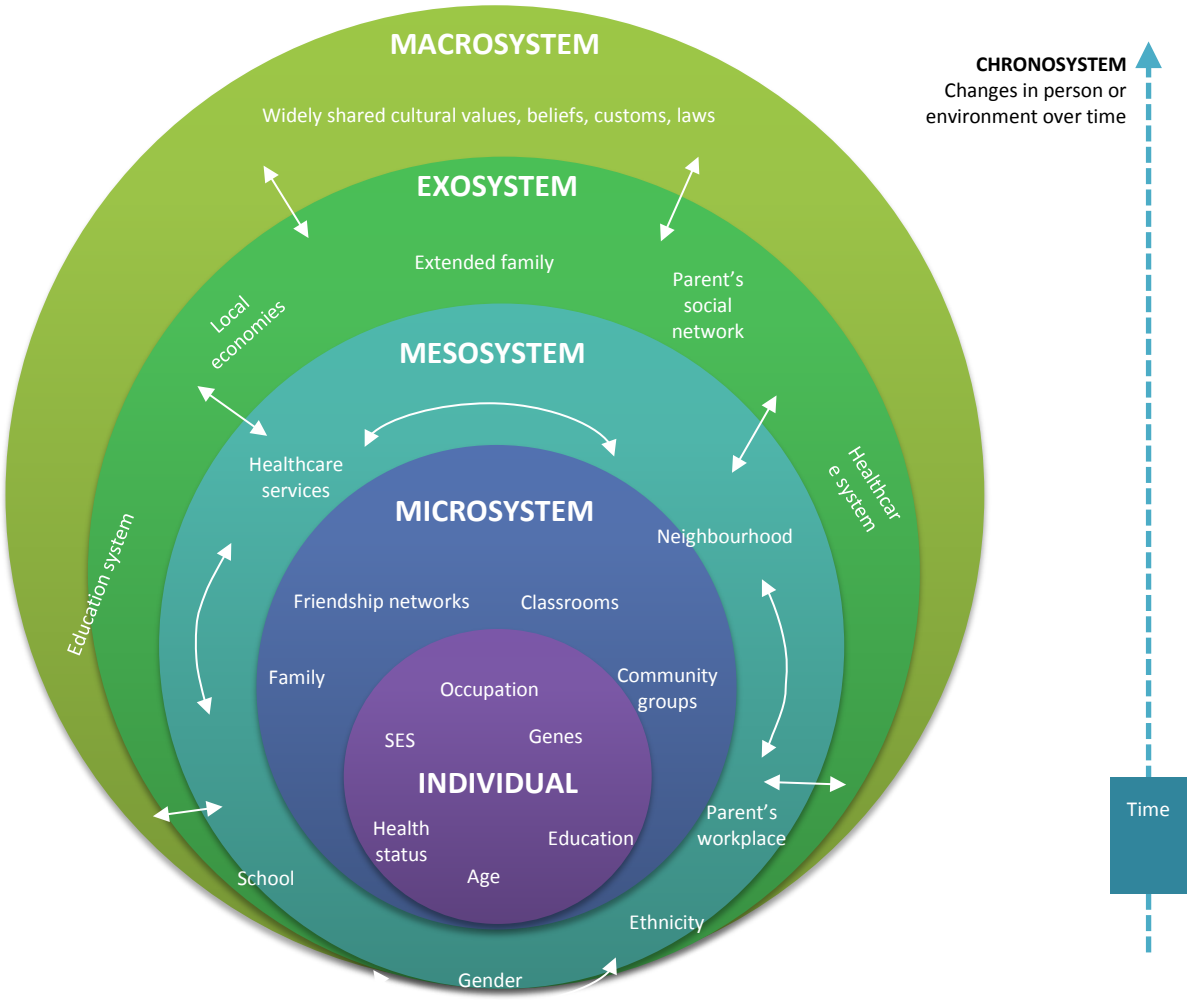

Figure 2.1: Bronfenbrenners's Bio-ecological Model of Development
(Adapted from (Siegler, Deloache and Eisenberg 2006)

In Nepal, these 'levels of environment' are full of disparities. The most commonly reported dimensions of health and healthcare utilisation disparities, are geography, education, wealth, caste, and gender (CBS 2011, Government of Nepal and UNDP 2014). Those living in urban areas, educated, rich, belonging to 'high' caste groups, and males are typically at one end, and the rural, impoverished, and females at the other (CBS 2011, Government of Nepal and UNDP 2014). These disparities at the different 'levels of environment' are described in detail below with a particular focus on the status of women at each level.

2.5 Society and Culture (Macrosystem)

Social and cultural beliefs, values, and practices influence the opportunities, choice, and living conditions of members of society (Bronfenbrenner and Ceci 1994, Bronfenbrenner and Morris 2006, Brooks-Gunn, *et al.* 1995, Brooks-Gunn and

Duncan 1997, Brooks-Gunn, *et al.* 1993). According to the most recent data available for Nepal, 25% of its people live in poverty, representing a reduction from the 1995 figure of 42% (CBS 2004, 2005, 2011, 2011, Government of Nepal and UN country Team 2013). The poverty gap, which measures the intensity or depth of poverty, declined by half over the same period, indicating people living below the poverty line in 2011, experienced a lower degree of poverty than those living below the poverty line in 1995 (CBS 2005, 2011). Despite recent improvements in life expectancy, slow economic growth and the generally low educational status of the population, means that Nepal continues to be one of the least developed countries in the South Asia region and in the world (Government of Nepal and UNDP 2014). Nepal's low development status is in part due to the difficult geographical and social contexts (Government of Nepal and UN country Team 2013, Government of Nepal and UNDP 2014). For example, 83% of Nepal's population continue to live in rural areas, while it's rugged terrain hinders the delivery of public services (Government of Nepal and UN country Team 2013, Government of Nepal and UNDP 2014). In addition, institutional frameworks and social practices have historically favoured certain population groups based on caste, geographical location, and gender, leading to exclusion of certain groups from social, political, and economic opportunities (Bhandari 2012, Do and Iyer 2010).

It was these exclusionary tendencies that led to the country's decade long civil conflict. Starting in 1996, the "People's War" was led by *Maoist* activists who sought to establish a class-less republic, free of discrimination (Bhandari 2012, Do and Iyer 2010). Today, more resources are being invested in implementing socially inclusive policies to address inequalities (Government of Nepal and UN country Team 2013, Government of Nepal and UNDP 2014). Remarkable improvements have been made, especially with regards to gender-equality in education, and maternal and child survival (Government of Nepal and UN country Team 2013, Government of Nepal and UNDP 2014). However, the strong legacy of Nepal's feudal mentality and patriarchal values, in combination with the low educational attainment of previous generations, continue to pose considerable challenges for the healthy growth and development of future generations (Government of Nepal and UN country Team 2013, Government of Nepal and UNDP 2014). The following sub-sections discuss the caste, gender, and geographic dimensions of persisting inequalities.

2.5.1 Caste system

Like other predominantly Hindu societies, Nepal's society is deeply divided into unequal and hierarchical social groups cased on caste. Although Nepal's Caste (*Varna)* system has its origins in Hindu philosophy, the social hierarchy experienced in Nepal today, is the outcome of attempts made by successive governments to grapple with the country's remarkable ethnic diversity (Bennett, Dahal and Govindasamy 2008) In 2011 the national census recorded 125 diverse ethnic/caste groups, each with its own distinct language and culture (CBS 2012), however, certain castes have traditionally dominated social, political, and economic life. Notably, the dominance of Hindu 'elites' have ultimately led to the institutionalisation of Hindu values and practices, including their language, religion, and social rules of interaction and conduct, as detailed by the National Legal Code (*Muluki Ain*) in 1854 (Bennett, Dahal and Govindasamy 2008, World Bank and DFID 2006). Government economic policies, including those related to land tenure and trading rights, have also been biased toward certain ethnic and caste groups (Pradhan 2011).

In general, the *Brahmans* (the priestly caste), and the *Chhetris* (the warrior caste) are at the top of the caste hierarchy. They were traditionally the 'elites' and today continue to be the richest, and most educated groups in the country (Government of Nepal and UNDP 2014, Pradhan and Shrestha 2005, World Bank and DFID 2006). The *Dalits* and *Madhesis* who have historically been delegated specific occupations in society, occupy the lowest caste groups in the hierarchy and even today, are characterised by poverty, lack access to public infrastructure, and poor health outcomes (Bennett, Dahal and Govindasamy 2008, Government of Nepal and UNDP 2014). The non-caste *Janajatis* and *Newars* make-up the 'middle' castes. The *Janajatis* and the *Newars* are the indigenous or ethnic nationalities of Nepal (Bennett, Dahal and Govindasamy 2008). As the traditional inhabitants of Kathmandu, Newari people make up a large share of the urban population, even though they constitute only 5% of Nepal's total population. As urban dwellers, their access to educational and employment opportunities has historically been greater than other caste groups. People who belong to Muslim and Christian religious groups are placed between the *Janajatis* and *Dalits* (Bennett, Dahal and Govindasamy 2008), while an 'others' category is made up by foreigners who are primarily migrants from India.

These hierarchical social divisions are evident at the community-level. For example, while districts house a mix of different caste groups, villages tend to be homogeneous in terms of ethnic or caste identity; that is they tend to be home to people belonging to the same caste groups (Pradhan and Shrestha 2005). If there is some diversity, villages are usually divided spatially into discrete areas (Pandey, *et al.* 2013). This type of spatial distribution in the population means that villages are embedded in a tight network of caste and relational structures, which can be supportive but also constricting (Moffat and Finnis 2005, Pradhan and Shrestha 2005).

2.5.2 Geography

As a small land-locked country bordering the People's Republic of China in the north and India in the east, south and west, Nepal has tremendous geographical diversity. For example, from north to south, Nepal ranges in altitude from more than 8,000 metres above sea level in the north, to less than 100 metres above sea level in the south (MoHP, New ERA and ICF International 2012). This wide difference in altitude roughly divides the country into three ecological zones or belts that run east to west, namely the Mountains in the north, the Hills in the middle and the Plains (or Terai) in the south (MoHP, New ERA and ICF International 2012).

The Mountain zone covers approximately 35% of the total land area of the country, however due to harsh and difficult terrain, only 7% of Nepal's total population lives in this zone (MoHP, New ERA and ICF International 2012). The Hill zone in the middle of the country, covers approximately 42% of the total land area, and houses 43% of Nepal's population (MoHP, New ERA and ICF International 2012). This zone includes Kathmandu, the country's most urbanised area, and host to the majority of offices and headquarters for government and private organisations. Population density in this zone varies significantly, from densely populated valleys and less populated areas at the foot of the mountains (MoHP, New ERA and ICF International 2012). The Terai zone, bordering India, covers approximately 23% of Nepal's total land area, and is home to about 50% of the Nepal's population (MoHP, New ERA and ICF International 2012).

For the purposes of conducting the planning and management of development programmes and running the administration at the national level, Nepal can be

further divided into five development regions, namely: Far-western, Mid-western, Western, Middle, and Eastern regions. These geographic zones and development regions exhibit large difference of access to public services, including transport, education and health infrastructure (CBS 2004, 2011). In general, despite only housing 17% of the population, the most modern and best infrastructure is available in urban areas. The mountain zone, and the Mid-western and Far-western development regions are considered 'remote' and least developed areas of the country, with poverty, ill-health, and harmful traditional practices often more concentrated in these areas (Government of Nepal and UNDP 2014, MoHP, New ERA and ICF International 2012).

While these traditional 'equity domains' are well known, widening disparities are being documented among less researched domains, such as 'wealth' groups. In the context of urban settings, disparities between the richest and poorest sectors of society, have not received much attention, primarily because the standard of living has traditionally been one of 'advantage'. However, the uncontrolled migration of rural migrants into urban areas is rapidly changing this. A report focusing on the inequalities in maternal and child health in Nepal, suggested that since most rural-to-urban migrants are the rural poorest, that these migrants may in fact 'transfer' their rural poverty to urban areas (Nguyen, *et al.* 2011). Unfortunately, the inability of the government to keep pace with the demand for infrastructure and services, has placed strain on the existing public infrastructure in urban areas. One of the most obvious manifestations of the unplanned growth of Kathmandu is the rise and expansion of slum and squatter settlements (UN-HABITAT 2010). These settlements are characterised by substandard housing, inadequate access to water and sanitation and inhabited by socially disadvantaged individuals (UN-HABITAT 2010), while the segregation of 'disadvantage' has created a distinct polarised urban society (CARE 2008). Specifically focusing on squatter settlements, it is estimated that around 50,000 people or 5% of Kathmandu's population live in squatter settlements (Sengupta and Sunjeet 2012). Although small by any international comparison, unofficial figures suggest that they continue to increase annually by 12-13% (Sengupta and Sunjeet 2012).

2.5.3 **Gender**

Gender cuts across geographic and caste domains. While women's inclusion and relative equality with men varies among the various ethnic groups and regions of Nepal, the majority of communities are patriarchal, whereby the lives of women are strongly influenced by society's strong preference for males (UNICEF 2006). It is in this context that the following sub-section discusses the significant role of gender on the lives on Nepali women and the children who depend on them.

One of the most significant changes that has occurred in Nepal's recent history, has been women's active representation and participation in politics. This has resulted in a much needed gender perspective with regards to social, economic, cultural, and political equality (Menon and Rodgers 2013). Despite this progress, in general in contemporary Nepal, women's access to education, employment opportunities, skill development, and decision-making continues to be less than that of males (Government of Nepal and UNDP 2014, Maleku and Pillai 2014).

From a cultural perspective, boys are prepared for the 'outside world' from an early age, raised to be the providers of both economic resources and social identity (Luitel 2001). Women on the other hand, especially in rural areas, girls are prepared to be home-makers, wives, and mothers (Bennett 1984, Furuta and Salway 2006, Gittelsohn, Thapa and Landman 1997, Kelkar 2007, Luitel 2001, Pant, *et al.* 2008). Their roles in adulthood have been traditionally confined to household maintenance, producing and rearing children, and undertaking agricultural work as an extension of household duties (Bennett 1984, Furuta and Salway 2006, Gittelsohn, Thapa and Landman 1997, Kelkar 2007, Luitel 2001, Pant, *et al.* 2008). In addition, as a way of maintaining harmony in the household, it has also been considered desirable that a wife have less education than her husband (Luitel 2001), meaning that little importance has been placed on the education of girls (LeVine 2006, Luitel 2001). Obedience, modesty, and a shy demeanour are considered to be appropriate characteristics of 'good women' (Bennett 1984, Luitel 2001). These desired traits refer not just to behaviour within the household, but also to behaviour within the village, which ultimately affects women's confidence to travel outside the village alone (Bennett 1984). Opposing or 'bold' behaviour, such as wandering where she likes and saying what she likes, is often associated with sexual looseness, especially in young women (Bennett 1984). Thus, except when their work or religious activities

take them outside the home, women's movements are highly restricted by social norms and attitudes (Bennett 1984).

Together, these factors have limited women's exposure to new ideas, as well as the development of inter-personal skills, initiative, and confidence in interacting with larger world (Simkhada, *et al.* 2006, UNICEF 2006). Their dependency on others, especially on the men in their lives, has long been understood to be a major factor in structuring gender inequalities in Nepal, and it has had devastating consequences for women's health (Furuta and Salway 2006, UNICEF 2006).

The section below, discusses government efforts to address some of the social and cultural issues described in this section.

2.6 SOCIAL SUPPORT (EXOSYTEM)

Services and facilities provided by the government are public investments that affect a household's accumulation of resources. In countries like Nepal, where no universal social security exists, the role of governments in strengthening the productive abilities of its population lies in the amount of public investment in schools, public healthcare facilities, transport, roads, and water and sanitation infrastructure (Government of Nepal and UNDP 2014). The services that enable human health and development are discussed below, placing a special emphasis on services that hinder women's health and that of poor communities.

2.6.1 Living standards

Access to basic services including safe drinking water and sanitation facilities, the condition of housing, and the level of crowding are all important physical characteristics that can affect the health of individuals.

The proportion of the Nepali population with access to safe drinking water in 2011 was reported to be 89% (WHO and UNICEF 2014). However in Nepal, 'safe drinking water', does not necessarily ensure water quality. For example, for the 22% of households connected to central water supplies, poorly maintained distribution systems and inappropriate treatment, mean that faecal contamination of water is common (Aryal, *et al.* 2012, Katuwal and Bohara 2011). In addition, the water supply is not consistent, available only for a few hours per day, a few days a week (Aryal, *et al.* 2012, Katuwal and Bohara 2011). The 24% that rely on public taps,

must queue for long hours to fetch water, while the 42% of households that rely on tube-well for water sources, are inevitably affected by inadequate management of solid waste and waste-water, especially in urban centres (MoHP, New ERA and ICF International 2012). In terms of sanitation, the system is inadequate. In 2011, 38% the population continued to defecate in the open (MoHP, New ERA and ICF International 2012, WHO and UNICEF 2014). Although only 3.5% of households are connected to sewer systems, most connections feed into river, and have become a major problem, particularly in urban areas (Bhattarai and Conway 2010).

In terms of housing, the type of house in which a family resides can serve as an indication of their economic status (UN-HABITAT 2010). In Nepal, there are stark differences in housing quality between rural and urban areas. Houses in rural areas predominantly have flooring made from sand or earth, walls made from stone and mud, and roofs made from ceramic tiles (MoHP, New ERA and ICF International 2012). Urban housing, in contrast, increasingly resembles western-style housing, with the majority of households reporting cement floors, walls, and roofs (CBS 2011).

The latest housing report by UN-HABITAT (2010) suggested that the influx of rural migrants to urban areas had caused affordable housing to hit critically low levels, with rent and land prices rising to record highs, making overcrowding a common feature of urban living (UN-HABITAT 2010). The report estimated that about 50% of all urban residents no longer occupied a complete house (UN-HABITAT 2010). Most rented a certain number of rooms or a floor within a house in a ‘flat-system’ style home (UN-HABITAT 2010). Furthermore, the report indicated that high rent and land prices, together with limited employment opportunities, had led to an increasing number of migrant and local families living in substandard housing conditions in unhealthy slum and squatter neighbourhoods (Bhattarai and Conway 2010, Government of Nepal and UN country Team 2013, Sengupta and Sunjeet 2012, Thapa and Murayama 2010, UN-HABITAT 2010).

The most comprehensive study on the living conditions experienced by squatter residents, was carried out in 2008 by the local non-governmental organisation (NGO), Lumanti Support group for Shelter (here after *Lumanti*) (Lumanti Support Group for Shelter 2008). The study found that only 2% of squatter houses are built from permanent building materials (cement, brick, concrete), while 98% of squatter

houses are built from semi-permanent (tin-sheet roof and mud or soil sunburnt bricks) or temporary materials (wood or bamboo walls and plastic roofs) (Figure 2.2) (Lumanti Support Group for Shelter 2008). These slum and squatter settlements lack access to public services such as water and sanitation infrastructure (Lumanti Support Group for Shelter 2008, Shrestha 2013). Overcrowding is also a common phenomenon in squatter areas, where on average three to four people share a single-room house of 12–15 m^2, with no separate room for cooking (Figure 2.3) (Muzzini and Aparicio 2013).

Figure 2.2: Squatter housing on the banks of the Bagmati River, Kathmandu

Figure 2.3: A one-room household in the squatter settlement where cooking, washing, and sleeping occurs in the same room

2.6.2 Education

The Department of Education, under the Ministry of Education and Sport (MOES) is responsible for implementing and monitoring education programmes in Nepal (Ministry of Education 2012). In 2014, 16% of the total government budget was allocated to education, of which 78% came from the Government of Nepal and 22% from aid partners (Ministry of Finance 2014). Until 2009, the education system in Nepal consisted of five levels: pre-primary or early childhood education for those who are three to four years of age; primary (grades 1-5), lower secondary (grades 6-8), secondary (grades 9-10), and higher secondary (grades 11-12) (Ministry of Education 2012). Since 2009, the School Sector Reform Programme (2009–2015) restructured these levels into basic (grades 1–8) and secondary (grades 9–12) level. In addition, although part of the School Sector Reform Programme is to make basic education free, changes in government and lack of consensus have not allowed these plans to be universally implemented (Ministry of Education 2012).

According to the Nepal Living Standards Survey (NLSS), a nationally representative survey carried out every five years, in 2011 government schools provided education for 72% of children and adolescents in Nepal (CBS 2011). In Kathmandu however, the situation is reversed, with the private sector providing education for 70% of

school-age children (CBS 2011). In general, public education is characterised by poor infrastructure and facilities, low-quality teachers, weak management and regulation, and low achievement (Carney and Bista 2009, Shrestha 2008). The disparity in the quality of education can be captured by the pass rate of school leaving certificate (SLC) exam, the exam taken at the end of grade 10 to continue into grade 11, between public and private schools. In 2013 for example, 30% of public compared to 89% of private school students passed the SLC exam (Ministry of Education 2014).

Nevertheless, progress in school attendance has been made. Among 6-10 year olds, primary school attendance rose from 64% in 1990 to 96% in 2013 (Government of Nepal 2014, Government of Nepal and UN country Team 2013). Today, 96% of boys and 95% of girls aged 6-10 years are enrolled in primary school, making girls 50% of the primary school population (CBS 2011). Despite these figures, secondary education remains low, with only 42% continuing on to lower secondary (grade 6), and only 28% continuing on to secondary (grade 9) (CBS 2011). The proportion of girls who continue on to secondary education (30% of boys and 26% of girls) is also an issue. The factors affecting children's educational attainment, in particularly that of girls, is discussed in detail in Section 2.6.2.

2.6.3 Healthcare

The Department of Health Services (DoHS), under the Ministry of Health and Population (MoHP), is responsible for delivering curative, preventive, and promotional healthcare services in Nepal (MoHP 2014). The country's healthcare system is heavily dependent on external support, with 52% of the health budget administered by the DoHS coming from the GoN (MoHP 2014). The remaining 48% of the health budget comes from donors (MoHP 2014).

In 2011, the government was the main provider of healthcare, providing curative services to an estimated 60% of the population (FHD/NHSSP 2012, MoHP, New ERA and ICF International 2012, WHO 2007). In recent years, the government has implemented various healthcare policies and programmes aimed at improving the health of poor and vulnerable population groups, and those living in rural areas, through the provision of 'free' healthcare services (MoHP 2014). These programmes are delivered through sub-health posts, health posts, and primary healthcare centres,

as well as zonal and district hospitals, and regional and central hospitals (FHD/NHSSP 2012).

The general community perception of the public healthcare system is that better services are available in hospitals compared to lower level facilities (FHD/NHSSP 2013, Karkee, Lee and Pokharel 2014, Paudel, *et al.* 2013). Therefore, many people who live in rural and semi-urban areas travel long distances to attend urban hospital facilities, bypassing health-posts and clinics (Bentley 1995). The country also experiences acute shortages of doctors, both general practitioners, specialists, and nurses (FHD/NHSSP 2012). For example, in 2011, Nepal was estimated to have one doctor per 24,000 people and one nurse per 4,000 people (FHD/NHSSP 2012). This represents a total ratio of one health worker per 3,500 people, significantly less than the WHO recommendation of one per 450 people (FHD/NHSSP 2012). As a strategy to manage the shortage of health professionals, Nepal has invested in creating different cadres of less well qualified mid-level healthcare workers, who may not only work in healthcare facilities but also in the community (Lehmann 2008, WHO 2007). In addition, Nepal has a wide array of community health volunteers and workers, who play different roles in community healthcare, particularly in rural areas, as many highly qualified professionals are unwilling to consider rural or remote postings, or public sector jobs over the higher private and NGO sector (FHD/NHSSP 2012). Community health workers and volunteers receive between one week and three months of training before qualifying to deliver health messages and administer simple interventions such as contraception, oral rehydration solution, and immunisations. They are considered one of the most important features of the Nepali healthcare system, as they have enabled access to simple interventions, to isolated and hard-to-reach households (Glenton, *et al.* 2010, MoHP, New ERA and ICF International 2012).

2.6.4 Employment

According to the NLSS, the proportion of those gainfully employed in Nepal increased from 67% in 1995 to 78% in 2011, with the agricultural sector providing employment for 64% of the total population (CBS 2011, Pokharel 2012). Despite its large share of employment nationally, the agricultural sector suffers from low investment and lacks commercialisation and modernisation, contributing only 34% to the country's gross domestic product (GDP) (CBS 2011, Government of Nepal and

UNDP 2014, Sharma 2006). Moreover, the high proportion of subsistence farmers means that only an estimated 20% of employed persons in Nepal are paid employees (CBS 2011, Pokharel 2012).

The creation of earning opportunities is a constant challenge facing the Government. Between 1997 and 2007, Nepal experienced de-industrialisation driven primarily by a poor business environment caused by internal conflict and power outages (Government of Nepal 2014). The result has been that most income prospects in the country stem from the service industries, such as tourism and health (Government of Nepal and UNDP 2014). The 2014 Annual Financial Report stated that despite the entrance of 500,000 youths into the Nepali labour market in 2013, there were no new employment opportunities created (Government of Nepal 2014). As a result, migration, either to urban areas of the country or abroad, has become an important coping strategy for many men and an increasing number of women (Government of Nepal and UNDP 2014). For rural-urban migrants who are uneducated or have skills unrelated to urban living, employment opportunities are often restricted to the lowest-paying occupations in the informal sector, such as street vendors, day labourers, waste-pickers, and housemaids (ADB 2010).

2.7 THE ROLE OF FAMILIES AND COMMUNITIES (PROXIMAL CONTEXTS)

The focus of this thesis is on differences between women living in squatter and non-squatter families and communities. These proximal contexts of development will be discussed in detail in the section below using Brooks-Gunn's (1995) Family and Community Resource Framework (Brooks-Gunn, *et al.* 1995). The framework has been employed in order to better understand how family and community resources can influence women's healthcare utilisation during the pregnancy, birth, and postnatal period (Brooks-Gunn, *et al.* 1995).

As follower of Bronfenbrenner's work, Brooks-Gunn and colleagues have focused more precisely on investigating the role of 'proximal' processes of human development, or processes that occur within the family and the community that have the potential to improve or hinder human development (Brooks-Gunn 1995, Kendall and Li 2005). An interpretation of Brooks-Gunn's Family and Community Resource Framework (1995) by Kendall (2003), suggested that families and neighbourhoods have four types of 'resources' or capital thought critical for human development,

namely *human*, *social*, *financial* and *physical* capital (Brooks-Gunn 1995, Kendall 2003).

According to the framework, processes occurring within the family and household are possibly the most influential for the growth and development of an individual, as its influence on health and well-being persists throughout the life-course (Brooks-Gunn, *et al.* 1995). Parental choices (or lack thereof) about the allocation of 'resources' are said to influence how much parents and households invest in the health and education of their offspring. While communities can also influence individual outcomes, it is primarily parental choices about the 'resources' allocated to rent or housing, that will determine the neighbourhoods or communities in which families live (Brooks-Gunn 1995).

In this framework, *human* capital, refers to the knowledge and skills of an individual or population, and is most commonly captured by educational attainment (Becker and Tomes 1994, Brooks-Gunn 1995, Kendall 2003). However, it can also be transmitted from parents to children in the form of inherited characteristics (e.g. genes, cognition, appearance) and learned behaviours (Becker and Tomes 1994, Brooks-Gunn 1995, Kendall 2003). *Social* capital can also exist at the family (or household) and community level. Although definitions of social capital vary, elements of social capital commonly include social connectedness, involvement in voluntary organisations, informal networks, and values of trust, reciprocity and belonging (Baum and Ziersch 2003). At the family level, *social* capital describes the connections that individuals establish with other members of the family, and can be measured by family type, such as single versus both parents, nuclear versus joint, the number of children, and parental work hours (Baum and Ziersch 2003, Coleman 1988, Kendall 2003, Putnam 1995). At the community level, it describes the relationships that people form with others outside their immediate homes or communities, and can be measured by the public sector services made available to the community, such as water and sanitation, education, healthcare, number of unemployed individuals, and by neighbourhood quality or composition (Brooks-Gunn 1995, Coleman 1988, Kendall 2003). Social capital within a community can also exist in two distinct ways within social structures; there is *bonding* social capital, which links members of a particular group, and *bridging* or *cross-cutting* social capital which links across groups (Baum and Ziersch 2003). These

connections can not only generate trust, establish expectations and obligations, and create and enforce norms, but they can also be used to generate other forms of capital (Baum and Ziersch 2003, Brooks-Gunn 1995, Coleman 1988, Kendall 2003, Putnam 1995). *Financial* capital on the other hand, is captured by wealth or income generation, while *physical* capital describes a process where financial capital is translated into physical resources, such as a house, furniture, television, and books (Brooks-Gunn 1995, Kendall 2003).

The section that follows utilises Brooks-Gunn's framework to explain how communities and families in Nepal shape the health and development of future generations.

2.7.1 Communities and neighbourhoods

The quality of available community resources, as well as the resources of members of that community, can lead to disparities in the level of human, social, physical, and financial capital between communities (Coleman 1988, Putnam 1995). These resources include the presence or quality of schools, health clinics, water and sanitation infrastructure, and relationships communities have with persons or communities outside of their own communities (Coleman 1988, Putnam 1995). Importantly, as will be discussed below, exclusion in one dimension contributes and reinforces exclusion in another.

The accumulation of *human, social, physical* and *financial* capital at the community level in Nepal is generally linked to existing social structures based on Hindu values and practices and geography (Sengupta and Sunjeet 2012). The social and political dominance of Hindu 'high' caste groups, have historically played to the advantage of individuals belonging to the same caste (Pandey, *et al.* 2013, Sengupta and Sunjeet 2012). Today, 'high' caste groups have accumulated greater resources than 'low' caste-groups, including human capital (education), financial capital (income), and physical capital (land and household assets) (Government of Nepal and UN country Team 2013, MoHP, New ERA and ICF International 2012).

In terms of geography, rural and farming communities in Nepal, particularly those in the Mid-western and Far-western development regions, and the Mountain zone, have historically represented vulnerable and fragile groups. These communities have consistently been reported to have less access to assets or resources, including

transport facilities, schools, education, healthcare, an water and sanitation (CBS 2011, 2011, FHD/NHSSP 2012, Government of Nepal and UNDP 2014, MoHP, New ERA and ICF International 2012, Pradhan, *et al.* 2010). Living in these communities has traditionally threatened the residents' accumulation of any form of capital, including human, physical, and financial capital. For example, children living in the Mountain zone, the Mid-western or the Far-western regions, have the lowest immunisation rates in the country, have higher incidences of bloody diarrhoea, and have the highest prevalence under-nutrition in the country (MoHP, New ERA and ICF International 2012).

As the Nepal modernises, the influx of labour force from different parts of country and belonging to all caste groups into urban centres like Kathmandu, has changed the traditional concept of 'disadvantage' in urban areas of the county (Pradhan 2004). For example, the traditional systematic caste-based exclusion is quickly disappearing in Kathmandu. A recent study reported that among urban poor communities in Kathmandu, *Brahman* and *Chhetri* castes record a higher incidence of lowest daily income compared to *Janajati* and *Dalit* caste groups (Dahal 2011). Furthermore, that study concluded that in urban areas, poverty, is not dependent on ethnic background, but rather on population characteristics such as age, gender, and family type, as well as household size, and nature of work (Dahal 2011).

In squatter settlements however, where residents differ in their accumulation of different forms of capital, the mix of castes and ethnic groups living adjacent to one another has been found to hinder their *bonding* social capital, which in turn makes these communities more vulnerable to shortfalls in *bridging* social capital or social exclusion (Moffat and Finnis 2005). Several studies have documented that public perception of squatter communities in Nepal is overwhelmingly negative, viewed as 'land grabbers' who live in appalling conditions to benefit from possible resettlement grants, rather than as a result of poverty or desperation (Rademacher 2009, Tanaka 2009). As a consequence, squatter communities suffer discrimination and exclusion not just from neighbouring non-squatter communities but also from credit organisations, formal employment sectors, and the government (Rademacher 2009, Tanaka 2009, UN-HABITAT 2010).

While culture and communities can influence how parents care for children, it is the direct interaction with the parents through genes, beliefs, and behaviours as well as

the multiple contexts they choose for the child, that have the most direct effect on the on children's future life chances (Brooks-Gunn 1995, Kendall 2003). As such, the section that follows focuses on the influence of the family on the individual.

2.7.2 Family and household

This section describes how parental treatment of boys and girls have contributed to Nepali women's limited capacity to accumulate human, social, financial, and physical capital, consequently adversely impacting their health status.

As stated earlier, Nepalese society has traditionally favoured males. Within the family, girls and women have been reported to suffer from inadequate nutrition from an early age (Furuta and Salway 2006, Gittelsohn, Thapa and Landman 1997) and achieve limited education as a result parental perceptions regarding the value of daughters (Ersado 2005, UNICEF 2006). Such parental attitudes have traditionally determined the socialisation and division of housework, where girls are expected to undertake domestic labour and the perception that non-farm employment is a more desirable and appropriate occupation for males than females (Ashby 1985, LeVine 2006, Parker, Standing and Shrestha 2014, Stash and Hannum 2001). In addition, investing in girls is considered an economic liability, since daughters join their husband's (marital) home, while sons are expected to look after their parents in old age (Ashby 1985, CREHPA 2007).

The quality of personal relationships between a girl and her parents, as well as her siblings, have also been documented influence their access to other resources (Bajracharya and Amin 2010). For example, through taking life histories of adult women, LeVine (2006) and Parker (2014) found that parental attitudes towards educating girls, in particular that of fathers, was an essential factor in women's educational achievements (LeVine 2006, Parker, Standing and Shrestha 2014). In addition, the presence or absence of other siblings has also been found to influence their chances of education in childhood. For instance, Parker (2014) reported that older male siblings pleaded with parents to allow their sisters to go to school, while in other cases, older siblings who were engaged in paid employment, financed education for their younger siblings (Parker, Standing and Shrestha 2014). In other cases, it was the absence of male siblings that encouraged parents to invest in the education girls (LeVine 2006, Parker, Standing and Shrestha 2014).

Today, persisting attitudes regarding women's role in society continue to hinder women's full participation in society. The 2011 NLLS suggested that traditional parental perceptions about the value of girls' education continue to be enforced. For example, 5% of boys and 12% of girls aged between 6 and 24 years, have never attended school (CBS 2011). For 28% of boys and 65% of girls, the primary reason was parent's unwillingness to send their children to school, as majority undertake household chores, such as looking after siblings and cooking, so that their parents can go to work and earn (CBS 2011). In addition, although it is illegal for girls to marry before the age of 18, marriage in Nepal continues to occur relatively early. Among 20-49 year old women, 52% were married by the age of 18, with a median age at first marriage at 17.8 years (MoHP, New ERA and ICF International 2012). This suggests that deep-rooted social perceptions of gender roles and stereotypes at the household level continue to translate into the unequal allocation of resources among male and female children within the family.

Once married, traditional household dynamics within a multigenerational 'joint' family where the wife joins her husband's family, have also been reported to restrict women's decision making power within the household. In general, women's lack of decision-making power within the family, their lack of education and economic power, have been found to restrict their ability to seek and receive healthcare (Simkhada, *et al.* 2006). Despite the negative literature of mothers-in-law on the autonomy and decision making power of daughters-in-law (Simkhada, Porter and van Teijlingen 2010), they have also been reported to form supportive and loving relationships with them. In the study by Parker and colleagues (2014) for example, mothers-in-law were credited with providing essential support in helping recently married women continue their education after marriage or childbirth (Parker, Standing and Shrestha 2014).

Together, the low educational attainment of girls, the restriction on their movements outside of the family unit as they enter their reproductive years, have been found limit women's opportunities to form supportive social networks, depending instead on the social networks of their husband's family (Morrison, *et al.* 2010, Rankin 2002). This lack of opportunity to establish their own networks, has been found to be an important contributor to the social environment that increases women's risk of suicidal behaviour (Pradhan, *et al.* 2011). In addition, familial reinforcement of

traditional customs and rituals within the home environment continue to be reported as a barrier to improving women's status in Nepal (Government of Nepal and UN country Team 2013). For instance, the practice of *chaupadi pratha*, or isolation during menstruation and post-delivery period, was carried out to protect men from potential 'pollution'. The practice prohibits women from entering religious sites, touching water, preparing food, and relegating women to animal sheds (Dahal 2008, Hamal and KC 2014, Pandey 2014, Tamang, *et al.* 2002). In contemporary Nepal, there is evidence that the significance of such practices are fading, however such practices continue to be enforced in poor and isolated households and communities (Brunson 2010, Hamal and KC 2014, Pandey 2014).

Poverty also has a great impact on the amount of resources households can invest on their children (Duncan, *et al.* 1998). Duncan and colleagues (1994) suggested that economic deprivation in the first five years of life has the most harmful effects on children's developmental outcomes (Duncan, Brooks-Gunn and Klebanov 1994). In Nepal, poor families, especially those in rural areas, are often unable to ignore the high opportunity costs of educating their children, with rural individuals generally achieving lower educational status than their urban counterparts (Ersado 2005, UNICEF 2006). If a choice has to be made between sending a boy or a girl to school, the boy will usually be given precedence (Ersado 2005, UNICEF 2006), primarily because the expected returns on investment in educating a girl is unlikely to provide sufficient economic incentive to delay her marriage (Bajracharya and Amin 2010). There is also a poverty dimension to practices of early marriage, with girls belonging to the poorest households more likely to marry under the age of 18 than girls from the richest households (Bajracharya and Amin 2010). Early marriage can interfere with a girl's educational attainment and accumulation of human capital. In adulthood, women living in poorer households have been found to suffer from poorer health and utilise less maternal healthcare. For instance, poverty has also been associated with increased parity in Nepal, were parents may perceive children as a source of income, thus motivating them to have more children, or because they have less access to family planning (Adhikari 2010, Karkee, Lee and Binns 2013, Morrison, *et al.* 2014, Pradhan, *et al.* 2010, Shrestha, Bell and Marais 2014). More importantly however, if the family is impoverished, the mother is herself more likely to be unhealthy and under-nourished in the pregnancy period, potentially

'transferring' her disadvantage to the child in the womb. For unborn babies for example, poverty increases the risk of poor birth outcomes, and subsequent physical health and cognitive and emotional development that can persist into adulthood (Black, *et al.* 2008, Brooks-Gunn and Duncan 1997, Brooks-Gunn, Klebanov and Liaw 1995, Evans 2004, Grantham-McGregor, *et al.* 2007, Khanal, *et al.* 2014, Kumar and Singh 2013).

Having described community and household level factors than may influence women's accumulation of resources in Nepal, the section that follows begins by highlighting the importance of utilising healthcare to reduce the risk of adverse outcomes for the mother and her baby.

2.8 MATERNAL HEALTH AND HEALTHCARE SYSTEM IN NEPAL

Good maternal healthcare and nutrition are crucial for the welfare of households, communities, and the wider society (WHO 2005). The high level of inter-relatedness between a mother and her offspring over the life-course means that the death of a mother represents a significant threat to the survival and development of surviving children and her family (Katz, *et al.* 2003, McCaw-Binns and Hussein 2012, Ronsmans, *et al.* 2010, Sear and Mace 2008). Katz and colleagues (2003) estimated that in the Sarlahi district in Southern Nepal, the death of a mother increased the odds of death for the infant by 6 fold in the first week of life, 12 fold among those one to four weeks of life, and 52 fold among four to 24 weeks (Katz, *et al.* 2003). In addition to loss of life, the consequences of maternal ill-health, including inadequate nutrition, can lead to loss of human capital and increased risk of adult chronic diseases (Save the Children 2012, UNICEF 2009, WHO 2005). Several studies indicate that the full benefits of addressing maternal health include inter-generational benefits on the nutritional status, health, and education of the offspring, as well as the economic capacity of families. For example, under-weight women or those with body mass index <18.5 kg/m^2, are more likely to give birth prematurely or give birth to low-birth-weight (< 2.5kg) offspring (Han, *et al.* 2011). At two years of age, these children tend to have lower cognitive scores than children of adequate birth-weight (>2.5kg) (Grantham-McGregor, *et al.* 2007, Power, *et al.* 2006, Walker, *et al.* 2007). In their school years, these children are more likely to have attention-deficit disorder and other behavioural problems (Bhutta, *et al.* 2002, Kormos, *et al.* 2014, Marlow, *et*

al. 2005, Robinson, *et al.* 2008), who then tend to be less productive in adulthood (Alderman and Behrman 2006, Hoddinott, *et al.* 2013, Hoddinott, *et al.* 2008). It is clear therefore, that promoting interventions that focus on improving the overall health of mothers and children, beginning at the pre-conception period, can also translate to healthier, better nourished, and more productive societies (Bhutta, *et al.* 2014, Victora, *et al.* 2008, WHO 2005).

The pregnancy, delivery, and postnatal period represent important windows of opportunity to address risk factors which can result in greater vulnerability and ill-health in later life, both in the mother and in the child (Bhutta, *et al.* 2008, Bhutta, *et al.* 2013, WHO 2005). For example, each intervention provided during ANC, is provided with the aim of offering the baby an optimal environment for growth and development *in-utero* and subsequent healthy trajectory in childhood and adulthood (Di Cesare and Sabates 2013, Noonan, *et al.* 2013, WHO 2009). For example, a placebo-controlled study from Nepal suggested that folic-acid-iron supplementation, increased mean birth-weight by 37grams, reduced the incidence of low birth weight from 43% to 34% (Christian, *et al.* 2003) and brought subsequent cognitive advantages in childhood (Christian, *et al.* 2010).

At the time of delivery, giving birth in a clean environment, in the presence of trained health professionals who have access to medicines, supplies, and equipment is necessary to manage obstetric and neonatal complications and death (Blencowe, *et al.* 2011). Postnatally, care is aimed at detecting danger signs of complications in both the mother and child, but also to offer support and advice on the care of the newborn, specifically feeding practices, and later, child immunisation and uptake of contraceptive methods (WHO, Department of Making Pregnancy Safer and Department of Reproductive Health and Research 2006).

Nepal's commitment to improving the health of women and children, has brought about the implementation of free-care policies that have been largely responsible for the reductions in maternal, neonatal, and infant mortality (Hussein, *et al.* 2011, Upreti, *et al.* 2012). These 'investments' in improving the health of mothers and children have real payoffs for households, communities, and the wider society, not just in terms of lives saved, but also in the benefits that come from avoiding long-term mental and physical deficiencies, and disease in later adulthood (Alderman and Behrman 2006, Bhutta, *et al.* 2014, Save the Children 2012). For example, it has

been estimated that improving coverage of available pre-conception, antenatal, intra-partum, and post-natal interventions by 2020, could prevent more than 84% of maternal deaths and 77% of neonatal deaths (Bhutta, *et al.* 2014). These averted deaths have long term consequences for national productivity, with the United States Agency for International Development (USAID) recently estimating that maternal and newborn mortality leads to US$15 billion in lost potential productivity globally every year (Pellegrom, *et al.* 2014).

The subsections that follow, begin by describing two models of healthcare utilisation commonly used in maternal health research. A description of the health status of mothers in Nepal and the way in which the government delivers maternal health interventions to its population will follow, focusing on the health and service delivery in Kathmandu. Studies carried out in Nepal in the area of healthcare utilisation are then discussed.

2.8.1 Models of healthcare use

Governments, international aid agencies, and academics have become increasingly interested in the equal utilisation and access of healthcare, primarily because it is considered to offer equal opportunity to be healthy to all sectors of society (Braveman and Gruskin 2003). However, as per health status, inequities in utilisation of healthcare can arise from systematic social disparities within households and communities (Braveman and Gruskin 2003, Marmot and Friel 2008).

Two models have been commonly used in the literature to gain a better understanding of the broader societal, community, and family level factors that may influence the utilisation of healthcare during pregnancy, delivery, and after delivery. The models are the three Delays Model (1994) by Thaddeus and Maine, and Andersen's Behavioural model of healthcare utilisation (1995, 2005). As will be described below, both models reflect the importance of the context of an individual's daily, socially and culturally embedded lives. Most importantly, both models also consider the effect of the health-system itself (Andersen 1995, Andersen and Newman 2005, Thaddeus and Maine 1994). The models therefore acknowledge that the performance of the health system matters, and that health facilities themselves play an important role in shaping decision's about whether to utilise services. Before

discussing common themes, differences, and deficiencies, a brief overview of each model are provided.

2.8.1.1 *Thaddeus and Maine's 'three delays' model*

The *'Three Delays'* model emerged from an extensive review of the broader literature concerned with maternal health, of which maternal mortality was considered an outcome of a generic problem (Thaddeus and Maine 1994). In their analysis, the concept of 'delays' emerged as the pertinent factor affecting the interval between onset of illness (specifically, an obstetric complication) and its outcome (Thaddeus and Maine 1994). In their model, Thaddeus and Maine (1994) framed various individual, community, and health system factors according to 'delays' occurring in three phases, specifically delays in deciding to seek care, reaching the facility, and receiving adequate care once at the facility, in which delays at any stage can result in maternal mortality (Thaddeus and Maine 1994). The three delays are described in detail below:

FIRST DELAY: A delay in making the decision to seek care

Delays occurring in the first phase, are described as factors generally referred to in the literature as 'socio-demographic' factors which affect perception, including perceived accessibility of facility and perceived quality of care received at facility (Thaddeus and Maine 1994). These factors can occur on the part of the individual, the family or both. Thaddeus and Maine (1994) emphasise that before deciding to seek treatment, individuals need to recognise that they have a condition that requires medical attention. For women experiencing obstetric complications, women must be able to recognise their symptoms of complications and also understand the gravity of symptoms. However, the ability to recognise illness is not only influenced by their own personal factors, including age, education, but also by the perceived aetiology of the illness. In other words, if the illness is not seen as a serious health condition for which medical expenses are justified, the decision to seek healthcare will not be reached (Thaddeus and Maine 1994). Other delays occurring in this phase include women's status within the household and community, perceived consequences of financial and opportunity costs, and the perception of care at the nearest facility (Thaddeus and Maine 1994).

SECOND DELAY: A delay in reaching an appropriate obstetric facility once the decision has been made to seek care

Delays occurring in the second phase determine the timely use of services, and is related to the reality of the context, including ability to pay, distance to facility, transportation, and logistics. These delays are very common in rural Nepal, where even when a woman has identified that she is suffering a life-threatening condition, and a decision has been made to seek care, the uneven distribution of health facilities in combination with a lack of roads passable by vehicles, present major barriers for women's access to delivery care (Hodge, *et al.* 2014, Sharma, Sawangdee and Sirirassamee 2007).

THIRD DELAY: A delay in receiving adequate and appropriate care once the health facility has been reached

Finally, delays occurring in phase three usually reflect the inadequacy of the health system in each setting. Late or wrong diagnosis made by staff are factors that contribute to delays in this phase. In addition, the general distribution of facilities, shortages of supplies, equipment and personnel, as well as competence of available personnel, and adequacy of referral system are other factors commonly assessed in this phase. In Nepal, lack of human resources was one of the major factors affecting the availability and quality of maternal health services, especially in remote hill and mountainous areas (Pradhan, *et al.* 2010).

The variables commonly collected in the literature to distinguish the delay that had occurred are presented in Figure 2.4.

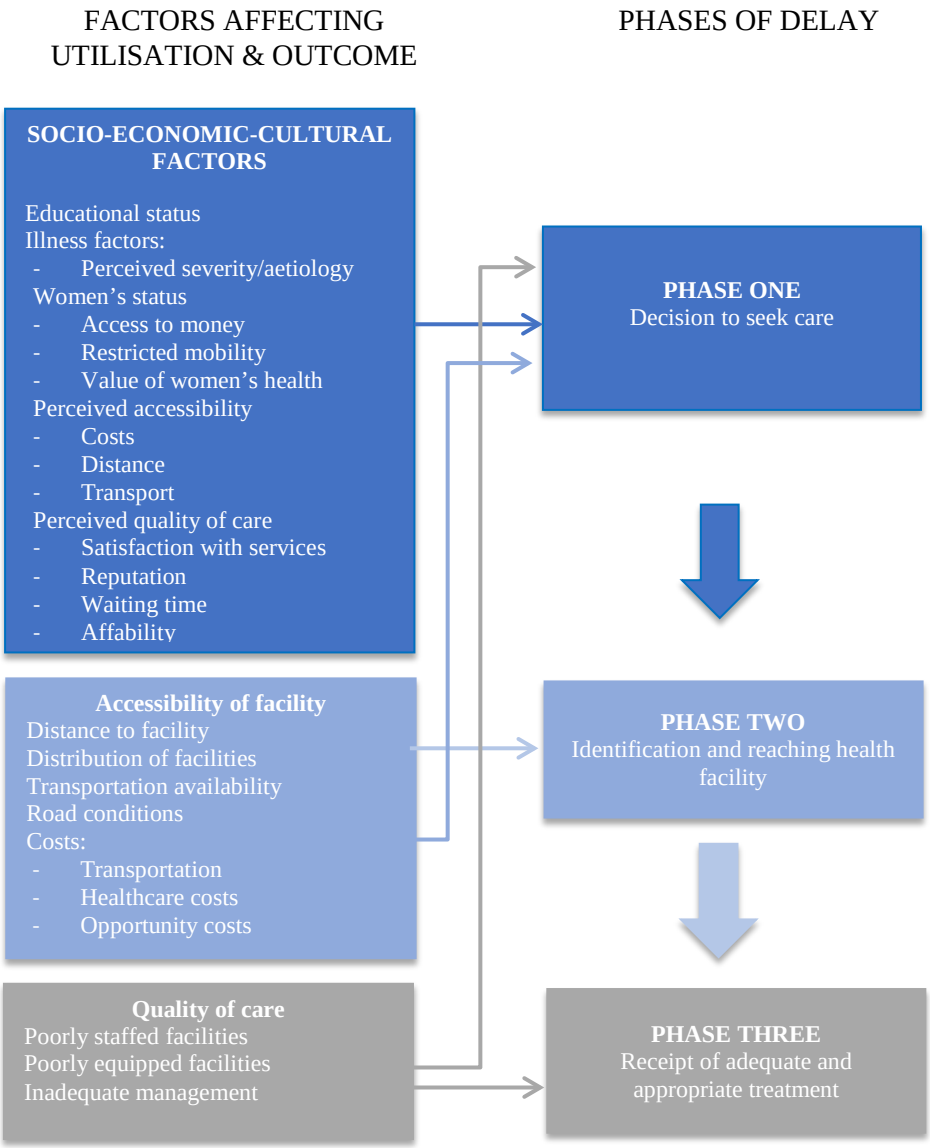

Figure 2.4: The "Three Delays" Model and commonly assessed variables
(Source: Adapted from Thaddeus and Maine 1994)

Importantly, Thaddeus and Maine (1994) acknowledged the interdependence of individuals on their environments, meaning that delays can occur at the individual or community level. For example, even when the woman identifies that she is suffering a life-threatening condition, a decision to seek care is reached, and finances are made available for her transportation to the facility, once she arrives at the facility, there is a lack of adequate equipment to treat her specific complication. In this case, the facility servicing her community has failed to provide adequate care, and although she sought appropriate care in a timely manner, she did not receive it.

2.8.1.2 *Andersen's behavioural model of healthcare use*

Unlike the *Three Delays* model, *Andersen's Behavioural Model of Health Service Use* was developed to better understand inequitable access to formal healthcare services in the USA (Andersen 1995). Since it was first developed, it has gone through four iterations, with the fourth version depicted in Figure 2.5

The original model developed in the late 1960s suggested that people's use of healthcare services is a function of their predisposition to use services (demographics, social structure, and health beliefs), factors that enable or impede use (personal and community), and their need for care (perceived and evaluated). Subsequent revisions have incorporated 'health status' outcomes and feedback loops, thus acknowledging the important dynamic interactions that occur between individuals and the health system in reaching a decision to utilise care in future (Andersen 1995). In the most recent version (Figure 2.5), the model posits that health service use is determined by *individual* factors and *external* factors, that either facilitate or hinder utilisation of health services (Andersen 1995). These components are briefly described below:

At the individual level, the model suggests an explanatory causal order, starting with *predisposing* factors, which reflect the individual's tendency to utilise healthcare services. According to Andersen, an individual is more or less likely to use health services based on demographic (e.g. age, sex), position within the social structural (e.g. education, occupation) and attitudes and beliefs (e.g. about health providers, medical care, and disease). For example, an individual who believes that heavy bleeding after child birth is beneficial as it is getting rid of old blood is unlikely to utilise services. While these individual characteristics, are not directly related to health service use, they are important because they affect the type and amount of illness and consequently used healthcare differently (Andersen and Newman 2005).

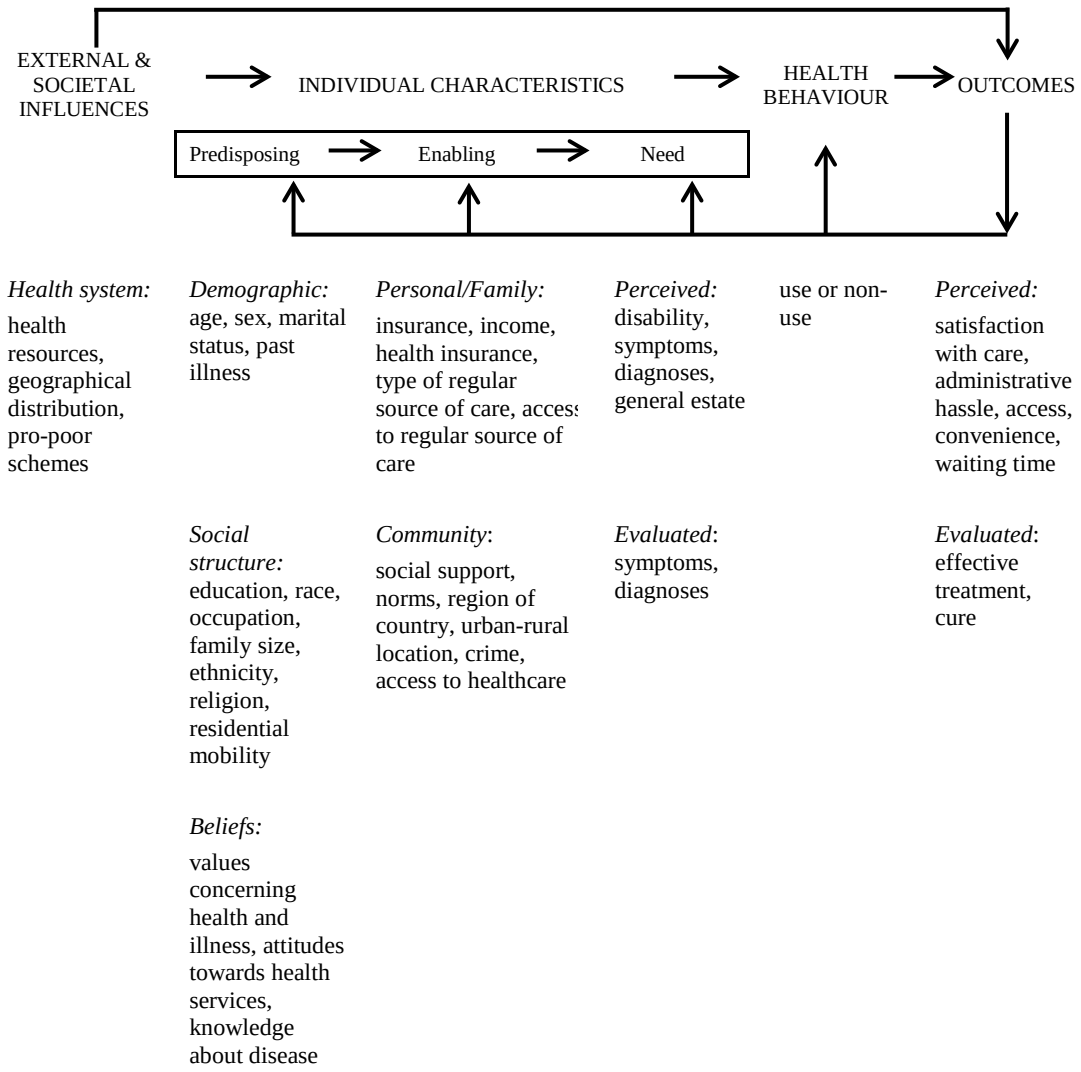

Figure 2.5: Andersen's behavioural model of healthcare use
(Adapted from Andersen and Newman (2005))

Andersen and colleagues (1995, 2005) posit that although individuals may be predisposed to use healthcare, some means must be available for them to take-up services. These means are called '*enabling'* factors, and may be found within the family (e.g. income) or community (e.g. distance to facility, available health personnel and facilities, place of residence). Family-level enabling factors such as income, are associated with utilisation by way of increased economic means to afford care. Community-level factors may be linked to utilisation because local norms can at times override individual beliefs and values, in turn influencing the behaviour of the individual living in a specific community (Andersen and Newman 2005).

Assuming the presence of predisposing and enabling conditions, the individual must have a perceived *need* for healthcare for the use of the healthcare to take place

(Andersen and Newman 2005). For *need* to be perceived, the individual must also perceive illness or the probability of its occurrence. According to Andersen and colleagues, illness level represents the most immediate cause of health services use (Andersen and Newman 2005). Health *outcomes*, the experiences and satisfaction with care received, can also affect subsequent predisposing factors and perceived need, as well as health behaviour (Andersen 1995). The 'feedback loops' shown in Figure 2.5 illustrate how satisfaction with care received and improved health status, may affect future healthcare utilisation. This is an important element, which suggests that an individual is more likely to continue utilising healthcare through the subsequent effects of healthcare use on predisposing factors, as well as their experience with the health system itself (Andersen 1995).

Following the sequence illustrated in Figure 2.5, the combination of these factors will result in either utilisation or non-utilisation of healthcare services. According to Andersen, equitable and inequitable health service use occurs when predictors belonging to social structure, health beliefs, and enabling factors determine who gets care (Andersen 1995). With respect to promoting equitable access, Andersen and Newman (2005) suggest that enabling resources are strongly associated with health services utilisation, health beliefs are judged as having medium association because, as Figure 2.5 shows, these can be altered as a result of utilisation itself (Andersen and Newman 2005). Addressing demographic characteristics and social structure however are less effective in the promotion of equitable access since they cannot be altered to change utilisation (Andersen 1995). For the purposes of this thesis, Andersen's model has been used to explain women's maternal healthcare utilisation in Ward 34, Kathmandu Nepal.

In the following subsection sections, the health status of mothers in Nepal is presented, followed by a description of how healthcare is delivered in the country, while the final sub-section presents women's utilisation of antenatal, delivery, and postnatal care.

2.8.2 Maternal health in Nepal

Like many nations around the world, Nepal is one of the 189 countries committed to achieving the eight Millennium Development Goals (MDGs) by 2015, representing progress on a range of economic and social indicators. The MDG related to

improving maternal health, MDG5, aims to reduce the maternal mortality ratio (MMR) by three-quarters from 1990 to 2015. The MMR is the key indicator for expressing the health of mothers is the Maternal Mortality Ratio defined as the total number of women who die during pregnancy, childbirth, or within 42 days after delivery, per 100,000 live births in a given time period (Ronsmans and Graham 2006, WHO, *et al.* 2014). While the MMR represents a woman's chances of dying from a given pregnancy, it is also used as a wider indicator of the health stock of women, embodying the socio-cultural and economic inequalities that adversely affect female children through to adolescence or adulthood, when they become mothers (Ronsmans and Graham 2006, WHO, *et al.* 2014).

The MMR in 1990 was estimated by the United Nations (UN) at 850 per 100,000 live births, equating to 7,600 deaths per year or 21 deaths per day (UNDP 1992). This estimate prompted national action towards improving the status of women in Nepal, with the MoHP launching the Nepal Safe Motherhood Programme (NSMP) in 1997 (Government of Nepal 2006, Hotchkiss 2001). The specific interventions implemented through the NSMP and subsequent national programmes are described in the section that follows. These national strategies have been successful in reducing the national MMR. In 2014, the WHO reported that between 1990 and 2013, Nepal's MMR had dropped to 190 deaths per 100,000 live births, and meeting the MDG target of reducing its MMR by 75% (WHO, *et al.* 2014).

Despite this progress however, pregnancy, childbirth, and the weeks just after childbirth continue to represent periods of high risk to a woman's life with approximately 67% of maternal deaths occurring during delivery and the postnatal period (Pradhan, *et al.* 2010). The direct leading causes of death are haemorrhage (24%), hypertensive disorders (21%), and complications related to abortion (7%) (Pradhan, *et al.* 2010). Indirectly, limited health literacy across Nepal, as well as weak health systems and lack of facilities contribute to maternal mortality in Nepal (Pradhan, *et al.* 2010).

As highlighted by Andersen's model of healthcare, how maternal healthcare is delivered is an important part of increasing the utilisation of healthcare services. Therefore, the section that follows describes maternal healthcare provision, and where possible, special mention is made to the delivery of healthcare in Kathmandu.

2.8.3 Maternal healthcare provision in Nepal

Nepal's efforts to reduce its MMR, began in 1997 with the implementation of Nepal's Safe Motherhood Programme (NSMP) (Government of Nepal 2006, Hotchkiss 2001). In the beginning, the NSMP (1997-2004) had the explicit purpose of promoting access to delivery services in Nepal in selected districts (Barker, *et al.* 2007). At the health-system level, the NSMP targeted the quality of midwifery through training of service providers, as well as improving the physical infrastructure of hospitals, including equipment and supplies (Basnet, *et al.* 2004, Government of Nepal 2006, Hotchkiss 2001). In the community, the NSMP focused on creating awareness of, and demand for, modern maternity services by addressing a range of barriers faced by women in accessing the services, including increasing knowledge on the benefits of modern healthcare (Barker, *et al.* 2007, Government of Nepal 2006). However, these interventions achieved limited results, and the proportion of women who did not attend ANC between 1996-2001 decreased from 56% to 51%, while home deliveries decreased from 92% to 89% (MoHP, New ERA and ICF International 2002, MoHP, New ERA and Macro International Inc. 1997, SSMP 2010).

Building on the experiences of the NSMP, the Support to the Safe Motherhood Programme (SSMP) (2004-2009), took a national system-strengthening approach, working at central policy and planning level, rather than the district level, to improve maternal health services. For example, a 'basic' or minimum package of essential services provided at different health facility levels, was outlined and implemented nationally (Barker, *et al.* 2007). In addition, it established a standard learning resource package as the foundation for training curricula for skilled birth attendants (SBA), and sought to increase equity in availability of quality maternal health services (Barker, *et al.* 2007, Government of Nepal 2006, SSMP 2010). Furthermore, to help cover the travel costs to and from a health facility during childbirth, a maternity incentive scheme in the form of a cash payment varied by ecological region, was adopted nationally in 2005 (Barker, *et al.* 2007, Government of Nepal 2006, MoHP, New ERA and ICF International 2007). In 2009, this incentive scheme was expanded to include 'free' ANC and delivery services for all types of deliveries at government and accredited hospitals (MoHP 2012). Together these interventions and incentives are known as the *Aama* (mother) Programme (MoHP 2012).

Antenatal, delivery, and postnatal care are provided through three main service settings in Nepal, Birthing Centres (BCs), *Basic* Emergency Obstetric Care (BEOC) centres, and *Comprehensive* Emergency Obstetric Care (CEOC) centres. A total of 1,555 Sub-health post, health posts, and primary healthcare centres across the country, are equipped as BCs, where only the most basic care is available. These facilities are mostly staffed by locally recruited staff nurses, auxiliary nurse midwives, and maternal and child health workers (Mehata, *et al.* 2012, Pradhan, *et al.* 2010). The 'basic' ANC package is available at all levels of care, including out-patient departments in hospital-level facilities, where women can access additional chargeable services such as blood testing and ultrasounds (Simkhada, *et al.* 2006).

Delivery care can be provided by at all facility levels, however they differ in terms of the different procedures they can perform. For example, staff at BCs are equipped to conduct only normal institutional and home deliveries, and provide family planning counselling, services after birth (Pradhan, *et al.* 2010). In 2013, approximately 27% of all facility deliveries occurred in birthing centres (MoHP 2014). Basic Emergency Obstetric Care centres, are staffed by all cadres of healthcare staff, in particular SBAs who can be doctors, nurses, or midwives (Mehata, *et al.* 2012). They are equipped to manage assisted vaginal delivery (vacuum or forceps), manual removal of placenta, removal of retained products of abortion (manual vacuum aspiration), and administration of parental drugs (for postpartum haemorrhage, infection and pre-eclampsia/eclampsia), and resuscitation of newborn (MoHP 2014, Pradhan, *et al.* 2010). Comprehensive emergency obstetric care on the other hand, includes surgery (caesarean section), anaesthesia, and blood transfusion along with BEOC functions. Unlike BEOC centres, CEOC are staffed by specialist doctors as well as all cadres of healthcare providers (Mehata, *et al.* 2012). However, only some CEOCs are equipped with personnel and equipment for maternal and neonatal intensive care (MoHP 2014, Pradhan, *et al.* 2010).

In 2011, government facilities were the main service provider of maternity care in Nepal, with an estimated 74% of all institutional deliveries, taking place in government facilities (MoHP 2014, MoHP, New ERA and ICF International 2012). As with other services in Nepal, accessing healthcare in some of Nepal's most isolated regions is difficult (MoHP, New ERA and ICF International 2012). For example, as urban settings attract the majority of the health workforce, women and

children in the Mid-western and Far-western development regions receive healthcare from health workers who may not have the necessary knowledge or training to identify or manage obstetric complications (Baral, *et al.* 2013, Department of Health Services 2010, MoHP 2014, MoHP, New ERA and ICF International 2012, Shrestha and Bhandari 2013, WHO 2007). Accordingly, these regions also have the highest rates of neonatal, infant, and child mortality (MoHP 2014).

An emerging issue facing healthcare in Nepal, particularly as the country urbanises, is the overcrowding experienced in hospital-level facilities, primarily due to a strong client preference for higher or hospital-level facilities (FHD/NHSSP 2013). The majority of clients attending hospital-level facilities have been reported to primarily choose public hospitals due to their reduced charges in comparison to private facilities, and also the perception that care is better quality at hospital rather than clinic-level facilities (FHD/NHSSP 2013). Women and families who utilise public facilities are thought to be poorer than the 'average' population, but richer than those who do not utilise maternal healthcare services (Mullany 2006).

To improve the health status of urban poor groups, but also to divert clients from hospital-level facilities, the local government launched the Community Urban Basic Health Service Programme (Kathmandu Metropolitan City 2009). At the community level these clinics provide *basic* preventative, promotive and curative services, and have a particular focus on those living in slum and squatter settlements (Kathmandu Metropolitan City 2009). Service delivery is through *Community Urban Health Clinics* that provide 'basic' healthcare in the facility and in the community, equivalent to the services provided by sub-health posts in rural areas (Kathmandu Metropolitan City 2009). Like rural facilities, each clinic is staffed with three mid-level health workers and provide all services free of charge. In 2009, a total of 22 clinics continue to provide services in urban areas (Kathmandu Metropolitan City 2009).

2.8.4 Maternal healthcare utilisation in practice

This section will describe the utilisation of antenatal, delivery, and postnatal care around the country. Since there is limited literature surrounding maternal healthcare utilisation in Kathmandu, figures provided in this section, refer primarily to urban Nepal in general.

Antenatal care is an umbrella term that is used to describe the different sets of interventions, medical examinations, and care that are carried out during pregnancy (WHO, Department of Making Pregnancy Safer and Department of Reproductive Health and Research 2006). In Nepal, the ANC guidelines, follow the World Health Organisation's (WHO) minimum standards for the provision of ANC, which recommend making 'four or more' ANC visits at timed intervals (MoHP 2014). Over the four visits, the guidelines recommend that women receive toxoid (TT) immunization, prophylactic iron and deworming tablets, and receive counselling on various topics such as nutrition, danger signs of obstetric complications, and rest. This last components of ANC, is an important element of care provision as it is during these face-to-face interactions that caregivers have the opportunity create awareness about potential risks and provide advice, so that women and their families can make decisions and take action in the case of an emergency (WHO 2009). However, at the largest maternity hospital in Nepal, and the most widely utilised source of antenatal and delivery care in Kathmandu, Mullany (2007) reported that with the exception of some high-risk cases, usual ANC procedures for patients do not include a health education component (Mullany, Becker and Hindin 2007).

In terms of utilisation, results from the NDHS indicate that in 2011, 85% of pregnant women attended at least one ANC visit, but only 50% attended the recommended 'four or more' visits (MoHP, New ERA and ICF International 2012). This represents a considerable improvement from 1996, when only 44% of Nepali women received attended at least one ANC visit, and only 9% attended the recommended 'four or more' ANC visits (MoHP, New ERA and ICF International 2012, MoHP, New ERA and Macro International Inc. 1997). Thus in 2011, one in two Nepali women who become pregnant go through their pregnancy without receiving the recommended monitoring and interventions.

The positive effect of the essential components of ANC for the growth and development of the foetus has also been reported in Nepal. In this instance, analysis of the 2011 DHS data, Khanal (2013) found that women who did not receive ANC and those who did not receive iron supplementation during pregnancy were 58% and 49% more likely to have low-birth-weight babies, respectively (Khanal, Zhao and Sauer 2014). Another study using the 1996 and 2001 DHS data reported that when a woman attended the recommended number of ANC visits, a child maintained a

healthy weight in his or her infant or toddler years (Halim, Bohara and Ruan 2011). Furthermore, a randomised control community trial in the Sarlahi district in the Central development region (Terai zone), found that offspring of women who had received folic acid-iron supplementation during pregnancy, had the highest probability of survival at age 7 years (Christian, *et al.* 2009). In the same cohort at age 8, it was found that iron/folic acid supplementation during pregnancy was linked to improved cognitive outcomes (Christian, *et al.* 2010)

Despite the availability of transport incentive schemes and removal of user-fess at the time of delivery, in 2011 only one in three women gave birth in a health facility (MoHP, New ERA and ICF International 2012). In urban areas, where there are more health facilities, a higher prevalence of facility deliveries have been reported (MoHP, New ERA and ICF International 2012). Although national statistics report that only 35% of women utilised delivery services, a recent report published by the Family Health Division (FHD) (2013) found that government tertiary-level facilities were struggling to meet the demand for delivery services created by the 'Free delivery' scheme (FHD/NHSSP 2013).

After birth, postnatal care (PNC) is often neglected by many women in Nepal (Pradhan, *et al.* 2010). It has been estimated that 33% of maternal deaths occur within the first 24 hours after birth, 6% in the first 24–48 hours after birth, and 28% 48 hours to 42 days (NEUPANE). Despite the importance of the first 42 days after birth, in 2011 between 40-47% did not receive PNC (Khanal, *et al.* 2014, MoHP, New ERA and ICF International 2002, 2012, Neupane and Doku 2013). Further analysis of the DHS data suggested that approximately nine in ten women who reported attending PNC had delivered in a health facility, suggesting that for Nepali women, encouraging an institutional delivery is also an effective method of increasing PNC uptake among (Khanal, *et al.* 2014, MoHP, New ERA and ICF International 2012).

2.9 FACTORS AFFECTING UTILISATION OF MATERNAL HEALTHCARE

In this section, a summary of the barriers to maternal healthcare utilisation commonly reported in the literature are presented. Throughout this section, studies carried out among Nepali women and women living in slum and squatter

communities around the world have been used because very few studies have been carried out among women living in squatter settlements in Nepal.

2.9.1 Health-system factors affecting utilisation

Health systems are largely responsible for providing fair and equal opportunity for individuals and communities to be healthy, with health-system policies, laws, and regulations enabling access and utilisation of health services (Andersen 1995, Goddard and Smith 2001, Obrist, *et al.* 2007). The five dimensions through which access to healthcare can be measured are: availability of drugs, equipment, and qualified staff; Accessibility or geographical distance to home; affordability or client's ability to pay; adequacy including opening hours and infrastructure; and acceptability or the individual's perception of the information and care provided (Boller, *et al.* 2003, Karkee, Lee and Pokharel 2014).

In Nepal, earlier NDHS have consistently reported an geographical biases in the availability, accessibility and adequacy of healthcare services. In general, facilities located in rural areas, Mountainous zones, and Mid-western and Far-western regions reportedly serviced primarily by community healthcare workers and low-level facilities compared to urban areas, and of all ecological and development regions (CBS 2011, Department of Health Services 2010, MoHP, New ERA and ICF International 2012). Women living in these regions have also reported long travel time to reach adequate facilities in the case of emergencies (CBS 2011), while the health workforce preference for urban work, have a consequent impact on the adequacy of care provided (Department of Health Services 2010, MoHP 2014, Pradhan, *et al.* 2010). These factors in turn impact on women's utilisation of healthcare. For example, a study carried out in Nepal found that ANC was three to six times higher in areas serviced by "high" quality health posts compared to those of "low" quality (Acharya and Cleland 2000). In this instance, the quality of health posts was assessed according to the availability of staff, drugs, medical equipment, number of rooms, and availability of water and sanitation facility (Acharya and Cleland 2000). Acceptability on the other hand is generally measured from the woman's perspective, taking into account factors such as the individual's perception of quality of care and the caregiver's attitudes toward patients (Obrist, *et al.* 2007). For example in Nepal's highly stratified society, staff attitudes and behaviour have

been reported to affect healthcare utilisation, with issues such as patronage, whereby care providers are perceived to provide better care for family, and lack of affability preventing women from utilising maternity care (Clapham, *et al.* 2008, Pradhan, *et al.* 2010). More recently, women's perceptions of staff attitudes, as well as availability of equipment and drugs were found to have an effect in Kaski, a centrally located hills district of Nepal (Karkee, Lee and Binns 2013). In that study, women were found to bypass their nearest facility because they perceived lower level facilities to have limited equipment and capable staff to deal with complications (Karkee, Lee and Binns 2013). This perception of the poor quality of care provided by lower level facilities has been previously reported at the national level, with hospital-level facilities frequently found to be overcrowded, dirty, and under-staffed (FHD/NHSSP 2013). The report suggested that overcrowding was primarily due to women choosing to by-pass lower-level facilities as a consequence of the general belief that bigger hospitals provide better quality and safer services (FHD/NHSSP 2013).

A common problem in slum areas however, is the quality of services available within close proximity. For example, a study assessing the barriers to delivery care in slum and squatter settlements of Nairobi, Kenya, found that the high concentration of health facility within slum communities contributed to the high prevalence of ANC attendance (97%) and facility deliveries (70%) (APHRC and World Bank 2006). However, the study also reported that a the majority of urban slum communities were served by inadequate health care facilities (APHRC and World Bank 2006), with Nairobi slums being served mainly by privately owned, sub-standard, unlicensed, and informal health facilities (APHRC and World Bank 2006). Another problem faced by slum and squatter communities around the world, is the perceived low quality of care provided by government facilities. For instance, in the slums of Indore City, India, Agarwal and colleagues (2010) found that slum residents had a low preference for government health facilities during obstetric emergencies because they were regarded as providing low quality care (Agarwal, *et al.* 2010). Similarly among slum residents in Mumbai, More and colleagues (2011) found that among women who experienced problems during pregnancy, there was an overall preference for private healthcare (More, *et al.* 2011). Among the reasons for this preference, the authors cited ease of accessibility, convenient opening hours and a perception that

the quality of care is higher (More, *et al.* 2011). More and colleagues (2011) also found that although private care is generally associated with higher costs, slum residents were willing to meet the costs, as it was their expectation that they will receive superior service (More, *et al.* 2011). This willingness to overcome cost-barriers to receive private care, which are perceived to provide better care was also reported among slum residents of Pune and Mumbai (Griffiths and Stephenson 2001).

2.9.2 Community and neighbourhood factors affecting utilisation

The concept of "where you live affects your health" is not new. In Nepal, community-level geographical variations in health and healthcare utilisation have been reported over many years (MoHP, New ERA and ICF International 2002, 2007, 2012). In the area of maternal healthcare, national data has primarily focused on differences between development regions, ecological zones and rural versus urban communities, largely because national household surveys collected through DHS are the only source of population data available in the country.

As per other public services, living in rural and remote areas of the county have traditionally been associated with reduced ANC and delivery coverage (Sharma, Sawangdee and Sirirassamee 2007). Similarly, living in the Mid-western and Far-western regions, have been associated with reduced antenatal and delivery care coverage (Acharya and Cleland 2000, Sharma, Sawangdee and Sirirassamee 2007). More recently, Shrestra and colleagues (2012) found that women living in rural and remote communities within one district (Kavrepalanchok) of Nepal, were less likely to utilise delivery care than women living in urban communities (Shrestha, *et al.* 2012). A combination of factors were cited for this difference, including more traditional beliefs, distance between home and health facility, difficult travel and lack of transportation among other (Shrestha, *et al.* 2012).

At times, the term 'community' can be interchangeably used with the term 'neighbourhood' to signify more immediate residential environment, with no clear distinction or definition made between the two (Diez Roux 2001). In the area of urban health and inequities in health, community or neighbourhood level indicators have been identified as important determinants of healthcare utilisation (Andersen 1995, Andersen and Newman 2005, Kirby and Kaneda 2005, Montgomery and

Hewett 2005). There are many mechanism through which communities or neighbourhoods can affect utilisation, however these fall broadly under four broad categories, namely social interaction, environmental, geographical, and institutional (Galea and Vlahov 2005, Galster 2012, Kirby and Kaneda 2005, Leventhal and Brooks-Gunn 2000, Montgomery and Hewett 2005). *Social* mechanisms points to features of *social capital* or the social processes endogenous to neighbourhoods, where as a result of sheer proximity ideas and behaviours can be influenced by neighbours or where information can spread through networks of people (Coleman 1988, Galea and Vlahov 2005, Galster 2012, Montgomery and Hewett 2005). *Environmental* mechanisms refers to natural or human made attributes by which neighbourhoods may put residents at increased risk of violence, or adverse physical conditions and toxic exposure potentially affecting the mental and or physical health of residents (Galster 2012). *Geographical* mechanisms refers to aspects of spaces that may affect residents' life courses yet do not arise within the neighbourhood but rather purely because of the location of the neighbourhood (Galster 2012). For example, certain neighbourhoods may have little accessibility to opportunities or inferior public services and facilities because of their limited resources (Galster 2012). *Institutional* mechanism refers to the actions by those typically not residing in the given neighbourhood, who control important resources (Galster 2012). Thus stigmatisation, access to fewer or lower quality services, and the presence of private services such as liquor stores or fast-food chains may encourage or discourage certain behaviours (Galster 2012).

In high-income countries, where sources of data are vast, neighbourhoods with high concentration of lowly educated individuals, living in poverty, recent migrants, single parent households, unemployment, and low coverage of healthcare providers, have been found to impact on women's utilisation of ANC (Heaman, *et al.* 2007, Perloff and Jaffee 1999). For low-income countries however, the lack of such 'micro' level data has made analysis of neighbourhood-level factors somewhat rare. Nevertheless, several studies have attempted to investigate these 'neighbourhood' effects using DHS data. In Cambodia, for example, Sagna (2012) used the primary sampling unit as the 'neighbourhood' variable, and found that 'neighbourhood' prevalence of large family size, low education concentration, high concentration of poverty, and distance to health facility, negatively affected access to ANC (Sagna

and Sunil 2012). Similarly in rural Haiti, Gage and Calixte (2006) found that communities that did not have paved roads, had high concentration of poverty, and communities that did not have a health centre within close proximity, were less likely to attend the recommended four or more ANC visits (Gage and Calixte 2006). At the time of delivery, Gage and Calixte (2006) found that the absence of a community health worker, distance to hospital, and high concentration of poverty, increased the likelihood of a home delivery (Gage and Calixte 2006). Social networks have also been found to influence healthcare utilisation. For example, a study carried out in urban Brazil found that pregnant women of lower socio-economic status, were more prone to receiving inadequate prenatal care, primarily because their social networks were characterised by low levels of diversity, including predominantly people from the same social group with similar patterns of health service use (Leal, *et al.* 2011). At the time of delivery, Kruk and colleagues (2010) found that in Tanzania, negative community perception of the skills of traditional birth attendants, was associated with higher odds of an institutional delivery (Kruk, *et al.* 2010). The authors proposed that because women frequently share experience that they or their family members have had with the health system, it is possible that opinions about the quality of health may be shaped by these conversations, ultimately impacting on the utilisation of services (Kruk, *et al.* 2010).

Similar neighbourhood-level effects have also been found in studies investigating factors specific to slum settlements. For example, a problem faced by many women living in slum areas is the 'road' network within the communities. A study carried out by Essendi and colleagues (2011) in Nairobi, Kenya found that the narrow lanes and passages characteristic of slum areas, were a major infrastructural barrier for women's access to formal healthcare facilities (Essendi, Mills and Fotso 2011). In this case, women suffering obstetric complications or already in labour reported having to walk or be carried to the nearest facility or to public transport out on the main road (Essendi, Mills and Fotso 2011). Other studies that have compared differences between different slum settlements in India (Das, *et al.* 2010) and Kenya (Fotso, Ezeh and Oronje 2008) have found that home deliveries were more common among settlements with high concentrations of poverty. In India and Bangladesh, slum settlements containing high concentration of recent migrants, have been found to use less care during pregnancy and delivery (Das, *et al.* 2010, Stephenson and

Matthews 2004) and after birth (Kamal 2012). The high concentration of recent migrants has been proposed to influence maternal healthcare utilisation by way of residents being more likely to practice traditional behaviours during pregnancy and childbirth (Das, *et al.* 2010, Kamal 2012, Stephenson and Matthews 2004). Pertinent to research on slums, is the community's thriving practice visiting low quality health facilities (Bazant, *et al.* 2009, Izugbara, Ezeh and Fotso 2009, Wahed, Moran and Iqbal 2010, Ziraba, *et al.* 2009). These healthcare services are commonly located closest or within slum and squatter settlements, usually run as private clinics with traditional birth attendants as the healthcare givers.

2.9.3 Family and individual factors affecting utilisation

2.9.3.1 *Maternal education*

Among Nepali women, high educational attainment has been consistently found to be associated with increased use of ANC (Acharya and Cleland 2000, Furuta and Salway 2006, Halim, Bohara and Ruan 2011, Matsumura and Gubhaju 2001, Pandey, *et al.* 2013, Pandey, Lama and Lee 2012), institutional deliveries (Furuta and Salway 2006, Karkee, Binns and Lee 2013, Matsumura and Gubhaju 2001, Pandey, Lama and Lee 2012, Shrestha, *et al.* 2012), and postnatal care (Dhakal, *et al.* 2007, Khanal, *et al.* 2014, Neupane and Doku 2013, Pandey, Lama and Lee 2012).

Around the world, amongst women living in slum and squatter areas, maternal education has also been found to have a strong association with the use of maternal healthcare services (Bellows, *et al.* 2013, Fotso, Ezeh and Essendi 2009, Fotso, Ezeh and Oronje 2008, Olusanya, Alakija and Inem 2009, Rahman and Islam 2010).

The means by which education exerts its effect on healthcare utilisation may be through both material and psycho-social mechanisms. For example, Behrman and Wolfe (1987) and Elo (1992) proposed that the association between female schooling and health outcomes may reflect not the influence of education itself, but also 'unobserved' family background (Behrman and Wolfe 1987, Elo 1992), such as health-related skills and habits acquired since childhood (Elo 1992, Wolfe and Behrman 1987). This 'unobserved' components of the household, fits into the notion of *human capital*. Although human capital is most easily and commonly measured through educational attainment, children can also accrue human capital from the moment of conception, in the form of inherited genetics and ability, as well as

aspects related to the family such as the importance parents place on opportunities for early learning (Becker and Tomes 1994).

One pathway through which education is thought to influence healthcare utilisation, is through its effect on beliefs about the causes of diseases. In turn, this modification in beliefs creates a perceived need for healthcare and the recognition that available services are valuable and appropriate, hence enabling women to create a demand for healthcare and act on that demand (Caldwell 1979, Furuta and Salway 2006). Another potential mechanism through which education influences healthcare utilisation is that schooling creates knowledge of modern healthcare facilities, improves women's social confidence and ability to communicate with medical practitioners, giving them an enhanced self-confidence and willingness to travel outside the immediate home community to do so (Caldwell 1979, Cleland and van Ginneken 1988). More specifically, research from Nepal has found that the effect of education on literacy and comprehension allows mothers to fully understand and grasp health messages in print and audio, as well as their abilities to understand medical instructions, explain a health narrative, and thus become more 'assertive' or confident to seek treatment for herself or her child (LeVine, *et al.* 2004). Moreover, increased education also increases one's chances for obtaining a job that pays well, leaving resources to seek healthcare when necessary (Caldwell 1979, Cleland and van Ginneken 1988, Schultz 2004). Finally, there is also a tendency for better educated women to marry similarly better educated men, thus together achieving a higher standard of living and financial capability to access healthcare (Cleland and van Ginneken 1988).

2.9.3.2 *Socio-cultural factors*

As described earlier, women in Nepal face several forms of discrimination and exclusion from the moment they are born, some of which are perpetuated by patriarchal traditions and values within the home, irrespective of caste, class, ethnicity, religion, social status, educational background or geographic location (Government of Nepal and UN country Team 2013, UNICEF 2006). In Nepal, it is widely agreed that the general low social status of woman has represented a major barrier in improving the health of children and mothers (Furuta and Salway 2006, Sharma, Sawangdee and Sirirassamee 2007). Traditional household dynamic have been reported to restrict women's ability to make decisions regarding their own

healthcare, limit their access to household income, and restrict their movement outside the household (Brunson 2010, Furuta and Salway 2006, Matsuyama and Moji 2008, Mullany, Hindin and Becker 2005, Simkhada, Porter and van Teijlingen 2010). For example, Furuta and Saltway (2006) suggested that in rural Nepal, a woman's control over her own earnings was associated with utilisation of ANC (Furuta and Salway 2006). In Kathmandu, a mixed methods study by Mullany and colleagues (2005) reported that in Kathmandu, household composition or whether the mother-in-law cohabits with the couple, may play a factor discouraging female involvement in decision making (Mullany, Hindin and Becker 2005). Qualitative interviews indicated that pregnant women who were not residing with their mothers-in-law were more involvement in decision making regarding their own healthcare, presumably because mothers-in-law reinforce traditional beliefs and practices within the household (Mullany, Hindin and Becker 2005). Another qualitative study investigating the role of mothers-in-law in the utilisation of ANC in rural Nepal, found that the attitudes and experiences of mothers-in-law had a strong influence on the utilisation practices of daughters-in-law (Simkhada, Porter and van Teijlingen 2010). At times, mothers-in-law could positively influence utilisation practices, by accompanying daughters-in-law and also made funds available to attend ANC (Simkhada, Porter and van Teijlingen 2010). Most often however, the effect of mothers-in-law was negative, with reports of limiting or withholding financial resources that would have enabled pregnant women to attend necessary care (Simkhada, Porter and van Teijlingen 2010). Similarly, at the time of delivery, a study carried out in the Makwanpur district, suggested that while women may be enticed to give birth in a facility, the process of consultation or 'getting permission' from family members, hindered women's utilisation of health facilities if the family's perception was that delivery care was unnecessary (Morrison, *et al.* 2014).

Husbands have traditionally remained relatively uninvolved in the pregnancy and delivery processes (Brunson 2010, Furuta and Salway 2006, Simkhada, Porter and van Teijlingen 2010). While recent studies however, have reported a more supportive relationships between husbands and wives, particularly in urban areas where there is an increasing trend to live in nuclear family units (Mullany, Becker and Hindin 2007, Simkhada, Porter and van Teijlingen 2010, Thapa and Niehof 2013), Mullany (2006)

described persisting social stigma faced by men who become too supportive or involved with their wives (Mullany 2006).

In other cases, the seriousness of certain conditions requiring medical care may be influenced by a woman's or her family's own perception of severity or the perceived aetiology of the illness (Matsuyama & Moji, 2008). In other words, if the illness is not seen as a serious health condition the decision to seek healthcare will not be reached (Matsuyama and Moji 2008, Thaddeus, Nangalia and Vivio 2004). In this instance, a study from the Kavrepalanchowk district of Nepal investigating the perception of bleeding after delivery among women found that it was considered to be normal, beneficial, and even necessary, because bleeding is believed to be ridding of contamination, excess heat, and excess blood (Matsuyama and Moji 2008). Similar perceptions of bleeding after delivery have been reported in Bangladesh (Kalim, *et al.* 2009).

Specific to slum communities, where women are characterised by low educational status, higher parity, low use of family planning, and early childbearing, tended to be those who held more traditional health beliefs, and therefore less likely to seek appropriate maternity care (Hazarika 2010, Magadi, Madise and Rodrigues 2000, Stephenson and Matthews 2004). In Bangladesh, Kamal (2012) confirmed this view and stated that the reason for the underutilisation of maternity care in urban slum settlements was due to their traditional beliefs and practices surrounding pregnancy and childbirth (Kamal 2012).

2.9.3.3 *Maternal age*

Several studies around the world have established associations with the age of women and antenatal and delivery care utilisation, however the relationship is not always clear. Some studies for example have found that younger women are more likely to utilise modern health facilities than older women, as they are inexperienced in child bearing, consider themselves a high risk group, and thus have greater tendency to fear home deliveries (Das, *et al.* 2010, Mpembeni, *et al.* 2007). It has also been suggested that younger women have achieved higher educational status and a greater exposure to modern healthcare than their older counterparts, which may help the formation of new opinions and attitudes towards modern maternity care (Das, *et al.* 2010, Mpembeni, *et al.* 2007). It is believed that the reason older women are often reported to have poorer utilisation of modern healthcare is that they have

accumulated knowledge and experience of the pregnancy and childbirth process. This experience in turn makes them more confident in managing the processes and complications without the assistance of trained professionals (Hou and Ma 2012). Another reason may be that as they become older, women's demand for health services may decline as their opportunity costs increase (Hou and Ma 2012).

In other studies however (Hamid, Johansson and Rubenson 2010, Magadi, Agwanda and Obare 2007, Matthews, *et al.* 2005, Sagna and Sunil 2012, Titaley, Dibley and Roberts 2010), in particular those carried out in South Asian countries (Godha, Hotchkiss and Gage 2013), young age is associated with inadequate healthcare utilisation. In these studies, maternal age is interpreted as a proxy for autonomy and decision-making power on the basis that women who marry early often have lower educational attainment and lower status among their communities (Godha, Hotchkiss and Gage 2013, Hamid, Johansson and Rubenson 2010, Matthews, *et al.* 2005).

Further analysis of the 2011 NDHS data has found that maternal age in Nepal is not associated with women's utilisation of ANC (Pandey, *et al.* 2013), delivery care (Karkee, Lee and Khanal 2014), or PNC (Khanal, *et al.* 2014). However, earlier studies using NDHS data have shown a propensity for younger women to seek routine professional antenatal care in 1996 and 2001 (Halim, Bohara and Ruan 2011), a greater likelihood to begin ANC early (Neupane and Doku 2012), and give birth in the presence of a skilled birth attendant in 2006 (Neupane and Doku 2013). Authors propose that this is because younger women have little or no experience with pregnancy and because they considered themselves a high-risk group and fear home deliveries.

Among slum and squatter populations, studies carried out in the slums of Delhi, (Kusuma, Kumari and Kaushal 2013), Mumbai (More, *et al.* 2009), and Lagos (Olusanya, Alakija and Inem 2009) have found that older women were more likely to utilise antenatal and delivery services. In their study, Kusuma and colleagues (2013) linked women's younger age to the migration process, whereby new migrant groups wete characterised by a younger age profile (≤20), and thus had less access to healthcare in comparison to their more settled and older counterparts (Kusuma, Kumari and Kaushal 2013).

2.9.3.4 ***Parity***

In Nepal, recent analysis of the 2011 NDHS data showed that higher birth order was significantly associated with a underutilisation of antenatal (Pandey, *et al.* 2013) and delivery services (Karkee, Lee and Khanal 2014). This finding is supported by the international literature. With regards to ANC, women with higher parity where less likely to initiate ANC or make the first visit in the first trimester thereby affecting the number of ANC visits made throughout their pregnancy (Elo 1992, Fotso, Ezeh and Oronje 2008, Guliani, Sepehri and Serieux 2012, Hou and Ma 2012, Kruk, *et al.* 2010, Magadi, Madise and Rodrigues 2000, Ochako, *et al.* 2011, Sagna and Sunil 2012, Trinh, Dibley and Byles 2007). Possible explanations for this trend could be that nulliparous women were more cautious about their pregnancies, as they had no previous experience with pregnancy or childbirth (Halim, Bohara and Ruan 2011, Kamal 2012, Sagna and Sunil 2012). Another explanation is that as the number of childbirth experiences increased, women tended rely more on their previous experiences of pregnancy and childbirth and believe that modern healthcare is not as necessary (Gage and Calixte 2006, Hou and Ma 2012, Sagna and Sunil 2012). Lastly, a higher birth order implies a larger number of family members and hence lower resources, both in terms of time and money, which are needed to seek formal healthcare (Hou and Ma 2012).

Among slum and squatter residents, the association between parity is in line with other studies carried out on non-slum areas (Das, *et al.* 2010, Fotso, Ezeh and Oronje 2008, Olusanya, Alakija and Inem 2009). Among slum residents in Kenya, Fotso and colleagues (2008) found that women of high parity were less likely to initiate ANC on time and to attend the recommended number of visits, presumably because they believed they were experienced in such matters (Fotso, Ezeh and Oronje 2008). A study carried out in the slums in Mumbai, explained the association between higher parity and underutilisation of maternity services, in terms of the obstacles faced by largely nuclear families commonly found in slum areas. These obstacles included economic costs of a facility delivery, the lack of social support to look after the house and other children while women attend healthcare, and lack of a companion to navigate the hospital system while husbands are at work (Das, *et al.* 2010).

2.9.3.5 *Employment*

The notion that women's economic participation in society affects intra-household dynamics and relations through enhancing the autonomy of women has been widely acknowledged in the literature (Bloom, Wypij and Gupta 2001, Dharmalingam and Philip Morgan 1996, Hogan, Berhanu and Hailemariam 1999, Kantor 2003). However, while on the one hand employment might enhance women's decision making power within her household, on the other hand employment status may not mean much, especially for women who are often confined to home-making activities such as household maintenance and child-care, due to social and reproductive reasons (CBS 2011). In Nepal for example, it is estimated that 78% of women are employed. However, the majority of this employment is in the 'self-agriculture' sector, due to the expectation that such tasks will be undertaken by women as part of household duties and, in more recent years, due to the out migration of men either to urban areas or overseas in search for employment (CBS 2011, Kelkar 2007). Logistic regression analysis of the 2001 NDHS data showed that it was not so much working women, but rather the combination of actively earning and having control over how they used their own earnings that significantly increased women's likelihood of using maternity care during pregnancy and childbirth (Furuta and Salway 2006). The study further found that women who were not earning and reported undertaking housework only, the norm in Nepalese society, were also more likely to use such care than were working women with no influence over use of their earnings (Furuta and Salway 2006). Dhakal and colleagues (2007) however, proposed that the effect of employment on healthcare utilisation, is through education, whereby educated women were more likely to get a job in the formal sector than in agriculture. Women who were employed in the formal sector not only had better financial status and resources to use quality health services, but also gain empowerment within the household (Dhakal, *et al.* 2007). Formal employment has also been found to influence women's utilisation of delivery facilities in Zambia (Stekelenburg, *et al.* 2004).

In the context of slum and squatter settlements, employment status has been previously proposed as a proxy of autonomy by a study carried out in Mumbai, India (Matthews, *et al.* 2005). The study found that women who reported paid employment were found to be two and a half times more likely to report involvement in the

decision to obtain healthcare for themselves (Matthews, *et al.* 2005). The mechanisms by which paid employment is believed to encourage the use of maternity services is proposed to be higher freedom of movement around the city and their increased access to monetary resources, which can be spent on maternity services (Matthews, *et al.* 2005). On the contrary, a study from the slums of Bangladesh reported that it was in fact non-working women who had better utilisation practices than their working counterparts (Kamal 2012). The author proposed that working women in slums areas are mostly engaged in lowly paid jobs such as house-maids, low-paid garment workers, and cleaners (Kamal 2012). Thus in Kamal's study, working was considered a necessity, and their engagement in paid employment reflected their poor economic status, rather than decision-making power (Kamal 2012). In Nepal, poor urban women have been found to engage in lowly paid occupations that pay daily wages, and work long hours, which may also restrict their capacity to attend maternity services, primarily in opportunity costs in lost wages (Matsumura and Gubhaju 2001, Sharma, Sawangdee and Sirirassamee 2007).

2.9.3.6 *Finances*

Substantial research has demonstrated that individual or household wealth is strongly related to the use of maternal care services both in Nepal (Karkee, Binns and Lee 2013, Karkee, Lee and Khanal 2014, Neupane and Doku 2013) and other countries (Bazant, *et al.* 2009, Celik 2000, Gage 2007). Women from the poorest quintile, measured by household assets and characteristics, tended to seek maternal care less due to economic constraints or competing interests in meeting the costs for health services and any associated travel costs (Magadi, Madise and Rodrigues 2000, Magadi, Zulu and Brockerhoff 2003). Specific to Nepal, financial barrier also include opportunity costs for those accompanying the woman and lost income (Borghi, *et al.* 2006, Ensor and Ronoh 2005). Even after the introduction of the 'free delivery' programme in 2009, extra costs incurred at the time of delivery have been reported to continue to prevent women from giving birth in a health facility (Morrison, *et al.* 2014).

Recently, an analysis of the DHS data for 31 countries found that women belonging to the poorest 20% compared to the richest 20% were 84% and 94% less likely to attend 'four or more' ANC visits and have a skilled attendant present at the time of delivery (Ahmed, *et al.* 2010). This type of wealth gradient in healthcare access and

utilisation were also found within slum communities (More, *et al.* 2009). For example, a study carried out among 48 slum neighbourhoods in in Mumbai, India, found that residents vary in their accumulation of resources, including access to water, sanitation, and literacy among many (More, *et al.* 2009). These differences in access to resources created a wealth gradient, which in turn meant that the poorest households or those with less access to resources, were more likely to report young age at first pregnancy, low education, recent migration, and inadequate healthcare during pregnancy, delivery, and after birth, than those from the richest households (More, *et al.* 2009). In addition, decreased wealth was associated with a higher prevalence of low birth weight and lower prevalence of newborn immunisation (More, *et al.* 2009). In 2011, further analysis of the same slum communities in India, found that the greatest cost in seeking obstetric care was incurred by women in the lowest quintile from 'loss of wages'. In addition the study found that women in poorest quintile used savings, as opposed to 'current income/wages' to finance spending, suggesting that health expenditure placed a great burden on the poorest (Skordis-Worrall, *et al.* 2011). Similar findings have been reported for slum residents in Karachi, Pakistan (Nisar and White 2003), Nairobi, Kenya (Fotso and Mukiira 2011), and Bangladesh (Kamal 2012).

2.10 MATERNAL HEALTHCARE AMONG SQUATTER POPULATIONS IN KATHMANDU

As described in previous sections, Nepal's rapid urban population growth has been accompanied by an increase in urban poverty and resulted in large groups of people living in informal squatter settlements around Kathmandu (Acharya 2010, UN-HABITAT 2010). Nevertheless, few studies have been carried out on the health of mothers living in slum and squatter areas in Nepal. In this section, evidence of lower health status among slum populations have been drawn from countries such as India, Bangladesh, and South Africa. These countries have grappled with the emergence and expansion of slum and squatter populations for a longer period of time and on a larger scale compared to Nepal. Specific to Kathmandu, two studies of maternal healthcare utilisation among squatter populations will also be critically discussed.

Around the world, growth in urban poverty has not only influence health service provision, but also challenged the commonly held assumption that the health and

healthcare utilisation among urban populations, is better than that of rural dwellers, simply because health facilities are nearby.

The cumulative effects of growing up and living in such hazardous environments, were found to lead to high MMR in Nairobi, Kenya (Ziraba, *et al.* 2009). Using verbal autopsy interviews, the study calculated that the MMR between 2003-2005 was 706 deaths per 100,000 live births, which was higher than the national estimate of 560 per 100,000 live births, with approximately 79% of maternal deaths occurring among women who delivered outside a health facility (Ziraba, *et al.* 2009).

In general, studies have attributed the low health status of slum and squatter populations to poor hygiene, over-crowding, lack of basic amenities such as water and sanitation, low accessibility to formal health services, with many health outcomes being worse in slum areas then in neighbouring urban areas (Srivastava, *et al.* 2012, Sverdlik 2011, Unger 2013, Ziraba, *et al.* 2009). For Nepal, only two studies have provided information of maternal health utilisation among squatter settlements in Kathmandu. One was carried out in 2008 by the non-governmental organisation CARE (CARE 2008), while the other was a Master's research project from Tribhuvan University in Kathmandu, Nepal (Tiwari 2012). The study by CARE was a wider investigation on the health status of squatter communities living along the Bishnumati River (CARE 2008). The study recruited a total 632 households, of which 207 reported the birth of a child in the three years prior to the study. Mothers in these 207 households were then asked questions about their maternity care utilisation at the time of their most recent birth. Approximately 18% of women reported no ANC during their pregnancy, while 41% reported giving birth at home (CARE 2008). Since the study investigated the wider health problems experienced by urban squatter residents, only general reasons for the overall underutilisation of health services were reported. In-depth interviews with eight household heads revealed that barriers to healthcare among squatter residents included a lack of affordability, the negative attitude of service providers towards poor patients, the lack of information about existing 'free' healthcare schemes, and the perceived low quality of care at government facilities (CARE 2008).

More recently in 2010, Tiwari carried out a study regarding the utilisation of antenatal and delivery care among squatter populations (Tiwari 2012). In his study, Tiwari used simple random sampling technique to recruit 200 women who had given

birth to a live baby in the year preceding the study. Participants were drawn from 10 randomly selected squatter settlements from around Kathmandu. Results showed that 19% of women did not attended ANC, 39% did not attend the recommended four or more ANC visits, while 34% gave birth at home. Multivariate logistic regression analysis found that women with no education were three times less likely to give birth at home than educated women (Tiwari 2012). Those whose husband's were uneducated and those who were multiparous, were two and half and three times more likely to give birth at home than those with educated husbands and those who were primiparous, while those who lived 60 or minutes away from a hospital were two times more likely to give birth at home than those who live less than 30 minutes away for a health facility (Tiwari 2012). For ANC, bivariate analysis indicated that a lower proportion of multiparous women, women with no education, women engaged in labour employment, and those that belonged to the Dalit caste, attended ANC. Information about the husband was also collected, and this indicated that a lower proportion of women whose husbands had no education, and were engaged in manual labour occupations attended ANC (Tiwari 2012).

While these studies have shed some light into the barriers facing women when seeking maternal healthcare in Kathmandu, both studies failed to recruit 'control' populations from nearby neighbourhoods. A comparison to 'average' urban dwellers as reported by 2011 NDHS suggested that women living in squatter settlements underutilised maternity services during pregnancy and childbirth compared to their 'average urban' counterparts (MoHP, New ERA and ICF International 2012). When compared to women from Kathmandu, as reported by the NLSS (2011), women who lived in squatter areas also underutilised antenatal and delivery services, where only 5% and 7% do not attend ANC and deliver their babies at home, respectively (MoHP, New ERA and ICF International 2012).

A lack of health-related data for squatter populations impedes government and non-government sectors to address the health needs of this vulnerable and growing population group (CARE 2008). Recent evidence suggests that the physical and social environment experienced by women who live in squatter settlements, can have adverse effects on the survival of the offspring. For example, a recent study from Nairobi, Kenya, slum residents were found to have higher rates of neonatal, child, and under-five mortality compared to rural and urban residents, as well as Kenya as a

whole (Kimani-Murage, *et al.* 2014). The authors suggested the higher mortality among children may be the result of poor health conditions including healthcare and social services, water and environmental sanitation and housing that have been documented in urban slum settings (Kimani-Murage, *et al.* 2014).

Altogether, the evidence suggests that offspring born to women living in squatter settlements will be at greater risk of death and lost potential, not only because children are born into families with limited resources, but also because the adverse physical and social environments in which growth and development occurs from the moment of conception, predispose them to a life-time of health vulnerabilities from the moment they are conceived, which can later express in the form of disease in adulthood. Given the current pace and haphazard pattern or urban growth in Nepal, the implications of ignoring the emerging issue of squatter communities and their health is that, a rapidly increasing proportion of the population will be expose to altered risks of disease, but it will also widen the health gap between poor and non-poor urban residents for the current and future generation. According to theories of human health and development that have been discussed in this chapter, addressing health disparities from the moment a child is conceived can contribute to closing the health disparity observed in adulthood (Barker and Clark 1997, Braveman and Barclay 2009, Bronfenbrenner 1979, Shonkoff, Boyce and McEwen 2009).

2.11 CHAPTER SUMMARY

This chapter has presented a general background of Nepal and the achievements and challenges faced by its government in improving maternal health over the past 20 years. This chapter has also presented an overview of the external and individual level factors commonly associated with inequalities in maternal healthcare utilisation. The limited literature available for urban settings in Nepal has provided the opportunity to delve into research from other low resource countries investigating practices of maternity care utilisation in urban settings, including squatter settlements.

In summary, the literature review has demonstrated the persistent underutilisation of healthcare services by women living in urban squatter or slum settlements as a result of individual-level factors such as education and wealth disadvantages, as well as community-level factors such as concentration of poverty and distance from health

facilities. Furthermore, in the context of urban squatter and slum settlements, the literature points to important ‘life course’ implications of poor health and development. In this instance, the literature suggests that the healthy growth and development of future generations is dependent on historical influences. In addition, this literature review has highlighted that the opportunities and constraints offered by the context, social structures, and culture in which an individual lives, has the potential to amplify or narrow inequities in health for future generations. Finally, this review of the literature has identified a lack of ‘control’ population as an important research gap in the area of maternal healthcare utilisation among women living in squatter settlements in Kathmandu, Nepal. In the following chapter the aims and objectives, and methodology and methods used in this study to identify the barriers to healthcare utilisation during pregnancy, delivery, and postnatal phases will be presented.

3 METHODS

3.1 OVERVIEW OF CHAPTER

As detailed in the previous chapter, research related to maternal healthcare in Nepal, has primarily focused on rural settings, with only a few studies carried out in urban areas. However, the rapid population growth observed in Kathmandu, has increased pressure on already lagging urban infrastructure including housing and healthcare. Focusing on this important gap, this study adopted a multiphase mixed methods approach to increase knowledge of maternal health service utilisation among women living in squatter and non-squatter communities of Ward 34, Kathmandu Metropolitan City, Nepal.

The aim of this chapter is to provide an overview of the research design employed in this multiphase mixed methods study. It begins by stating the aims and objectives of this thesis, and a rationale for using mixed methods. The objectives of this thesis were addressed in three separate phases. Section 3.2 begins with a description of the study setting, Ward 34, Kathmandu Metropolitan City, highlighting visual differences between non-squatter and squatter settlements found within the Ward. Section 3.4 describes the multi-phased mixed method design used in this thesis. Section 3.5 then describes the first phase, which consisted of secondary analysis of a cross-sectional household questionnaire regarding maternal health utilisation practices. Section 3.6 describes the methods used to assess service accessibility for residents living in Ward 34, while Section 3.7 describes the use of qualitative methods to determine facilitating factors and barriers to utilising maternal healthcare among the Ward 34 community. The sampling approach, data collection, research instruments, derived variables and data analysis are described separately for each phase.

Throughout this chapter, photos of the setting and study population are used to illustrate different aspects of the research process. All photos included in this thesis were taken and included herein with the permission and consent of each participants and relevant authorities in Kathmandu.

3.2 AIMS AND OBJECTIVES

The overall aim of this thesis was to increase knowledge of maternal healthcare utilisation among women living in squatter and non-squatter areas in Ward 34, Kathmandu Metropolitan City, Nepal. More specifically the study investigated women's utilisation practices during pregnancy, delivery, and postnatal periods.

In order to obtain a comprehensive understanding as to how and why inequalities arise in the utilisation of maternal healthcare in Kathmandu, three specific objectives were developed as follows:

1. To compare the utilisation of maternal healthcare among women living in squatter and non-squatter areas of Ward 34;
2. To compare the accessibility of maternal healthcare among women living in squatter and non-squatter areas of Ward 34;
3. To explore the contextual and explanatory factors associated with the underutilisation of maternal healthcare during pregnancy, delivery, and postnatal periods women living in squatter and non-squatter areas of Ward 34.

3.3 STUDY SETTING: WARD 34, KATHMANDU

Kathmandu Metropolitan City (hereafter Kathmandu) is not only the capital of Nepal but also the hub of cultural-religious, political-administrative and educational activities in the country (Thapa and Murayama 2010, Thapa, Murayama and Ale 2008). The unprecedented population increase in Kathmandu over the last 15 years is primarily due to high level of rural-to-urban migration. The city covers an area of about 49.45 km^2 and according to the national population census, in 2011 a total of 1,003,285 people lived in Kathmandu, this is an increase from 671,846 in 2001, housing 22% of Nepal's urban population in just 1.5% of the total urban land area (CBS 2003, 2012). With an average growth rate of 4.8% per annum, Kathmandu's population growth rate between 2001 and 2011 outpaced Nepal's urban population growth rate of 3.4%, and its total population growth rate of 1.4% per annum (CBS 2011). While no estimates on the migrant composition of Kathmandu's population is available, the 2011 NLSS estimated that approximately 53% of the urban population

living in the Valley was born outside of the Valley, with the vast majority, 72%, migrating from rural areas (CBS 2011).

Administratively, Kathmandu has been divided into 35 wards (see Figure 3.1). Each ward covers an average land area of 1.45km^2 and in 2011, housed an average of 27,870 people (see Appendix A) (CBS 2011). There is however a huge disparity between wards in terms of distribution of population, from 3,486 people (Ward 25) to 84,441 (Ward 16) (see Appendix A). The current study was carried out in Ward 34, located to the east of Kathmandu. Ward 34 was purposefully chosen as the study setting due to the opening of a new Community Urban Clinic (hereafter referred as the study-clinic) within the ward. The management of and services provided by the study-clinic are described in detail in Sections 3.5.1 and 3.6.1, respectively.

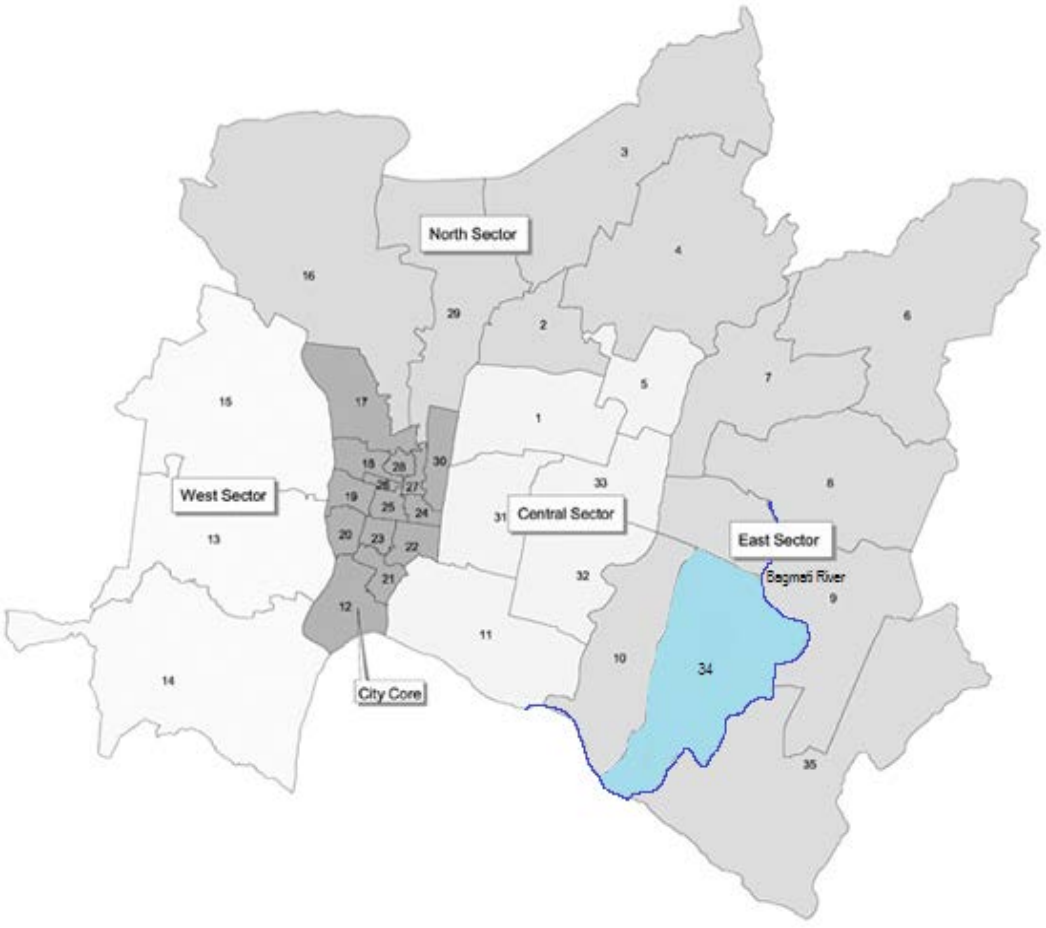

Figure 3.1: Distribution of Kathmandu by Ward (Ward 34 highlighted in blue)
(Source: Kathmandu Metropolitan City Office, 2013)

Ward 34 covers a total land area of 2.3km^2, and in 2011 it housed 66,121 people or 6.8% of the city's population in 4.7% of the city's land area (see Appendix A). The physical boundaries of the ward are made up of the Bagmati river to the east and south, while the road leading from Old Baneswar to New Baneswar and Sankhamul forms the ward boundary in the west, and the old road from Baneswar to the airport in the north (Kathmandu Metropolitan City 2010) (see Figure 3.1).

Between 2001 and 2011, the population in Ward 34 increased by 43% from 46,136 to 66,121 people (CBS 2012). While ward-level migration status has not yet been published, the rise is population is likely due to in-migration from rural areas, and to a lesser extent, a natural growth in population.

There is one government hospital within the administrative boundaries of Ward 34, as well as various private hospitals and health clinics. A description of these services has been presented in the previous Literature Review chapter. Rapid population growth and the expansion of housing in Ward 34 has given rise to a number of infrastructure problems, including water and electricity shortages, inadequate transport systems, and illegal occupancy of public land.

Over the last few decades, hundreds of families and individuals have settled along the banks of the Bagmati River passing through Wards 34 and 35, without the legal land right to be there (Lumanti Support Group for Shelter 2008). According to Lumanti, five of the 45 squatter settlements found around the Valley are located along the banks of the Bagmati River within the municipal boundaries of Ward 34, namely the squatter settlements of Chandani Tole, Bijay Nagar, Jagriti Nagar, Shanti Nagar, and Sankhamul (Lumanti Support Group for Shelter 2008). On the 'other side' of the Bagmati River, officially within the municipal boundary of Ward 35, the squatter settlement of Gaigaun can be found (Figure 3.2).

Figure 3.2: The Bagmati River separates Jagriti Nagar and Gaigaun settlements

As can be seen in seen Figure 3.3, with the exception of Sankhamul, all settlements are in close proximity to each other. In fact, on the ground, no physical or geographical landmarks separate the settlements from each other. Sankhamul however, was located 45 – 60 minutes by foot from the rest of settlements. Thus while Gaigaun is administratively and physically separated from the settlements in Ward 34 by the Bagmati River, it could be easily accessed via a footbridge, and in the field this meant that people living on one side of the river could often be found on 'the other side' visiting friends and family, and accessing healthcare or public transport. In addition, throughout the duration of this study, residents often 'rented rooms', or moved homes from one side of the river to the other.

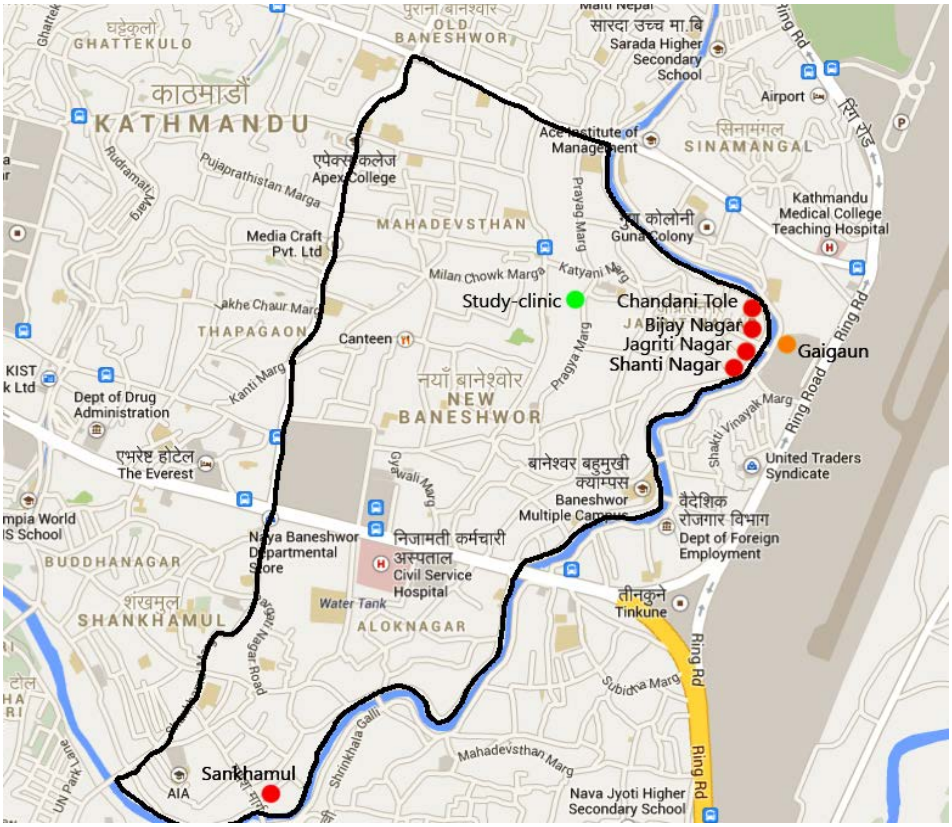

Figure 3.3: Map of the squatter settlements bordering Ward 34.
(Source: Google Maps, 2014)

Since part of this thesis involved investigating women's access to a clinic set-up especially for squatter communities located nearby, it was decided to exclude the settlement of Sankhamul from this study due to its distance from the rest of the settlements in Ward 34 (Figure 3.3). The settlement of Gaigaun was included in this study due to its close proximity and interconnectedness to the settlements found in Ward 34.

In total, five urban squatter settlements were included in this study, namely Chandani Tole, Bijay Nagar, Jagriti Nagar, Shanti Nagar, and Gaigaun (Table 3.1) (hereafter collectively referred as 'settlements bordering Ward 34'). Limited information exists on when squatter residents first moved into the area, however a Masters Thesis from 2005, reported that the settlements of Shanti Nagar and Jagriti Nagar emerged in the year 2000, with about 54 and 96 households, respectively (Shakya 2005). At that time, residents were believed to be rural to urban migrants in search for employment opportunities, predominantly migrating from the Eastern and the Central

Development Regions (Shakya 2005). The remaining three settlements have since emerged as more and more people move into the area looking for vacant land on which to build (Shakya 2005). Irrespective of their emergence, all five settlements are illegal. They are located on marginal public land along the banks of the Bagmati River and receive little to no help from the local government (Lumanti Support Group for Shelter 2008, Shakya 2005) and charities or NGOs (Khatiwada 2013).

Table 3.1: Characteristics of squatter settlements bordering Ward 34, Kathmandu

Settlement name	№ of households	Total population	Average household size (persons)	Largest ethnic group	Second-largest ethnic group	Included / Excluded from study
WARD 34						
Chandani Tole	48	222	4.6	Bhramin/ Chhetri	Janajati	included
Bijay Nagar	25	118	4.7	Janajati	Bhramin/ Chhetri	included
Jagriti Nagar	120	462	3.9	Janajati	Bhramin/ Chhetri	included
Shanti Nagar	360	1,632	4.5	Janajati	Bhramin/ Chhetri	included
Sankhamul	105	503	4.8	Janajati	Bhramin/ Chhetri	excluded
WARD 35						
Gaigaun	46	27	4.5	Janajati	Bhramin/ Chhetri	included

Source: Lumanti Support Group for Shelter (2008)

According to the only study to quantify the extent of the squatter settlements in the Valley in 2008, the total population of the five squatter settlements was 2,614 living in 599 households for an average household size of 4.4 persons per household (Lumanti Support Group for Shelter 2008). However at the time of that study, each settlement varied significantly in terms of size and population composition. In terms of absolute population numbers, the settlements bordering Ward 34 varied from 1,632 residents living in 360 household (Shanti Nagar) to 118 residents living in 25 households (Bijay Nagar) (Table 3.1). Shanti Nagar was then the second largest settlement in Kathmandu (Lumanti Support Group for Shelter 2008).

3.4 RESEARCH DESIGN

To address the aims and objectives of this study, a multiphase mixed methods approach was employed. The term ‘mixed methods’ has come to be used to refer to the use of two or more methods in a research project yielding both qualitative and quantitative data (Creswell and Plano-Clark 2010, Creswell and Plano-Clark 2010, Sale, Lohfeld and Brazil 2002, Tashakkori and Teddlie 1998). However, although all research is conducted in the spirit of enquiry, when undertaking mixed methods

research it is important to consider the paradigms underpinning it, primarily because the theoretical assumptions underpinning each method, are argued by some to be incompatible (Creswell and Plano-Clark 2010, Creswell and Plano-Clark 2010, O'Cathain 2010, Sale, Lohfeld and Brazil 2002).

Mixed methods research has its roots in pragmatism and encourages the use of multiple 'world views' (Creswell and Plano-Clark 2010, Sale, Lohfeld and Brazil 2002, Tashakkori and Teddlie 1998). In a pragmatic approach, the researcher accepts that there is a single 'reality' as well as that all individuals have their own unique interpretations of that reality (Creswell and Plano-Clark 2010, Sale, Lohfeld and Brazil 2002, Tashakkori and Teddlie 1998). Epistemologically, the pragmatist is free to study what is valuable, and believes that the measurable world relates more closely to the real world. This stance frees the researcher from the constraints imposed by the post-positivist and constructivist paradigms, allowing for a mixture of ontology, epistemology to better understand a social phenomenon (Creswell and Plano-Clark 2010, Sale, Lohfeld and Brazil 2002, Tashakkori and Teddlie 1998). Here the emphasis is on what works best to address the research question. Methodologically, pragmatist researchers employ both qualitative and quantitative data collection techniques and data, as it enables them to better understand social reality (Creswell and Plano-Clark 2010, Sale, Lohfeld and Brazil 2002, Tashakkori and Teddlie 1998). Some of the key justifications for carrying out mixed methods research involve a desire for comprehensiveness or complementarity, as one method overcomes the weaknesses of the other (Halcomb and Andrew 2009, Kroll and Neri 2009, O'Cathain 2010); increased confidence in findings where results from two different methods agree, thereby increasing validity (Halcomb and Andrew 2009, Kroll and Neri 2009, O'Cathain 2010); and emancipation, where the use of a variety of methods ensures that marginalised voices are heard (Halcomb and Andrew 2009, Kroll and Neri 2009, O'Cathain 2010).

According to Creswell and Plano-Clark (2010), multiphase designs examine a research topic through an iteration of connected quantitative and qualitative studies that can be either sequentially and or concurrently aligned (Creswell and Plano-Clark 2010). In addition, the design is said to provide researchers with the flexibility to adopt the required mixed methods to address interconnected questions emerging during different phases (Creswell and Plano-Clark 2010, O'Cathain 2010). Increased

credibility, complementarity, and expansion were the main aims for 'mixing' methods, whereby the results from one phase helped to better understand the findings of other phases, and further expanded on different enquiry components (Creswell and Plano-Clark 2010). Mixed methods was also deemed the most suitable to research this population due to their vulnerability and the limited data available on their situation (Khan and Zanuzdana 2011, Liamputtong 2009). In this study, both quantitative and qualitative methods were given equal priority and thus both were considered equally important in addressing the aims and objectives. In addition, the timing of implementation of each phase was a 'combination', in that data collection occurred both concurrently and sequentially over the duration of the project (Creswell and Plano-Clark 2010, O'Cathain 2010).

The study design is presented in Figure 3.5 to illustrate the sequence of quantitative and qualitative methods and timing of phases, with '→' indicating phases that occurred sequentially, and '+' denoting phases that occurred concurrently.

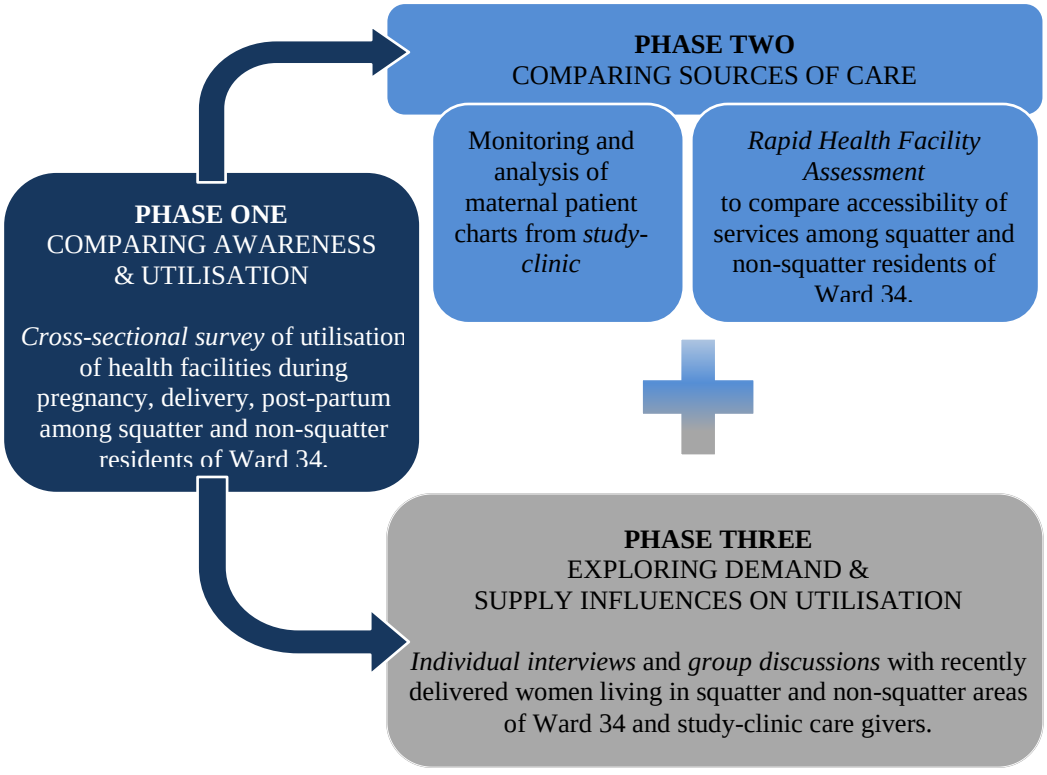

Figure 3.4: Visual model of the three-phase method design used in this thesis

Phase one consisted of performing analyses on survey data that had been collected by the host organisation of this study, Public Health development (PHD) Nepal, a non-governmental organisation (NGO) that conducts health research in Nepal. Data was collected from July to August 2010 in preparation for the establishment of a maternal health clinic that provided basic antenatal and postnatal care in Ward 34 (the 'study-clinic'), as part of the *Community Urban Clinic Programme*. Analysis carried out on the survey data was aimed at identifying individual and community level factors that influence the underutilisation of maternal healthcare in Ward 34. Permission to use data was granted by PHD Nepal (Appendix B).

In *Phase two* of the study, patient data were retrieved from the study-clinic set up by PHD Nepal. Monitoring of data pertaining to women receiving basic antenatal and postnatal care from the study-clinic was retrieved to assess utilisation of basic antenatal and postnatal services by residents of Ward 34. In addition to this, the accessibility of maternal healthcare services in the area were assessed to establish where women living in the study area were receiving care.

Finally, factors found to be associated with poor use of antenatal and delivery care in Phases one and two of the study, were further explored in the *Phase three* of this study, which consisted of Semi-Structured Interviews (SSIs) and Focus Group Discussions (FGDs) with women living in the study area, and SSIs with health professionals from the study-clinic.

Findings from all three phases were then synthesised to provide a contextualised and deeper understanding of how and why factors identified in the first phase may affect the use of maternal health services.

3.5 PHASE ONE: ANALYSIS OF HOUSEHOLD QUESTIONNAIRE

The purpose of this Phase was to compare maternal healthcare utilisation practices between squatter and non-squatter residents of Ward 34. This component of the study addressed study objectives 1, 2, and 4.

3.5.1 Data source

Data analysed for the first phase for this study is a small component of a larger study covering a number of issues pertaining to maternal and child health. The larger study was funded by The Healing Tree Foundation, Perth, Western Australia and involved

a collaboration between PHD Nepal, The Kathmandu Metropolitan City Council, and the Telethon Kids Institute, Perth, Western Australia. Approximately 11 research academics and research assistants who were employed by the three organisations were responsible for the overall design of the study and data collection. Data were collected by PHD Nepal research staff from the month of July to August, 2010. Survey data for this phase was accessed with the permission of PHD Nepal (See Appendix B).

The following sections describe the study design, sampling technique, procedure, ethical considerations, and data analysis for phase one of this study.

3.5.2 Study design

A quantitative cross-sectional design was employed.

Hypothesis

Squatter residents will have poorer maternal healthcare utilisation practices compared to non-squatter residents independent of individual-level demographic characteristics.

The specific aims of this survey were to:

1. Compare antenatal utilisation practices among women who have ever given birth.
2. Compare delivery utilisation practices among women who have ever given birth.
3. Compare postnatal utilisation practices among women who have ever given birth.
4. Investigate the associations between individual and community level factors on utilisation of antenatal, delivery, and postnatal care practices.

3.5.3 Sampling procedure

As described earlier, in Section 3.2 (pg.70), Ward 34 was the focus area of this study the due to the establishment of a ‘free’ maternal health clinic within Ward 34 by the NGO, PHD Nepal. Since Ward 34 can be broadly divided into two distinct geographical areas or locales, squatter and non-squatter, this section will firstly

describe the sampling procedure used in the squatter settlements followed by the non-squatter settlements.

The squatter settlements included in this study were purposely chosen due to their proximity to each other and similar physical accessibility to private and public maternal healthcare services in the Kathmandu. At the household level, participants living in squatter settlements were conveniently sampled, recruited through visits made directly to households at the researchers' discretion. That is, the trained local (Nepali) enumerators visited residences in a totally discretionary manner until the required number of participants had been obtained. The primary reason for employing this approach was the crammed nature of the housing structures; no distinction could be made where one house ended and another began. Each participant approached by the enumerators was provided with information about the aim of the study and the content of the questionnaire. After ascertaining the participants' interest in the study, willing participants were either interviewed on the spot or were told the research team could come back at a more convenient time. Participation was purely voluntary and no incentives of any form was given. Interviews were carried out in the privacy of each participant's home, however often due to the 'one room' nature of the households found in the squatter area, this was not always possible.

In the non-squatter area, a map of Ward 34 was obtained from the Kathmandu Metropolitan City Council website. In the first stage, Ward 34 was divided into five physically distinct areas partitioned by major roads. Three of these areas, namely Alok Nagar, Shanti Nagar and Old Baneswor areas were randomly drawn using a lottery method (Figure 3.5). In the second stage, each street was randomly selected by the enumerators. In each street the interviewers went to the first house, and then sampled every third household until 100 households in each area were interviewed.

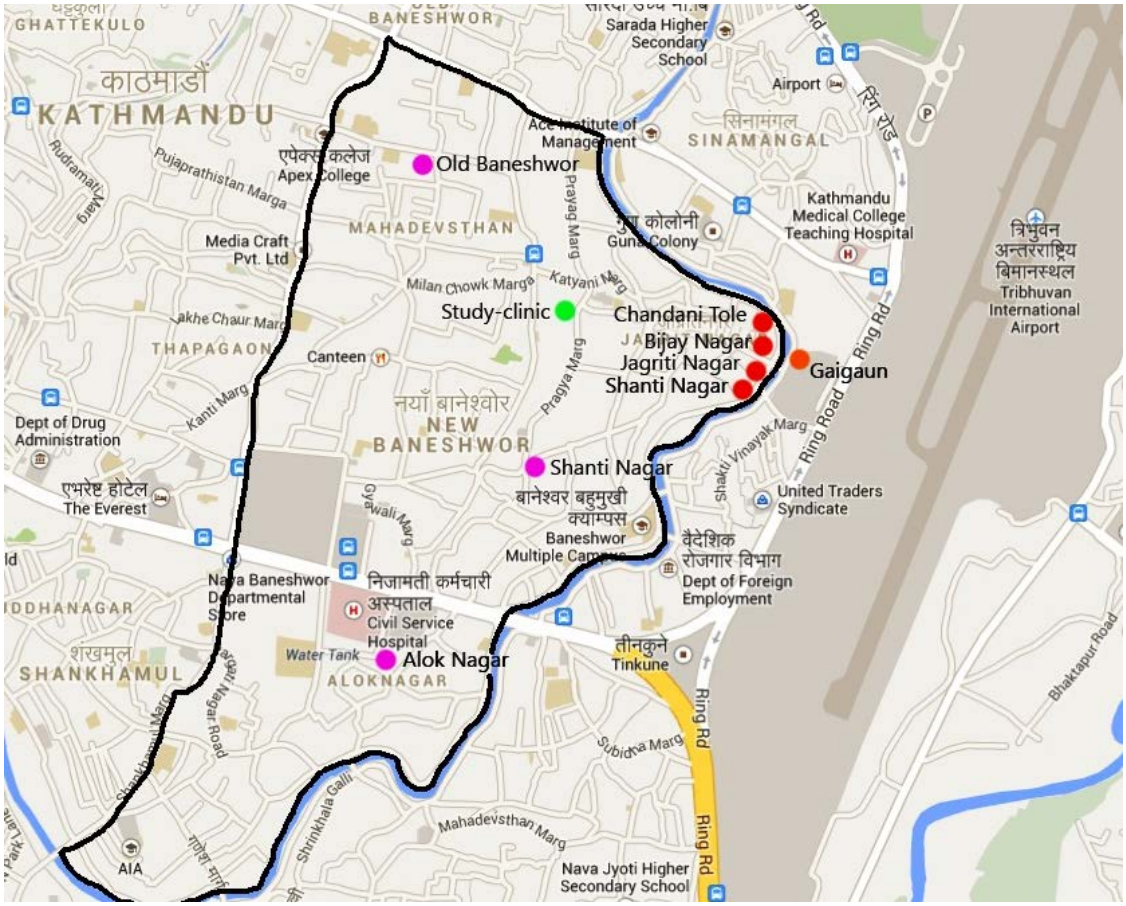

Figure 3.5: Squatter and non-squatter areas included in this study
(Source: Google Maps, 2014)

The pattern of occupancy or tenure encountered during fieldwork was as described in Section 2.5. Multiple families were often be found living in one house, and one household could be confined to one room or a number of rooms on one floor within a house structure (Figure 3.6). This presented difficulties for the research team. The most obvious challenge in terms of sampling was the difficulty in gauging how many families lived within one house structure, and therefore made it impractical to execute a true probability sampling method. In addition, the often heavy security in the form of gated houses made it difficult for the research team to interact with people inside the houses. As such, convenience sampling was chosen as the sampling strategy in non-squatter areas. That is, the enumerators visited residences in a totally discretionary manner until the required number of participants had been obtained. Therefore during field work, if enumerators came across a house structure hosting more than one household, only one household was conveniently selected, typically the first household who agreed to be interviewed.

Figure 3.6: Flat-system gated houses found in non-squatter areas

In both squatter and non-squatter areas, enumerators requested the participation of the most senior person within the household available at the time of the interview. All efforts were made to limit sampling bias by conducting interviews before and after work-hours, including the Nepali weekend (Sunday) to ensure participation from working.

Sample size calculation

Since survey data was collected as part of bigger study, the sample size and power calculation for maternal healthcare utilisation was carried out retrospectively. Based on the 2011 Nepal DHS results, power analysis calculated that a minimum sample of 124 women (62 squatter / 62 non-squatter) was needed to have 80% power to detect a difference of more than 24% in antenatal care attendance. This was based on the assumption that 72% of 'average' urban and 48% of 'average' rural women attend four or more antenatal visits (MoHP, New ERA and ICF International 2012). According to power analysis, a sample of 83 women from each locale, or 166 women in total, would have 90% power to detect a difference of more than 24%.

Inclusion criteria

For this study, female residents living in Alok Nagar, Shanti Nagar or Old Baneswor, Ward 34 or in the squatter settlements bordering Ward 34. Participants from these specific settings had to also be 15 years of age or older.

Exclusion criteria

Participants with cognitive impairment or conditions were excluded from this study. In addition, people under the age of 18 who did not receive parental or next-of-kin consent were not included in this study. It was also common to encounter potential participants under the influence of alcohol in the squatter settlements. These participants were also excluded from the study.

3.5.4 Data collection instrument

The questionnaire used in this study was based on the 2006 Nepal Demographic Health Survey (DHS), a nationally representative cross-sectional questionnaire carried out in 2006. Around the world, especially in developing countries, DHSs are regularly conducted every five years with the assistance of the DHS Programme, a programme that has developed model questionnaires, collected, analysed, and disseminated accurate and representative data on population and health in over 90 countries for the past 30 years (MEASURE-DHS). In Nepal, the first DHS was carried out in 1996, then 2001, 2006, and the most recent survey carried out in 2011.

For this study, two researchers from the local NGO, PHD Nepal, extracted questions from the 2006 Nepal DHS regarding housing, maternal health knowledge and maternal healthcare practices. The questionnaire was developed in English, translated into Nepali and tested on 30 women (non-study participants) of reproductive age living in Kathmandu. The methods for translation, back-translation, pre-testing, and final version preparation was carried out according to Eremenco and colleagues (2005) (Eremenco, Cella and Arnold 2005). This process is illustrated in Appendix C. The questionnaire was then modified based on feedback from pre-testing and subsequently back-translated into English to ensure the meaning of the questions remained as per the original version.

Since this phase involved the analysis of secondary data, only three sections of the original seven sections, only three sections were used, Sections one, two, and five (Appendix D). These sections are described below:

Section one of the questionnaire collected personal demographic characteristics such as marital status, caste/ethnicity, religion, family type, current age of respondent, household size, education, employment status, and length of stay in current resident. Marital status was collected as “unmarried”, “married”, “widowed”, “divorced”, and “other”. Caste/ethnicity was collected according to the eight major caste and ethnicity groups that exist in Nepal (Bennett, Dahal and Govindasamy 2008). Religious affiliation was collected as “Hindu”, “Buddhist”, “Muslim”, “Christian”, and “other.” Family type was collected as “nuclear”, to identify those families in which a couple lived with their offspring only; “joint” to identify families in which a nuclear family lived with at least one other married couple, typically a married couple and one married offspring; or “extended” families defined as those in which a nuclear family was extended by the inclusion of at least one other related person, such as a widowed mother, father or the inclusion of nieces and nephews. “Current age” and “household size”, to denote the number of people living in one household, were collected as continuous variables. Education was collected as “no education” for participants who reported receiving no formal schooling ever, “informal education” for those who received non-formal education through local or international NGOs or community programmes; “primary” education for participants who attended grades one to five, “lower secondary” for those who attended grades six, seven, and eight, “secondary” for participants who attended grades nine and ten, “higher secondary” for those who completed grades 11 or 12, and “college or university” for participants who reported education after leaving higher secondary school (UNESCO 2008). “Employment status” was collected according the major industries in Kathmandu, namely, agriculture, factory/small business, service, labour, health, self-employed, student, unemployed, housewife/husband. In addition, this section collected information regarding the legal tenure of participant’s household under “residence location”. This variable was dichotomised into “non-squatter” for respondents that resided, either as a tenant or an owner, in households built legally on private land, and “squatter”, for participants who reported residing, either as a tenant or an owner, in illegally built households on public land. Finally, “”ength of stay” in residence was collected as a continuous variable to denote the number of years participants had lived in their current household, and was categorised as “less than 5 years”, “5-10 years”, and “11 or more years”.

Section two collected information on the ownership status of common durable assets namely radio, television, refrigerator, gas stove, mobile, land-line, computer, bicycle, car; and housing characteristics information such as building materials used for walls, roof and floor, and sources of drinking water and sanitation infrastructure. This information was used to create two proxy measures of socio-economic status using Principal Components Analysis (PCA), namely asset-wealth and housing-quality. Both proxy measures were categorised into tertiles labelled "poorest", "middle", and "least poor". A detailed description of analysis carried out to calculate these proxy measures is described in detail in Section 3.5.7.3 (see pg. 92).

Section Five, collected data from female respondents who had ever given birth to a live baby. This section collected information regarding the birth history and maternal healthcare practices for the first and last (most recent) live birth. Variables of interest in this section included mother's "age at first pregnancy" and "age of first" and "age at most recent (last) birth" were collected as a continuous variable. "Attendance to ANC" was collected as "yes" for women who reported attending ANC, "no" for women who reported not attending, or "I don't know/can't remember." The number of ANC visits attended was collected as "1", "2-3", "4", "five or more", and "I don't know/ can't remember." Information on delivery care was collected as "home", "hospital", "health post", "private clinic", "traditional birth attendant's home", or "I don't know/can't remember". Postnatal care information was collected as "yes" for women who reported receiving care for themselves after giving birth, "no" for those that reported receiving no care, or "I don't know/can't remember".

3.5.5 **Procedure**

Like all DHS surveys carried out in Nepal, the questionnaire developed by PHD Nepal was administered via face-to-face interview in the participant's home.

Squatter and slum settlements are known to be hard areas to access for research. To ensure that the research approach was respectful of existing power structures, PHD Nepal held several meetings with community leaders. These meetings were used to gauge support for the survey and also to discuss plans for data collection. Initial meetings were held between PHD Nepal management and two main community leaders. Once PHD Nepal had obtained approval from community leaders, the

research team held one meeting in which the logistics of carrying out the survey were discussed.

The interviews using structured questionnaires were conducted by six Nepali trained health professionals, three trained nurses and three health assistants, who had experience in community surveys. Prior to implementation, the interviewers were oriented by PHD Nepal on the purpose of the study and how to complete the questionnaire, including “skip” questions and ethical conduct during data collection. During data collection, two enumerators approached each household; one acted as the interviewer and the other acted as the enumerator (Figure 3.7). Respondents did not see the contents of the questionnaire, and their spontaneous responses were recorded by the enumerator. All interviews were conducted in privacy and only after obtaining consent from the selected respondents. Participants were interviewed in Nepali and each questionnaire took about 40 minutes to complete.

Figure 3.7: Two enumerators collecting data in one of the squatter settlements

No remuneration was given to participants, however participants were made aware of the services available free of cost at the study-clinic. In addition, if participants were visibly ill or complained of common ailments, such as fever, common cold etc., the nurses or health assistants carried thermometers, stethoscopes, and paracetamol to

provide basic healthcare to any household approached, regardless of their participation in the survey. At the end of each field day, all enumerators met at the study-clinic. All questionnaires were assigned a unique identification number and underwent necessary checks for completeness and consistency. Pre-coded responses were then entered into a Microsoft® Excel database.

3.5.6 Ethical considerations

Ethical approval to conduct the study was sought from and granted by the Nepal Health Research Council (NHRC) (Appendix E) and the Human Research Ethics Committee (HREC) at Curtin University, Perth, Australia (Appendix F). In addition survey data for this phase was accessed with the permission of PHD Nepal (See Appendix B).

All potential participants were provided with information about the objectives and content of the questionnaire. Information was provided in a written or a verbal manner depending on the participant's literacy skills. If they were willing to participate, they were then asked to sign a statement of consent. Consent was documented by obtaining a signature or, in the case of illiterate women, by fingerprint. In cases where enumerators encountered adolescent girls or mothers under the age of 18, written or verbal (for illiterate participants) consent was sought from their next of kin (parents/ husbands or mother-in-laws, who are often seen as a guardian once married) before beginning the interview.

3.5.7 Data analysis

Once the data had been entered into Microsoft® Excel, range and consistency checks were performed to identify errors in data collection and entry. The data set was then converted to Statistical Package for the Social Sciences (SPSS), Version 22.0 (SPSS Inc., Chicago, IL, USA) for analysis.

As described in section 3.5.4, a series of binary and categorical summary variables were derived from raw data prior to statistical analysis. Basic descriptive statistics were generated for all study variables of interest. Means and standard deviations were calculated for continuous explanatory variables, while independent sample t-tests and One way Analysis of Variance (ANOVA) were used to determine significant differences between groups, as appropriate. For categorical variables, frequencies were calculated and differences between independent variables and

outcome variable were tested using Pearson's chi-square (χ^2) test. For multiple comparisons, chi-square test with Bonferroni correction was performed.

While the main focus of the data analysis was to determine whether differences between squatter and non-squatter residents existed, due to the sampling procedure employed, data were reported according to settlement from which participants were recruited, namely the three separate areas grouped under "non-squatter", and the five areas grouped under "squatter." The researcher's intention was to provide the reader with detailed information about the participants and the settlements from which they were sampled. For this reason, demographic information such as sex, religion, marital status, caste or ethnicity, family type, age, household size, educational level, employment status, length of stay in current residence, as well as asset ownership and household characteristics were presented in this manner. However, due to the low number of participants in each settlement, particularly in the squatter settlements, only descriptive statistics have been presented.

With regards to utilisation of maternal healthcare, "trends" in women's use of antenatal, delivery, and postnatal care were presented according to the age of their most recent (last) live birth, grouped as "less than 5 years", "5-10 years" and "greater than 10 years" (Shrestha, *et al.* 2012). Once again, the focus was to establish differences in trends between to squatter and non-squatter location of residence.

Logistic regression models yielding odds ratios with 95% confidence intervals (CIs), were used to test for significant associations between explanatory and outcome variables. The use of Odds Ratios (OR) in cross-sectional studies, where the outcomes are often binary, have been suggested as an appropriate method of analysis of cross-sectional data (Hosmer Jr, Lemeshow and Sturdivant 2013, Munro 2005). In this study, logistic regression models to determine factors associated with utilisation of maternal healthcare were calculated on a sub-group of all women that took part in this study, namely those that reported a live birth in the 10 years preceding the survey. By limiting the recall period to 10 years, we attempted to minimise recall bias. Although a 10 year recall-period has the potential for recall bias, previous studies have shown that since pregnancy and delivery are significant life events, the long-term maternal recall of place of delivery and ANC care use, are both reproducible and reliable 30 or more years after delivery (Githens, *et al.* 1993, Rice, *et al.* 2007, Tomeo, *et al.* 1999, Yawn, Suman and Jacobsen 1998).

A series of unadjusted Odds Ratios (uOR) were conducted first to determine the association between each predictor variable and each outcome variable. Adjusted Odds Ratios (aORs) were then calculated for each variable to determine factors associated the dependent variable, while controlling for explanatory variables. In this study, all models were adjusted for possible confounders by including them in the model. A p-value < 0.05 was considered as statistically significant for all analyses.

Explanatory variables included in the unadjusted and adjusted regression models were chosen on their theoretical and empirical importance, as established by previous national and international studies of maternal healthcare utilisation (Andersen and Newman 2005, Fotso, *et al.* 2009, Gage and Calixte 2006, Hazarika 2010, Joshi, *et al.* 2014, Karkee, Lee and Binns 2013, Khanal, *et al.* 2014, Pandey, *et al.* 2013, Perloff and Jaffee 1999, Sagna and Sunil 2012).

3.5.7.1 *Outcome variables*

This study assessed three outcome variables, these were:

1. *Underutilisation of ANC*: defined as receiving "fewer than four" ANC visits at the time of the most recent (last) pregnancy, and included all those who reported 0, 1, 2 and 3 ANC visits. "Four or more" visits to ANC was the reference category and this category included those who reported four and five or more visits. This variable was based on the WHO minimum standards for ANC, and Nepal's guidelines as set by the Ministry of Health and Population (MoHP 2012, WHO, Department of Making Pregnancy Safer and Department of Reproductive Health and Research 2006).
2. *Underutilisation of health facility for delivery:* this included those who reported giving birth at home at the time of their most recent delivery. Respondents who reported hospital or health-post deliveries were classified as health facility deliveries and this was used as the reference category.
3. *Underutilisation of PNC:* defined as those who reported no PNC visits after their most recent delivery, with attendance to PNC as the reference category.

3.5.7.2 *Explanatory variables*

Andersen's *Behavioural Model of Health Service Utilisation* (Andersen and Newman 2005) was used to conceptualise the analysis. As described in Section 2.7.1.2, *Andersen's Model* has been previously used in determining factors associated with

maternal healthcare utilisation, and helps to better understand the relationship between societal determinants, healthcare system related factors and factors pertaining to the individual with the use of healthcare (Beeckman, Louckx and Putman 2010, Sagna and Sunil 2012, Sunil, Rajaram and Zottarelli 2006, Titaley, Dibley and Roberts 2010). In this study, the factors assessed included:

Individual predisposing factors:

- *Maternal age at most recent birth*: calculated by subtracting the age of the most recent live birth from the current age reported by the mother, and categorised into those under the age of 20 ("<20"), those between the ages of "20-23", and "24+" to denote participants who were aged 24 years and above.
- *Caste and ethnicity*: re-classified into "High" caste groups (Brahmin, Chhetri and Newar); "Middle" caste or *Janajati* groups (*Gurung, Magar, Rai, Limbu, Tamang and Lama*); and "Low" caste groups. This classification largely follows the national government's classification of "caste" groups, however because this study was carried out in Kathmandu, from where Newar caste originate and therefore have long benefited from increased access to education and economic opportunities, Newar was classified with Chhetri and Bhramin groups (Bennett, Dahal and Govindasamy 2008, Government of Nepal and UNDP 2014). This classification has also been adopted by previous a previous study that used Nepal DHS data (Khanal, *et al.* 2014).
- *Education level*: dichotomised into "lower than secondary" for those who reported no education, informal education, and primary education were grouped into, and "secondary and above" for those who attended at least some lower secondary.
- *Number of offspring*: calculated from the birth history information collected, with those who provided information for birth information categorised into "none," while those who provided birth information for at least one offspring grouped into "one or more".

Individual enabling factors:

- *Employment status*: dichotomised into "semi-employed" to denote wage based labour and those employed in factories or small business; while the category "not earning" was used to denote those involved in unpaid work such as housewives, unemployed and students (Karkee, Lee and Binns 2013).

- *Asset-wealth*: included as "low," "middle," and "least poor" according to PCA analysis.
- *Location of residence*: included as the "squatter" and "non-squatter" locale or "neighbourhood" in which a people lived within Ward 34.

Individual need factors:

- *Age at first pregnancy*: grouped into those that were aged "< 20" years, "20-23" and "24 or later."
- *Number of offspring*: categorised as "one" for women who provided maternal history for one child only, and "two or more" for women who provided birth history information for at least two children.
- *Frequency of ANC*: dichotomised as "fewer than four" for women who reported attending zero, one two, or three visits, and "four or more" for women who reported attending four or more ANC visits. This dichotomisation was based on the WHO minimum standards for ANC and the Nepal Safe Motherhood guidelines (MoHP 2009, WHO, Department of Making Pregnancy Safer and Department of Reproductive Health and Research 2006). Two women reported not remembering how many times they had attended ANC.
- *Place of delivery*: categorised as "home" and "health facility" for respondents who reported the birth of their child in a government or private hospital, health post, or clinic. One woman reported giving birth on the side of the road on the way to the hospital; this was classified as a home delivery. Only two women reported giving birth in a health post, while no women reported "traditional birth attendant's home," or "I don't know/can't remember."

External community-level factors:

- *Residence location*: included as "squatter" and "non-squatter" locale or "neighbourhood" in which a people lived within Ward 34.

External Healthcare system factors:

- Year of birth, calculated using Age of most recent (last) live birth and categorising as "2009 or later" for births occurring 18 months prior to the survey or less, and "2008 or prior" for births aged greater than 19 months prior to the survey. The year 2009 was chosen because it represents the year the 4ANC programme and the free delivery policy were implemented across Nepal (Upreti, *et al.* 2012).

3.5.7.3 *Calculation of asset-wealth and housing-quality indices*

This study employed PCA to generate proxy-measures of socio-economic status (SES), one based on asset-wealth and another based on housing-quality.

For "asset-wealth", information on household ownership (yes (1) or no (0)) of ten consumer items, namely radio, television, mobile phone, landline, refrigerator, gas stove, computer, bicycle, motorbike and car, were used to generate an asset-wealth score. To develop the "housing-quality" index, information on seven household characteristics was used, namely type of material used for wall, roof, and floors, type of toilet used by household members, if the facility was shared, type of source for drinking water, and cooking activities were carried out in the same room as they slept. Since this information was collected as categorical variables, the first step was to recode information into binary yes (1) and no (0) variables that clearly distinguished "wealthier" from "poorer" households (i.e. cement versus mud floor).

Each item in each index was checked for internal consistency using correlation matrices for each group were examined for internal consistency. To enable the matrix to be factorable, only variables with sufficient correlation (> 0.2) with at least three other variables were included in further analyses. If any variable was found to be correlated highly (> 0.8) with other variables, only one variable from the group of correlated variables was arbitrarily selected and included in further analyses, to avoid multicollinearity. Factorability of the matrices was determined using Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) test. Variables were excluded in a stepwise manner until a factorable correlation matrix with a KMO >0.7 was reached, for each group separately. Diagonal and off-diagonal values of the anti-image correlation matrix were used to assess the sampling adequacy. Finally, the reliability of each index was determined using Cronbach's coefficient α.

Principal component loadings were used to compute the asset and housing indices of relative "asset-wealth" and "housing-quality" within Ward 34, whereby each household was assigned a score for each asset it owned, or each characteristics (or utility) of their household, and the scores were summed for each household (Filmer and Pritchett 2001). Based on the overall small sample size of our study, we chose to rank and divide each index into tertiles, labelled as "poorest", "middle", and "least poor."

3.5.7.4 *Testing for multicollinerarity*

All explanatory variables were tested for multicollinearity using the Pearson correlation coefficient and the Variance Inflation Factor (VIF) or Tolerance value (O'Brien 2007, Pallant 2010). For this study a Spearman's correlation ≥ 0.7 was used as an indicator of multicollinearity (Pallant 2010). Additionally a VIF ≥ 10 or Tolerance value ≤ 0.10) indicated multicollinearity and a VIF ≥ 5 (tolerance ≤ 0.2) indicated possibilities of multicollinearity (O'Brien 2007).

3.6 PHASE TWO: ACCESS TO MATERNAL HEALTHCARE FOR WARD 34 RESIDENTS

The purpose of this phase was to investigate maternal healthcare accessibility for women living in squatter and non-squatter settlements of Ward 34. To comprehensively explore access, two separate studies were carried out. The first study involved the analysis of patient-data from the study-clinic, while the second study carried out a Rapid Health Facility Assessment (R-HFA) on the facilities attended by women living within Ward 34. This phase collectively addressed study objectives 2 and 3.

The following section begins by describing the methods employed in the monitoring and analysis of data retrieved from the study-clinic in Section 3.6.1, followed by the methods used to carry out the R-HFA in Section 3.6.2.

3.6.1 Study-clinic

The study-clinic was set up primarily to provide health services to the urban poor and squatter population living within Ward 34. It was set-up as a collaboration between the Kathmandu Metropolitan City Council, PHD Nepal, and an Australian funding body. Under an agreement established between the three organisations, the Council provided a monthly supply of free essential medication (as determined by the National Government) to the study-clinic to enable the clinic to treat or prescribe to clients free of charge. The council also covered the rental fee of the premises. PHD Nepal was responsible for the day-to-day operations of the clinic, including financing staff salaries. Staff salaries, were funded by an Australian charitable organisation, The Healing Tree Foundation.

The clinic was staffed by a variety of healthcare professionals. The main care providers for antenatal and postnatal care were one auxiliary nurse midwife (ANM), and one health assistant (HA) who provided maternal services Sunday to Friday, the usual working week in Nepal. Hours of operation of the study-clinic varied over the duration of this study, opening at 7:30am when the clinic was first established, to 9:30am in August 2012. Closing times also varied, initially closing at 6:00pm, and 4:30pm by August 2012.

In terms of location, the study-clinic was situated approximately 900 meters from the squatter settlements on Prayag *Marga* (street). Several different “shortcuts” could be

taken to reach the clinic from the squatter settlements through the many alleys and roads leading to Prayag *Marga*. On average, the clinic could be reached in 10-15 minutes by foot from the squatter settlements (Figure 3.8). The study-clinic occupied the ground floor of a residential building, and had visible signage (Figure 3.9).

Figure 3.8: Location of study-clinic in relation to the squatter settlements
(Source: Google maps, 2014)

Figure 3.9: Frontage of study-clinic, Ward 34

With regard to physical infrastructure, the study-clinic was small, covering a total floor space of approximately 50 m^2 (5m by 10m) on the ground level of an apartment-style building. The study-clinic consisted of two main rooms (a front and a back room) separated by a concrete wall and connected by a doorway (Figure 3.10). The front room had been further partitioned to create three separate areas. At the very front was a pharmacy, leading through to the reception desk and to one side was examination room “one”.

The pharmacy stored all medicines provided by the government, which were provided to patients at no cost, including iron/folate supplementation, albendazole tablets, tetanus toxoid (TT) vaccinations, and Vitamin A tablets. The full list of the free medicines provided by the government is presented in Appendix G. The pharmacy also stocked other medications not provided by the government. These medicines did incur costs to patients though prices were kept deliberately low. Clients were required to register at the reception area, at a cost of NRs 10 (US $0.10), after which patients would be assigned a health professional in examination room one or two.

Vaccination fridge and over

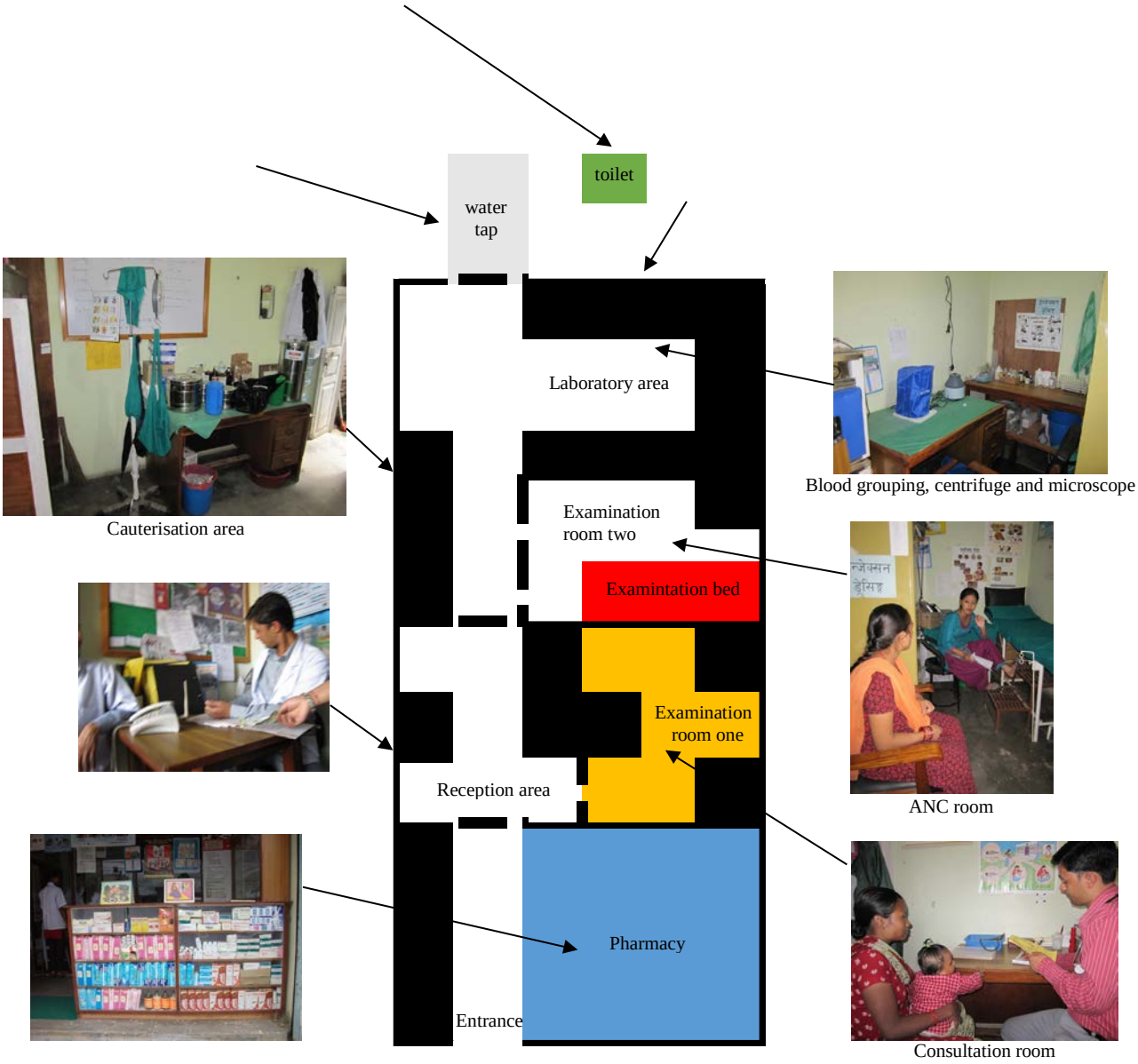

Figure 3.10: Lay out of the study-clinic (not to scale)

The second room towards the back of the clinic was partitioned into two separate areas by big metal cabinets and other strategically placed furniture; one area was the laboratory and the other was examination room two. For privacy, a curtain could be pulled across. The laboratory area contained equipment necessary to sterilise instruments, a vaccination fridge, an oven (incubator) and a centrifuge to carry out simple laboratory analysis. The laboratory within the clinic provided free blood testing for haemoglobin level and blood grouping. All laboratory testing was carried out by a trained laboratory technician.

All antenatal and postnatal services were provided by the ANM. Services and components of care were provided according to the minimum standards as outlined by the Government of Nepal (MoHP 2014), also referred as “basic” care. For ANC, basic care included at least four antenatal check-ups; blood pressure, weight, and foetal heart rate monitoring; provision of TT immunization, iron and deworming tablets; and counselling regarding danger signs and care during pregnancy. Postnatal care included at least three postnatal visits; counselling on personal hygiene, nutrition, and family planning; vitamin A and iron supplementation for the mother; immunization for newborns, and family planning services.

3.6.1.1 *Study design*

An audit of routinely collected clinic data.

Specific aims of the study

The three specific objectives of the study were to:

1. To identify individual-level characteristics of women attending the study-clinic
2. To describe the utilisation of the study-clinic’s antenatal services and its components
3. To describe the utilisation of the study-clinic’s postnatal services and its components

Sampling procedure

Records of all women attending the study-clinic for antenatal or postnatal care between June-July (Asadh) 2010 and March-April (Chaitra) 2013, were included in the analysis. The start and finish dates coincided with the commencement and cessation of provision of maternal healthcare by the study-clinic. A total of 111 prenatal and 106 postnatal cases were included in the analysis.

Inclusion criteria

All women who attended the study-clinic for antenatal or postnatal care, from June 2010 until June 2013 (3 years), were included in the study.

Exclusion criteria

There were no exclusion criteria for this study.

Data collection instrument

All data used in this study was retrieved from patient records (electronic version) for women who had attended antenatal or postnatal care at the study-clinic. Patient records collected maternal history, date of last menstrual period, current age, and, and the results of physical examinations (Figure 3.11 – Figure 3.17) and laboratory tests (see Appendix H).

Figure 3.11: Physical examination for nutrition status (height and weight)

Figure 3.12: Physical examination for hypertension (blood pressure)

Figure 3.13: Physical examination for anaemia (conjunctiva and spoon shaped nails, or koilonychias)

Figure 3.14: Checking for “pitting” or cutaneous oedema in the study-clinic

Figure 3.15: Measuring foetal palpation and heart rate at study-clinic

Figure 3.16: Woman receiving first shot of TT at 6 months gestation

Figure 3.17: Iron/folic acid supplementation

Women that presented at the study-clinic within the first 45 days after giving birth were eligible to receive postnatal care. If women had attended ANC at the study-

clinic, the ANM retrieved the patient's ANC chart and completed the birth and post-natal section of the patient chart. If the client had not attended ANC at the study clinic, the ANM collected maternal history information, and then proceeded to complete the delivery and postnatal section in the patient chart (see Appendix H).

The following information were routinely collected included maternal history, current age, data and place of delivery, and complications experienced during delivery. Micronutrient supplementation was also administered. Typically, no vaginal examination was conducted unless the client complained of discomfort or suspected a complication. Specific symptoms or signs of complications were asked and documented, including: "are you experiencing any heavy bleeding", "any smelly vaginal discharge" and specific symptoms and signs of uterus prolapse (e.g urine leakage, protrusion through vagina). If women complained of any signs of complications, they were asked to describe the symptoms (e.g. "is the discharge thick? Smelly? What colour?"). Appropriate treatment was prescribed (antibiotics in the case of stich infection), or they were instructed to attend the main government maternity hospital for more serious conditions (heavy bleeding or uterus prolapse).

Figure 3.18: Postnatal visit at the study-clinic

During each visit, if the woman received any of the components described above, it was recorded in the client's paper-based maternal chart. The ANM was then

responsible for transferring the paper-based record into the computer-based maternal record or chart.

3.6.1.2 *Data management and quality control*

Paper-based antenatal and postnatal cards were transferred into a Microsoft® Access electronic database with a user-interface that resembled the paper-based charts. All data for this study was retrieved from the study-clinic's Microsoft® Access electronic database.

Monthly updates of the maternity-related utilisation (e.g. antenatal and postnatal care attendance, uptake of iron supplementation, albendazole, TT vaccination, Vitamin A), were sent via email to the researcher in Australia, for review. Data were checked for completeness and errors in data entry. If data contained any irregularities or raised any questions or concerns, all questions were sent in writing (via email) to the study-clinic and a follow-up telephone call made about one week later to correct or discuss and clarify each question raised. At the end of each Nepali year (April/May), the paper-based charts were also routinely checked by the ANM against the electronic database to ensure that all information recorded on the paper based charts had been transferred to the electronic database.

3.6.1.3 *Ethical considerations*

Permission was sought from PHD Nepal to retrieve and use patient-data for research purposes.

The research was conducted under strong confidentiality protections. When data were extracted from the study-clinic's database, the patient name was removed from the data file and the original patient identification was replaced by a new identification number.

3.6.1.4 *Data analysis*

Variables retrieved from the electronic database included demographic information such as client's age, height, weight, and caste (surname). Obstetric history variables included parity, age at first birth, and place of delivery for previous pregnancies.

For women's index pregnancy, variables of interest from the maternal charts included: number of ANC visits and timing, whether the woman had attended care anywhere else, uptake of essential components (blood pressure, blood test,

albendazole, iron supplementation, supplementation, TT vaccines), place of delivery, PNC attendance and timing, clinician's notes, and referrals.

It must be highlighted that not all women returned to the clinic after their first antenatal visit or after giving birth, while some women only attended the study-clinic for PNC, the patient-data available for analysis was considered incomplete. While efforts were made to track clients to have a more complete picture of their maternal healthcare utilisation practices, this was not always possible. Therefore, descriptive statistics were generated from the available data.

3.6.2 Rapid-Health Facility Assessment

The R-HFA was carried out to increase our understanding of utilisation of maternal healthcare services among women living in Ward 34. The facilities included in this study were selected based on women's own experiences as reported by clients of the study-clinic, and individual interviews during phase three of this study.

3.6.2.1 *Study design*

This study utilised a R-HFA tool, an assessment developed by ICF Macro in collaboration with MEASURE, to provide information on the accessibility and capacity of health services (MoHSS and ICF Macro 2010).

Specific aims of the study:

- Identify where women living in Ward 34 were accessing maternal healthcare services in Kathmandu

3.6.2.2 *Sample*

The facilities included in this study were purposefully chosen. Data were collected from maternal healthcare facilities attended by women who attended care at the study-clinic. For example, women attending the study-clinic for ANC, were asked if they had received any TT vaccines during their index pregnancy. If they answered "yes", they were asked "where did you attend?" and the response was noted. Additional names of facilities were also retrieved during SSIs. In total, 13 facilities providing maternal healthcare were visited between September and October 2012.

Inclusion criteria:

- All facilities mentioned by women attending the study-clinic, as well as those mentioned during SSIs were included in the study.

Exclusion criteria:

- Facilities not mentioned by study-clinic attendants or by respondents during SSIs, were not included in the study.

3.6.2.3 *Data collection instrument*

The data collection sheet used in this study (Appendix I), was based on the 2009 Health Facility Census (HFC) carried out in Namibia (MoHSS and ICF Macro 2010), and under the advice of local researchers, the data collection sheet was adapted to the Nepal context to reflect current national policies and programmes related to maternal health in urban settings. The data collection sheet used for the R-HFA can be seen in Appendix I.

The R-HFA was developed in English, translated into Nepali. Translation was conducted according to the method described by Eremenco and colleagues (2005) (Eremenco, Cella and Arnold 2005), and summarised in Appendix C. The data collection sheet was pre-tested on two health professionals employed at two different institutions in Kathmandu, underwent minor changes based on feedback, and was finalised for fieldwork and data collection.

The R-HFA collected information regarding the physical location of each facility, the physical infrastructure and maintenance, and technical capacity to provide antenatal, delivery, postnatal care. The specific information collected is detailed in the section below.

3.6.2.4 *Procedure*

Since the total number of facilities mentioned by women was relatively small, the R-HFA visited all facilities. Like other R-HFA, the study required face-to-face administration of the questionnaire to a health facility representative. As such, a qualified health assistant, who also acted as a translator, and the principal investigator of this study visited each facility. The person interviewed at each facility varied from doctors and nurses to administrative staff. Interviews took between 20-45 minutes to administer, while the observation checklist took between 20-60 minutes to complete, depending on the size of the facility. As the intention was not to assess the quality of care provided by the health providers, visit to the facilities were not always conducted on days when services of interest were offered. Information on the intended visit was passed on to the facilities at least one day before the visit.

Firstly, the R-HFA collected the name and contact details of each facility, as well as the type of facility according to four categories: “hospital”, “teaching hospital”, “clinic” or “health post”. Ownership or managing authority of the facility was also collected as “private”, “public”, or “autonomous” to denote public facilities that have legal and managerial autonomy. The facilities’ geographic coordinates (latitude and longitude coordinates) via an apple phone application “Latitude”, in order to be able to determine its proximity (or physical accessibility) from Ward 34 (Figure 3.19). Opening and closing times, as well as days when the services were provided was also recorded.

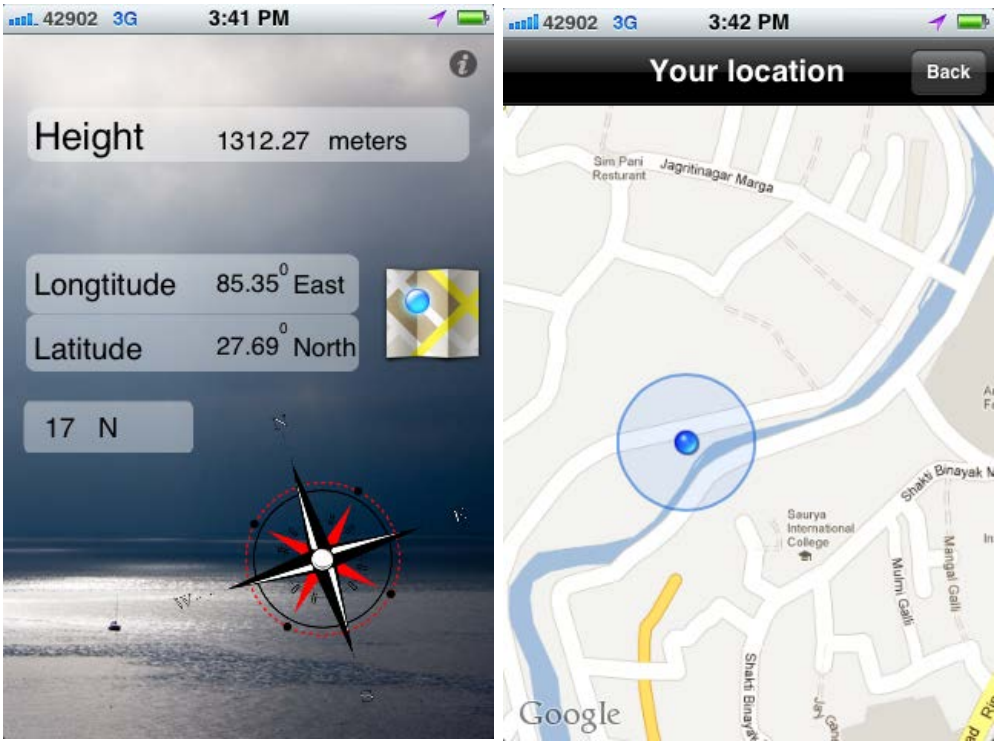

Figure 3.19: Coordinates of the squatter area from the application “Latitude”
(Application available from itunes, downloaded August, 2012)

Judgement on physical infrastructure and maintenance was subjectively assessed through observation of various physical characteristics that could be evaluated rapidly (Boller, *et al.* 2003, Garner, Thomason and Donaldson 1990). In particular, enumerators noted the cleanliness and maintenance of floors, walls, and toilets, as well as crowdedness.

Indicators of prophylactic treatment and diagnostic approach during antenatal, delivery, and postnatal care were assessed as per the minimum standards outlined by the Government of Nepal (MoHP 2014), which have been described in Section 3.6.1 (pg. 46). All prophylactic treatment, equipment, and diagnostic approach were recorded as available if the person interviewed reported the presence of services.

The R-HFA also collected information regarding the on-site availability of the necessary supplies and equipment to provide imaging (ultrasound) and investigative laboratory services, as well as basic and emergency obstetric care. The educational level of the person that normally provided antenatal, delivery, and postnatal care was also recorded. Collectively, these characteristics were chosen because they could be assessed rapidly and to some degree, believed to reflect each facility's capacity to provide services at each institution (Boller, *et al.* 2003, Garner, Thomason and Donaldson 1990). Finally, information on the availability of pro-poor schemes, such as the nationally implemented *4ANC* and *Aama* programmes, or any other pro-poor arrangement they may have in place, such as discounts for services for the poor, was also recorded.

3.6.2.5 *Ethical considerations*

The study team sought permission to interview a representative from each facility approached. The health-facility representative was told about the focus of the study on access of maternal healthcare services for urban poor populations and the general topic of the questions included in the survey. Importantly, all facilities were told that the name of the facility would be kept anonymous in any publications resulting from this study. Therefore the names of the facilities included in this survey have been kept anonymous.

3.6.2.6 *Data Analysis*

The presence of each item measured by the R-HFA was scored, that is the presence of each item or characteristic recorded was allocated points, which in turn allowed calculation of an overall score for each of the attributes.

Physical accessibility was determined by three different categories: opening times, weekend service provision, and the time it took to get to the facility, regardless of the type of transportation i.e. foot, bus, tempo, taxi or private car or motorcycle. Any facility that opened before and after normal working hours (10:00 – 16:30) or

providing 24 hour emergency services was scored two points, all other opening times were scored zero points. In terms of proximity, a facility located within a 20 minute reach was scored three points, two points were allocated to health facilities that took between 21 and 30 minutes to reach; one point to facilities that took between 31-60 minutes to reach; and zero points to facilities that took more than 60 minutes to reach. Characteristics of *physical infrastructure and maintenance*, were scored in one point increments, beginning at zero points if the element assessed was poorly maintained and a maximum of three points if it was highly maintained (Table 3.2). The points allocated in this criteria were based on personal judgment, and used an independent local health professional to compare these facilities to the local standards (Boller, *et al.* 2003, Garner, Thomason and Donaldson 1990). The maximum possible score for this section was 18 points.

Table 3.2: Attributes of accessibility of care in the present study

ACCESSIBILITY	*CATGORIES AND ELEMENTS ASSESSED*
PHYSICAL ACCESSIBILITY [a]	
Opening times	before or after hours (before 10:00 and after 16:30) (2 points); weekends (Saturdays) (2 points).
Proximity	time to reach: ≤ 20 minutes (3 points), 21 - 30 minutes (2 point), 31- 60 minutes (1 points), 61+ minutes (0 points).
PHYSICAL INFRUSTRUCTURE AND MAINTENANCE [b]	
General infrastructure	toilet with water to flush; waiting place for all women (3 points each)
Maintenance of facility	cleanliness of toilets; floor (3 points each); maintenance of floors; walls (3 points each).
TECHNICAL CAPACITY [c]	
Equipment available	on-site laboratory; ultrasound (2 points each); CEOC (2 points each), BEOC (1 point).
Diagnostic approach	weight; blood pressure measurement; haemoglobin check; urine for albumin (2 points each).
Provision of prophylactic drugs	albendazole tablets; iron tablets; tetanus toxoid vaccination; postpartum vitamin A capsules; newborn immunisation (2 points each).
AFFORDABILITY [d]	4ANC and / or Aama programme (2 points), other (1 point), none (0 points).

BEOC = Basic Emergency Obstetric Care; CEOC = Comprehensive Emergency Obstetric Care

[a] Maximum of 7 points
[b] Maximum of 18 points
[c] Maximum of 24 points
[d] Maximum of 2 points

For *equipment availability*, the scoring system used allocated a zero score if the equipment was missing, and a two point score if it was present (Boller, *et al.* 2003, Garner, Thomason and Donaldson 1990). In terms of delivery services, facilities equipped to perform Basic Emergency Obstetric Care (BEOC), had to report the presence of supplies and equipment to manage pregnancy complications by assisted vaginal delivery (vacuum or forceps), manual removal of placenta, removal of retained products of abortion (manual vacuum aspiration), and administration of parental drugs (for postpartum haemorrhage, infection and preeclampsia or eclampsia), and resuscitation of newborn. Comprehensive Emergency Obstetric Care (CEOC) had to report the presence of supplies, space and equipment to perform caesarean section and other emergency surgeries, and blood transfusion. BEOC was allocated one point, CEOC was allocated two points, while absence of delivery services were scored zero. The maximum possible score for this section was six points.

Diagnostics approach employed as well as the reported *prophylactic drugs* provided were scored in the same manner as equipment, allocating a zero score if the interviewee reported the service was not performed, and a two point score if the service was performed (Boller, *et al.* 2003, Garner, Thomason and Donaldson 1990). The maximum possible score for diagnostic approach was eight points, while the maximum score obtained for prophylactic drugs was 10 points.

Affordability of maternal healthcare at each facility was assessed by enquiring about the implementation of the *4ANC* and or the *Aama* programmes at the facility, or the implementation of any other pro-poor services, such as discounts for poor women. The presence of any pro-poor service was allocated two points, while the presence of "other" pro-poor programmes such as discounts for the poor were allocated one point. Facilities that had no pro-poor services were allocated zero points (Table 3.2). The maximum possible score for this section was two points.

The overall *accessibility* of each facility was then tabulated according to physical availability, physical infrastructure and maintenance, technical capacity, and affordability. The maximum possible score was 51.

3.7 PHASE THREE: FACILITATORS AND BARRIERS TO MATERNAL CARE

The purpose of this phase was to gain a deeper understanding of the contextual factors that facilitate or hinder the utilisation of maternal healthcare among women living in squatter and non-squatter areas of Ward 34. This phase addressed objective 4 of this study.

3.7.1 Study design

To unravel the complexities surrounding women's utilisation practices, a qualitative approach was needed. Semi-Structured Interviews (SSIs) and four Focus Group Discussions (FGDs) were conducted among squatter and non-squatter residents of Ward 34, to explore the factors that facilitate or hinder the utilisation of maternal health services from the beneficiaries' perspective (emic) and that of service providers (etic).

Although SSIs and FGDs are independent data collection methods, their combination is believed to be advantageous to researchers as complementary views of the phenomenon being researched (Lambert and Loiselle 2008). In his study, Lambert and colleagues (2008) found that the combination of both methods generally occurs for pragmatic reasons, for example women's unwillingness or inability to participate in one or the other; or researchers striving towards data completeness or validation (Lambert and Loiselle 2008). Similarly, interviews were carried out among women and service-providers to enhance the validity of results (Liamputtong 2009).

Specific aims

The specific aims of the study were to:

1. To identify facilitating factors and barriers associated with women accessing antenatal care.
2. To identify facilitating factors and barriers associated with women accessing delivery care.
3. To identify facilitating factors and barriers associated with women accessing postnatal care.

3.7.2 **Sample**

The study sought participation from the beneficiaries of maternal services and the providers of such services. A purposeful sample of women living Ward 34, and staff from the study-clinic was used.

Among women, SSIs and FGDs interviewed women living in squatter and non-squatter areas of Ward 34 who had given birth to a live baby in the two years preceding the study. The sample was stratified to retrieve information from women belonging to two subgroups: i) those who had received antenatal or postnatal care at the study-clinic (hereafter referred to as *clinic-users*); and ii) those who had not received antenatal or postnatal care at the study-clinic (hereafter referred to as *non-clinic-users*) were recruited. After gaining women's interest for participating in the study, women were asked if they would prefer to participate in "individual interviews" or "group discussions." This was done for practical reasons, for example if a woman was unable or unwilling to attend a focus group, she was interviewed individually. This combination of methods is believed to lead to fewer refusals or withdrawals, as individuals can choose the method that is most convenient for them (Lambert and Loiselle 2008, Ritchie, Lewis and Elam 2003).

Sampling of *clinic-users* began by retrieving the names of potential participants in the study-clinics' database. Snowball sampling was also used by asking women who had been interviewed, to identify other "neighbourhood sisters" who "had babies under the age of two years." Contact to request participation was made either via telephone or in person in the community. To recruit *non-clinic-users*, in addition to the snowball sampling methods described above, the interviewers also enlisted the help of local pharmacy owners. Pharmacy owners helped to promote the study to local women who attended their shops. If a woman expressed interested in participating, she was asked to leave her contact details with the pharmacist, and the study team contacted her the following day.

Sampling of the service providers was also purposeful and from a convenient sample, selecting only service providers from the study-clinic to participate in this study.

Inclusion criteria

Clinic-users: All women who had received antenatal or postnatal care from the study-clinic were eligible to participate in this study. In addition, women had to

report living in squatter or non-squatter areas of Ward 34 at the time of their most recent pregnancy.

Non-clinic-users: All women who had fallen given birth after June 2010, and who lived in squatter or non-squatter areas of Ward 34 at the time of that pregnancy, were eligible to participate in this study.

For both clinic-users and non-clinic-users, the two-year recall period was selected to coincide with the set-up of the study-clinic and also minimise recall bias.

In terms of service providers, the only ANM and HA working at the study-clinic were purposefully chosen due to their role in attending to pregnant women and newborn children at the study-clinic.

Exclusion criteria

Women who reported giving birth prior to June 2010, or those who did not live in Ward 34 at the time of their most recent birth were not included in this study. Women who were pregnant at the time of this study were also excluded. If a woman had participated in the SSIs, she was not eligible for participation in a FGD, and vice versa.

3.7.3 Data collection instruments

The individual interviews followed a topic guide based on common findings in literature as well as discussion with PHD Nepal researchers (including service providers from the study-clinic), and focused on the decision making process, and the experience of seeking care during pregnancy and delivery. The general features highlighted would also apply to the topic guide used for focus groups. Data collection for this phase occurred between 28 August and 2 October 2012.

All interview guides were developed in English, translated into Nepali following the procedure illustrated and summarised in Appendix C (Eremenco, Cella and Arnold 2005). Pre-testing of the topic guides was carried out on six participants, namely two women from squatter settlements and two from non-squatter settlements who lived outside of Ward 34, as well as one male and one female service provider not employed at the study-clinic. After pre-testing, the topic guides underwent minor changes, particularly with regards to the question flow, and were finalised for fieldwork and data collection.

For SSIs, the first section of the topic guide collected socio-demographic variables including age, caste and ethnicity, education level, employment status, address and parity. This was followed by ten open-ended questions related to the care received for participant's most recent pregnancy and perinatal period, starting with where they had had attended ANC, and how they had arrived at the decision to seek care from that particular facility, and their opinion on the care they had received (Appendix J). These questions were followed by similar questioning regarding PNC attendance. The topic guide then enquired about the receipt or purchase of essential components of ANC and PNC according to the minimum standards as outlined by the Government of Nepal (MoHP 2014) (refer to Section 3.6.1, pg. 94). The last section of the topic schedules asked women about their delivery experience, including companions, the means of transport used to arrive at facilities, and their opinions of the service they had received. Specific to the *clinic-users*, women were asked if they would return to the facility to deliver or recommend it to friends, and why; these questions often prompted more information about care received at the study-clinic and other facilities.

For FGDs, the topic guide consisted of six questions similar those included in the SSIs. The discussion began by asking the group about where women in their community usually go for maternal healthcare. Within this question, the role of public versus public facilities was explored. Groups were then asked about different aspects of maternal services, such as 24 hour services, free medication, cash-handouts, staff attitude and so on were most important in their community to encourage the use of maternal services among all women. The role the family unit plays in the decision to seek maternal healthcare was then explored. This was then followed asking women about the barriers that women in their communities experienced in accessing maternal care (Appendix K).

Among service-providers the interview schedule, the first section of SSIs schedule collected socio-demographic variables including age, caste and ethnicity, education level, and information about their position and the length of employment at the study-clinic. This section was followed by eight open-ended questions related to the care provided at the study-clinic, and their opinion regarding the care provided at the clinic, and the utilisation of the clinic among the target population (Appendix L).

3.7.4 Procedure

During fieldwork, one local female interviewer carried out all interviews and group discussions. The interviewer, who had experience in maternal and child health and had university degree in Public Health, was trained over three days on the purpose of the research. She was also trained on how to conduct interviews and focus groups, including group management and probing, how to find women for the sample, obtaining informed consent, especially for mothers under the age of 18, confidentiality, and study procedures.

As per phase one of this study, the help from community leaders in the squatter settlement was requested to find clinic-users who had agreed over the phone to participate in the study. Snowballing consequently lead us to other clinic-users and non-clinic-users, both in squatter and non-squatter areas. This was the most successful method of recruitment. Recruitment through pharmacies led only to non-squatter women. Interviews were carried out before and after work hours (including Sunday) to maximise participation from working mothers and lasted between 15 and 45 minutes in duration. SSIs were conducted in women's own home.

For FGDs, women were required to provide some information regarding their most recent delivery (e.g. number of ANC, and place of delivery) prior to beginning the discussions. Groups were grouped according to two main commonalities, namely their location of residence (squatter/non-squatter), and their use (or not) of the study-clinic. Focus groups were scheduled over three consecutive week days and lasted between 35 and 55 minutes. Focus group discussions were conducted in locations based on proximity to women's households. A primary school and a tailor's shop were used as comfortable places to conduct FGDs with women from squatter and non-squatter areas, respectively. At the end of data collection, saturation was achieved, as the interviewer noted that themes began to repeat and novel insights ceased to emerge.

3.7.5 Ethical considerations

All individual interviews and focus groups were carried out in Nepali. Prior to beginning the interviews and discussions, all participants were informed about the aims and purpose of the study. Participants were also informed that the interviews and discussions would be audio-recorded using a digital voice recorder. Consent was

documented by obtaining a signature or a thumbprint (for illiterate participants). For mothers under the age of 18, permission was first sought from their next of kin (usually husband or mother-in law).

Incentive

To show our gratitude for participation, a small incentive was given to participants of this Phase of the study only. The contents of the incentive was discussed and determined in consultation with local health professionals working directly with the squatter communities. Each study participant received a “medical kit” (Figure 3.20) containing basic over-the-counter supplies.

Figure 3.20: Incentive provided to informants of the qualitative arm of study

The use of the “medical kit” (and its contents) as an incentive, was approved by the Curtin and Nepal Ethics committees. The incentive consisted of oral rehydration salts (Jeevan Jal), medicated Band-Aids (Hansaplast), antibacterial soap, antibiotic ointment, chlorine solution for water purification. The total cost of each medical kit was estimated between NRs 150 – 200 (AUD$ 1.75 – 2.40). This “medical kit” was given to participants at the end of the interview sessions.

3.7.6 Data analysis

Transcription commenced at the same time as data collection, to enable ongoing analysis, although owing to time constraints not all interviews were transcribed until

after data collection had ceased. To ensure standardised and accurate transcription, two separate transcribers who were experienced in maternal health research were employed to transcribe the interviews verbatim. Both transcribers were native Nepali speakers. They were instructed to mark pauses in speech and other aspects of discussions as well markings for inaudible speech and stage directions (e.g. [laughter]) in the transcripts.

Once transcription was completed the same transcribers were asked to translate each interview to English. Once transcripts were translated to English, transcripts were reviewed, compiled a new version of each interview using both translations, and reviewed each interview against the field notes. The transcript files were entered into NVivo10 qualitative software (QSR International Limited, Warrington, UK) to assist in analysis of the data. Responses for closed questions were entered into SPSS for Windows (Version 22.0, SPSS Inc., Chicago, IL, USA) and used to calculate basic descriptive statistics.

Responses to open questions were analysed using a thematic framework approach, utilising deductive reasoning, whereby information was categorised according to a set of pre-determined themes derived from concepts found in the literature, as shown in Table 3.3 (Bradley, Curry and Devers 2007). Starting with pre-determined themes can help researchers integrate concepts already well known in the literature, and help uncovered issues that arise within the broad theme concerned (Bradley, Curry and Devers 2007, Pope and Mays 2007). For example, a deductive approach of maternal healthcare utilisation, the themes “individual”, “social”, and “environment”, were broadly drawn from Andersen’s model of healthcare use (Andersen and Newman 2005), however, the sub-themes were adapted to the Nepal context and took into account current policies and programmes, and results of the household questionnaire data and the clinic-data.

Table 3.3: Initial themes used in thematic framework analysis.

THEMES	SUB-THEMES
Individual predisposing factors	▪ age ▪ parity ▪ occupation ▪ education ▪ participation in household decision making ▪ perceived need/ traditional beliefs ▪ perceived quality of care ▪ complications
Social	▪ poverty ▪ availability of companion to health facility ▪ awareness of location of care ▪ transport-proximity ▪ availability of *Aama* programme
External factors	▪ reputation of facility ▪ residence location

Framework analysis has five main stages: detailed reading of the transcripts, identification of codes, identification of initial themes from the data sets, refinement of themes, and coding of the variables into themes (Pope, Ziebland and Mays 2000). However in this study, the translation of transcripts into English, added an extra step. The stages undertaken for the analysis of data in this study are described below:

Stage 1: In the field – first level analysis

- The interviewer listened to the recordings in the field in Nepal, and transcribed the digitally recorded data into English.
- Discussion were then held with the interviewer/transcriber to discuss the data she had collected, address any concerns, and highlight preliminary findings. This was a form of member checking.
- Field notes were also checked against the transcribed interviews to ensure a more complete picture of the context.
- Due to complexities in the field, including lack of computers, and consistent black outs, formal data analysis was carried out after data collection.

Stage 2: Checking translation – first level analysis

- A second native Nepali speaker was asked to listen to the digital recordings and transcribe interviews verbatim into English. This was done to allow for multiple

interpretation of content, and therefore a more accurate and culturally appropriate translation.

- The researcher then read the transcripts and compiled a reconciled version of each interview. This process also allowed the researcher to become familiarised with the data. In cases were discrepancies in language or events arose, a third native Nepali speaker was asked to listen to the specific part of the interview in questions and decide on the best translation of the data.

Stage 3: Open Coding of Interview data – 2nd level analysis

- All typed transcripts were imported into NVivo 10 (QSR International Pty Ltd) in order to assist with data analysis.
- Interviews were also read in order of collection as a way to try to be re-absorbed in the interview setting, thereby giving context to the data, and language used during the interview. Interviews were read and re-read all the transcripts to gain familiarity with the data, reading line-by-line through the whole transcript.
- Since this phase of the study sought answers to three separate study objectives, each transcript was read based on answering each of those objectives. Each transcript then received three annotations, based on the study objectives (eg. attended ANC, delivered at home, did not attend postnatal care).
- Reading and re-reading transcripts was an essential step of becoming familiarised with the data and also helped to recognise patterns within the data (Pope, Ziebland and Mays 2000). Since participants had been recruited according to location of residence, and utilisation of the study clinic, transcripts were divided according to the subgroups (see Figure 1) and analysed.
- While reading the words, phrases, sentences and expressions from the transcripts, analytical categories, a process also known as coding, were created (Pope, Ziebland and Mays 2000). This systematic reading and coding is also known as open coding (Bazeley 2009).

Stage 4: Emerging themes and developing a thematic framework- 3rd level analysis

- After coding each transcript, the data were again re-read and the codes were grouped together under more specific clusters that could be collated together to form basic-themes (Bazeley 2009).

- To ensure “interpretive rigour” or the degree to which credible interpretations have been made of the study results, a second “rater” was asked to code eight (10%) transcripts (Mays and Pope 1995, O'Cathain 2010).
- Each basic-theme was then analysed separately and re-examined for variations according to age, parity, and education to look for conditions under which particular categories or themes arose. This process of re-examining is a vital stage in the analytic process because human perception is selective and the relevance of data can be easily overlooked (Pope, Ziebland and Mays 2000).
- A separate thematic framework for each objective was developed. Thus a coding framework was developed to identify dominant themes and sub-themes relating to perceptions and experiences during each obstetric phase.

Stage 5: Higher level analysis drawing on the conceptual framework and deductive approach

- The themes were categorised based on their relationships to a specific organising theme according to the Andersen’s model. The frequency of occurrence of each of the themes within the data set was recorded to establish the strength of each theme.
- During this stage, we also compared responses from both the in SSIs and FGDs to each other. We found that the since women in the SSIs and FGDs were asked to consider the same issues, responses were sufficiently consistent. As such SSI responses were analysed and are presented with those of the FGDs.

Stage 6: Thick description of results

- Statements from the raw data were extracted to provide evidence of the existence of each theme within the various categories. With a view to provide explanations for the findings, final analysis of the selected extracts was related back to the research aims and objectives and the appropriate literature (Pope, Ziebland and Mays 2000). In presenting the results for this phase, we have tried to convey the original meaning, which at times leads to quotes appearing ungrammatical.

3.8 SUMMARY

This chapter has provided a description of the research design employed in the current study. The central aim of this study was to increase knowledge of maternal health service utilisation in communities bordering Ward 34, Kathmandu

Metropolitan City, Nepal. Specifically, due to the lack of urban specific data on antenatal, delivery, and postnatal healthcare utilisation, the objectives of the study were revolved around comparing awareness of danger signs and maternal healthcare utilisation practices between squatter and non-squatter residents of Ward 34.

The study adopted a mixed method approach and employed a multiphase design to complement the quantitative and qualitative nature of the research objectives. The first phase of the study comprised of the analysis of data from a questionnaire based on the 2011 NDHS in order to identify factors that contributed to awareness of danger signs and underutilisation of maternal healthcare services. The second phase of the study used quantitative methods to investigate maternal healthcare availability for women living in squatter and non-squatter settlements of Ward 34. A subset of statistically significant factors from the quantitative findings was then identified to be further explored using qualitative methods. The third phase of the study comprised a qualitative approach to explore the contextual and explanatory factors perceived to underlie these inequalities. Here, SSIs and FGDs were conducted with a purposive sample of women from squatter and non-squatter areas within the study area.

Through the use of mixed methods, the study sought to provide a more comprehensive understanding of the research topic than could be achieved having used either method alone (Creswell, Fetters and Ivankova 2004, Creswell and Miller 1997). Furthermore, the mixing of quantitative and qualitative methods in this study demonstrates how the contextual and in-depth nature of qualitative findings can be used to complement the representativeness and generalizability of quantitative findings (Hesse-Biber 2010).

The following chapter presents the results for the three phases of this study, where results from each phase are presented separately.

4 RESULTS

4.1 CHAPTER OVERVIEW

This chapter reports on the findings from this mixed methods investigation of maternal healthcare utilisation among squatter and non-squatter residents of Ward 34, Kathmandu.

Section 2 of this chapter provides a description of the results obtained from the analysis of the survey carried out in Phase one, which aimed to compare maternal healthcare utilisation practices between squatter and non-squatter residents of Ward 34. Demographic characteristics of the participants are presented, followed the prevalence utilisation practices of women. Section 3 reports the findings of Phase two of this study, namely the analysis performed from data retrieved from the study-clinic, and the results of the rapid-health facility assessment which collectively aimed to investigate maternal healthcare facilities available for women living in squatter and non-squatter settlements of Ward 34. Section 4 presents the results of phase three of the study which used SSIs and FGDs to gain an understanding of the contextual factors that facilitate or hinder the utilisation of maternal healthcare among women living in squatter and non-squatter areas of Ward 34. The chapter concludes with a summary of the key findings (Section 5).

4.2 PHASE ONE: ANALYSIS OF QUESTIONNAIRE DATA

The objective of this survey was to gather demographic and maternal health related data on the population of Ward 34, with a specific focus on comparing differences between those living in squatter and non-squatter settlements.

This section first presentd the response rates, focusing on the differences in response rates between the two broad groups created in this study, namely respondents living in squatter and non-squatter settlements. The socio-demographic characteristics of the study population then follow in Section 4.2.2. Sections 4.2.3 and 4.2.4 present household ownership of certain durable assets and household characteristics, respectively. These three sections present data according to each of the three non-squatter and the five squatter settlements sampled during data collection. To obtain a picture of the changing trends in maternal healthcare service utilisation at different time periods, the prevalence of utilisation of antenatal, delivery, and postnatal care of

all mothers interviewed is presented in Section 4.2.5. Section 4.2.6 then reports maternal utilisation practices of mothers who reported a live birth in the previous *ten years preceding the survey*. More specifically independent associations between the underutilisation of antenatal (Section 4.2.6.2), delivery (Section 4.2.6.3), and postnatal (Section 4.2.6.4) care utilisation practices and key socio-demographic, community, and health system factors are presented.

4.2.1 Response rate

The overall response rate of this study was 70%. In the non-squatter area, 370 of the estimated 17,772 households in Ward 34 were approached, of which 194 agreed to participate (52%). In the squatter settlements, 260 households of the reported 599 households were approached, of which 246 (95%) agreed to participate. For the purposes of this study, analysis was restricted to data pertaining to women who had ever given birth. A total of 363 women were found to have ever given birth. Four women reported a non-live birth and were subsequently excluded from further analysis. Altogether, data pertaining to 359 were analysed in this section because they given birth to a live baby before.

4.2.2 Demographics

The demographic characteristics of the study population is summarised in Table 4.1. A higher proportion of women from squatter settlements than non-squatter settlements were interviewed. Among the three non-squatter settlements sampled, the proportion of participants did not vary widely. However among the five squatter settlements sampled, half of participants were recruited from the Shanti Nagar squatter settlement (Table 4.1).

The median age of study participants was 32 years, ranging from 18 to 70 years (Mean = 33.9; SD = 9.7). The median age of respondents from non-squatter (Median = 33, Range = 19–62) was slightly higher than that of squatter residents (Median = 32, Range =18–70). Independent samples T-test suggested that although residents from non-squatter settlements (Mean = 34.6 years, SD = 9.4) were older than those from squatter settlements (Mean = 33.3 years, SD = 10.0), the difference was not statistically significant (p = .206). As can be seen in Table 4.1, the majority of participants in this study were between 20 and 35 years of age, with no significant differences observed between those squatter and non-squatter settlements.

Eighty percent of all participants practiced Hinduismh, however a significantly higher proportion of non-squatter (91%) compared to squatter (71%) residents identified with Hinduism ($p < .001$). While the proportion of Hindus in the non-squatter settlements remained around 90%, residents of squatter settlements exhibited a wider variation in religious affiliations.

With regards to ethnic and caste groups, individuals from "High" caste groups (Bharman, Chhetri and Newar) were the most common in this study (55%), however their proportion was significantly higher in non-squatter (79%) than squatter areas (38%, $p < .001$). Table 4.1 also shows that among the three non-squatter settlements, the proportion of participants belonging to High caste groups ranged between 72% - 89%, while among the five squatter settlements, the proportion was highest at 52% in Gaigaun.

Almost half of all participants had not attended any formal schooling. However, wide disparities were recorded between non-squatter and squatter residents, with a significantly lower proportion of women from non-squatter settlements (28%) reporting no formal schooling than their squatter counterparts (65%, $p <.001$). Among the three non-squatter settlements sampled, a higher proportion of residents from Aalok Nagar had no formal schooling, while among the five squatter settlements, Gaigaun had the highest proportion of residents who had no formal schooling.

In terms of employment status, 57% of women reported "not earning", that is they reported being housewives, unemployed, or students. A lower proportion of non-squatter residents reported "not earning" (44%) compared to squatter residents (67%, $p < .001$). Among non-squatter settlements, Aalok Nagar had the highest proportion of participants who were "not-earning", with the squatter settlement of Shanti Nagar recording the highest proportion of women who were "not earning" (Table 4.1).

During fieldwork, residents of squatter settlements were often encountered providing their services to construction sites around the Ward, collecting plastics from rubbish dump sites, and as domestic workers for households in non-squatter areas. In addition, women reported being engaged in other occupations such as diving into the Bagmati River to collect sand from the riverbed to be used for construction of building (Figure 4.1).

Figure 4.1: Women from squatter settlements collecting sand from river

Ninety-eight percent of all participants were married, with no significant differences in the proportion of married individuals found between non-squatter (99%) and squatter (98%) residents ($p < .898$). Eighty four percent of respondents reported living in nuclear family structures, with a slightly lower proportion of non-squatter (80%) compared to squatter households (87%). This difference was not statistically significant ($p = .096$).

The overall median household size was four people (Range = 2–12), with households in non-squatter (Median = 4, Range = 2–12) and squatter (Median =4, Range = 2–9) reporting similar household size. Independent samples T-test found no statistical differences in the mean household size between non-squatter (Mean = 4.3, SD = 1.5) and squatter settlements (Mean = 4.4, SD = 1.3, $p = .892$). About 3% of all households were made up of two people, with no statistical significant difference between squatter and non-squatter households ($p = .190$) (Table 4.1).

The median number of years respondents had occupied their current households was seven years (Range = 2 days–30 years). In non-squatter settlements, the corresponding figure was seven years (Range = 5 days–30 years), while in the squatter settlements it was seven years (Range = 2 days–30 years). Independent samples T-test suggested that non-squatter residents had lived in their current

households significantly longer (Mean = 10.0 years, SD = 7.7) than squatter residents (Mean = 7.4, SD = 5.2, $p < .001$). Table 4.1 shows that while the majority of respondents had lived in their current household between 5–10 years, approximately 36% of non-squatter residents had lived in their current household for 11 years or longer, compared to 16% of squatter residents ($p < .001$). Among non-squatter residents, a lower proportion of households from Aalok Nagar had lived in their house for “11 years or more” compared to residents from Shanti Nagar and Old Baneshwor. Among squatter residents, a higher proportion of the residents from Jagriti Nagar had lived in their households for “11 or more years.”

Table 4.1: Demographic characteristics of participants in non-squatter and squatter settlements of Ward 34 (N = 359)

	TOTAL % (N)			*NON-SQUATTER % (N)*			*SQUATTER % (N)*				
CHARACTERISTICS	GRAND TOTAL	NON-SQUATTER	SQUATTER	AALOK NAGAR	SHANTI NAGAR	OLD BANESWOR	BIJAY NGAR	CHANDANI TOLE	GAIGAUN	JAGRITI NAGAR	SHANTI NAGAR
TOTAL	100.0 (359)	42.6 (153)	57.4 (206)	34.6 (53)	32.7 (50)	32.7 (50)	2.9 (6)	9.7 (20)	15.0 (31)	22.8 (47)	49.5 (102)
CURRENT AGE			p = .087								
<20	2.5 (9)	0.7 (1)	3.9 (8)	1.9 (9)	-	-	-	5.0 (1)	-	6.4 (3)	3.9 (4)
20-35	59.3 (213)	56.6 (86)	61.7 (127)	60.4 (32)	44.0 (22)	64.0 (32)	66.7 (4)	70.0 (14)	64.5 (20)	51.1 (24)	63.7 (65)
36-49	30.6 (110)	35.9 (55)	26.7 (55)	32.1 (17)	46.0 (23)	30.0 (15)	33.3 (2)	20.0 (4)	25.8 (8)	36.2 (17)	23.5 (24)
50+	7.5 (27)	7.2 (11)	7.8 (16)	5.7 (3)	10.0 (5)	6.0 (3)	-	5.0 (1)	9.7 (3)	6.4 (3)	8.8 (9)
RELIGION			p < .001								
Hindu	79.7 (286)	90.8 (139)	71.4 (147)	92.5 (49)	90.0 (45)	90.0 (45)	50.0 (3)	60.0 (12)	93.5 (29)	74.5 (35)	66.7 (68)
Buddhist	11.4 (41)	7.8 (12)	14.1 (29)	5.7 (3)	8.0 (4)	10.0 (5)	-	10.0 (2)	-	12.8 (6)	20.6 (21)
other	8.9 (32)	1.3 (2)	14.6 (30)	1.9 (1)	2.0 (1)	-	50.0 (3)	30.0 (6)	6.5 (2)	12.8 (6)	12.7 (13)
CASTE			p < .001								
low	17.0 (61)	5.2 (8)	25.7 (53)	1.9 (1)	6.0 (3)	8.0 (4)	33.3 (2)	25.0 (5)	29.0 (9)	21.3 (10)	26.5 (27)
middle	27.6 (99)	15.7 (24)	36.4 (75)	9.4 (5)	18.0 (9)	20.0 (10)	33.3 (2)	30.6 (6)	19.4 (6)	42.6 (20)	40.2 (41)
high	55.4 (199)	79.1 (121)	37.9 (78)	88.7 (47)	76.0 (38)	72.0 (36)	33.3 (2)	45.0 (9)	51.6 (16)	36.2 (17)	33.3 (34)
EDUCATION LEVEL			p < .001								
no formal schooling	49.0 (176)	28.1 (43)	64.6 (133)	36.9 (19)	24.0 (12)	24.0 (12)	66.7 (4)	50.0 (10)	74.2 (23)	66.0 (31)	63.7 (65)
primary	12.8 (46)	8.5 (13)	16.0 (33)	3.8 (2)	6.0 (3)	16.0 (8)	16.7 (1)	25.0 (5)	12.9 (4)	6.4 (3)	19.6 (20)
secondary	25.3 (91)	37.9 (58)	16.0 (33)	32.1 (17)	46.0 (23)	36.0 (18)	16.7 (1)	25.0 (5)	12.9 (4)	21.3 (10)	11.7 (13)
higher secondary and above	12.8 (46)	25.5 (39)	3.4 (7)	28.3 (15)	24.0 (12)	24.0 (12)	-	-	-	6.4 (3)	3.9 (4)
EMPLOYMENT STATUS			p < .001								
not earning	57.4 (206)	44.4 (68)	67.0 (138)	47.2 (25)	46.0 (23)	40.0 (20)	50.0 (3)	50.0 (10)	51.6 (16)	70.2 (33)	74.5 (76)
semi-employed	26.2 (94)	24.2 (37)	27.7 (57)	22.6 (12)	24.0 (12)	26.0 (13)	50.0 (3)	40.0 (8)	38.7 (12)	19.1 (9)	24.5 (25)
employed	16.4 (59)	31.4 (48)	5.3 (11)	30.2 (16)	30.0 (15)	34.0 (17)	-	10.0 (2)	9.7 (3)	10.6 (5)	1.0 (1)

p-value from chi-squared tests with Bonferroni correction for multiple comparisons

Continued…

Table 1 (continued): Demographic characteristics of participants in non-squatter and squatter settlements of Ward 34 (N = 359)

	TOTAL			*NON-SQUATTER*					*SQUATTER*		
	% (N)			*% (N)*					*% (N)*		
CHARACTERISTICS	GRAND TOTAL	NON-SQUATTER	SQUATTER	AALOK NAGAR	SHANTI NAGAR	OLD BANESHWOR	BIJAY NGAR	CHANDANI TOLE	GAIGAUN	JAGRITI NAGAR	SHANTI NAGAR
MARITAL STATUS			p < .898								
unmarried	0.8 (3)	0.7 (1)	1.0 (2)	-	-	2.0 (1)	-	5.0 (1)	-	-	1.0 (1)
married	98.3 (353)	98.7 (151)	98.1 (202)	98.1 (52)	100.0 (50)	98.0 (49)	83.3 (5)	90.0 (18)	100.0 (31)	100.0 (47)	99.0 (101)
widowed	0.8 (3)	0.7 (1)	1.0 (2)	1.9 (1)	-	-	16.7 (1)	5.0 (1)	-	-	-
FAMILY TYPE			p = .096								
nuclear	84.1 (302)	80.4 (123)	86.9 (179)	84.9 (45)	76.0 (38)	80.0 (40)	100.0 (6)	95.0 (19)	80.6 (25)	85.1 (40)	87.3 (89)
joint	15.9 (57)	19.6 (30)	13.1 (27)	15.1 (8)	24.0 (12)	20.0 (10)	-	5.0 (1)	19.4 (6)	14.9 (7)	12.7 (13)
HOUSEHOLD SIZE			p = .190								
2 people	3.1 (11)	2.6 (4)	3.4 (7)	1.9 (1)	4.0 (2)	2.0 (1)	16.7 (1)	-	6.5 (2)	4.3 (2)	2.0 (3)
3-4 people	59.9 (215)	65.4 (100)	55.8 (115)	64.2 (34)	62.0 (31)	70.0 (35)	66.7 (4)	55.0 (11)	54.8 (17)	51.1 (24)	57.8 (59)
5 or more people	37.0 (133)	32.0 (49)	40.8 (84)	34.0 (18)	34.0 (17)	28.0 (14)	16.7 (1)	45.0 (9)	38.7 (12)	44.7 (21)	40.2 (41)
LENGTH OF STAY IN RESIDENCE			p < .001								
less than 5 years	27.6 (99)	25.5 (39)	29.1 (60)	34.0 (18)	18.0 (9)	24.0 (12)	33.3 (2)	50.0 (10)	35.5 (11)	27.7 (13)	23.5 (24)
5 -10 years	47.9 (172)	38.6 (59)	54.9 (113)	47.2 (25)	40.0 (20)	28.0 (14)	66.7 (4)	45.0 (9)	48.4 (15)	61.7 (29)	54.9 (56)
11 years or more	24.5 (88)	35.9 (55)	16.0 (33)	18.9 (10)	42.0 (21)	48.0 (24)	-	5.0 (1)	16.5 (5)	10.6 (5)	21.6 (22)

p-value from chi-squared tests with Bonferroni correction for multiple comparisons

4.2.3 Asset ownership and asset-wealth proxy

In this study, households owned an average of four durable assets (Mean = 4.2, SD =2.0), namely a television (87%), a mobile phone (86%), a gas stove (83%) and a radio (58%) (Table 4.2). With the exception of a push-bicycle, a higher proportion of non-squatter households reported ownership of all items. Overall, the number of assets owned ranged from zero to ten items. In non-squatter settlements, ownership ranged from one to ten items, with one household (0.7%) reporting ownership of two items or less. Among squatter households, the number of items owned varied from zero to nine, with 61 (30%) households reporting ownership of two items or less. A students t-test suggested that households located in non-squatter households owned a significantly greater number of items (M = 5.5, SD =1.8) than households located in squatter areas (M = 3.2, SD = 1.6, $p < .001$).

Overall, the three non-squatter settlements did not display much variation in the proportion of households that owned each asset. Likewise, little variation was found between squatter settlements.

The information gathered on the ownership status (yes/no) of the ten common assets, was then used to create a wealth-proxy using Principal Components Analysis (PCA), (Table 4.3). The initial 10-item correlation matrix was examined for internal consistency. In the correlation matrices, ownership of a car and a bicycle did not have correlations of > 0.2 with at least three other variables, and were thus excluded from the final PCA analysis. The final correlation matrix consisted of eight variables (Table 4.3). No variables had a correlation > 0.8 with other variables. The Bartlett's test of sphericity was significant (χ^2 test $p < 0.001$), and the KMO statistic was 0.803, indicating that the factor analysis of the variables are inappropriate. Cronbach's coefficient α for the eight-item scale was 0.740, which is a reasonable level of reliability for all indices.

Table 4.2: Prevalence of ownership of household durable assets in non-squatter and squatter settlements of Ward 34 (N = 359)

	TOTAL % (N)				*NON-SQUATTER % (N)*			*SQUATTER % (N)*				
	GRAND TOTAL	NON-SQUATTER	SQUATTER	P-VALUE	AALOK NAGAR	SHANTI NAGAR	OLD BANESHWOR	BIJAY NGAR	CHANDANI TOLE	GAIGAUN	JAGRITI NAGAR	SHANTI NAGAR
TOTAL	100.0 (359)	42.6 (153)	57.4 (206)		34.6 (53)	32.7 (50)	32.7 (50)	2.9 (6)	9.7 (20)	15.0 (31)	22.8 (47)	49.5 (102)
television	86.6 (311)	97.4 (149)	78.6 (162)	< .001	96.2 (51)	100.0 (50)	96.0 (48)	83.3 (5)	85.0 (17)	71.0 (22)	76.6 (36)	80.4 (82)
mobile	85.8 (308)	98.0 (150)	76.7 (158)	< .001	100.0 (53)	96.0 (48)	98.0 (49)	50.0 (3)	80.0 (16)	71.0 (22)	74.5 (35)	80.4 (82)
gas stove	82.5 (296)	99.3 (152)	69.9 (144)	< .001	100.0 (53)	100.0 (50)	98.0 (49)	50.0 (3)	75.0 (15)	58.1 (18)	70.2 (33)	73.5 (75)
radio	58.2 (209)	69.3 (106)	50.0 (103)	< .001	62.3 (33)	74.0 (37)	72.0 (36)	66.7 (4)	45.0 (9)	41.9 (13)	46.8 (22)	55.9 (55)
motorbike	24.2 (87)	42.5 (65)	10.7 (22)	< .001	32.1 (17)	48.0 (24)	48.0 (24)	16.7 (1)	5.0 (1)	12.9 (4)	12.8 (6)	9.8 (10)
fridge	23.4 (84)	47.1 (72)	5.8 (12)	< .001	37.7 (20)	58.0 (29)	46.0 (23)	16.7 (1)	-	3.2 (1)	10.6 (5)	4.9 (5)
landline	20.9 (75)	41.2 (63)	5.8 (12)	< .001	35.8 (19)	54.0 (27)	34.0 (17)	-	5.0 (1)	6.5 (2)	4.3 (2)	6.9 (7)
bicycle	18.9 (68)	14.4 (22)	22.3 (46)	< .057	17.0 (9)	18.0 (9)	8.0 (4)	-	25.0 (5)	12.9 (4)	31.9 (15)	21.6 (22)
computer	16.4 (59)	35.3 (54)	2.4 (5)	< .001	30.2 (16)	44.0 (22)	32.0 (16)	-	-	3.2 (1)	2.1 (1)	2.9 (3)
car	1.7 (6)	3.9 (6)	-	.004	1.9 (1)	6.0 (3)	4.0 (2)	-	-	-	-	-

p-value from chi-squared tests

Table 4.3: Minimum, maximum and component scores of the asset variables used to create the asset-based wealth index

	MIN	*MAX*	*FACTOR LOADINGS*
landline	0	1	.331
computer	0	1	.325
refrigerator	0	1	.307
motorbike	0	1	.252
radio	0	1	.135
stove	0	1	.037
television	0	1	.008
mobile	0	1	-.012
car	0	1	excluded
bicycle	0	1	excluded

Factor loadings reported only if they exceed the cut-off eigenvector of 0.2
Notes: Rotation method: Oblimin with Keizer normalisation, Index was created using only the first component or factor.

Given these positive results, principal components were then extracted. This resulted in two components or factor solution with eigenvalues >1.0, with the first component accounting for 37.1% of the variation. Table 4.3 also shows the factor scores or weights for each variable included in the PCA.

Using the factor scores from the first principal component as weights, a proxy index of "wealth" was constructed for each household. Interpreting the factor loadings shown in Table 4.3, a household that owns a refrigerator, for example, has an asset index higher by 0.307 than a household without it. The constructed "asset-wealth" score or index, was then used to group households into tertiles.

4.2.4 Household characteristics and housing-quality proxy

Households characteristics according to squatter and non-squatter residence, are presented in Table 4.4. The table also shows the variability in household characteristics according to each settlement sampled. Overall, the majority of households in squatter and non-squatter settlements had walls built from concrete blocks, however, the proportion of households with walls built from concrete blocks was significantly higher in the non-squatter settlements (97%) than the squatter settlements (59%, $p < .001$).

Table 4.4: Household characteristics in non-squatter and squatter settlements of Ward 34, Kathmandu, Nepal (N = 359)

	TOTAL % (N)			*NON-SQUATTER % (N)*					*SQUATTER % (N)*		
	GRAND TOTAL	NON-SQUATTER	SQUATTER	AALOK NAGAR	SHANTI NAGAR	OLD BANESWOR	BIJAY NGAR	CHANDANI TOLE	GAIGAUN	JAGRITI NAGAR	SHANTI NAGAR
TOTAL HOUSEHOLDS	100.0 (359)	42.6 (153)	57.4 (206)	34.2 (53)	32.9 (50)	32.9 (50)	2.9 (6)	9.7 (20)	15.0 (31)	22.8 (47)	49.5 (102)
WALL			< .001								
concrete	75.2 (270)	97.4 (149)	58.7 (121)	98.1 (52)	98.0 (49)	96.0 (48)	50.0 (3)	55.0 (11)	41.9 (13)	66.0 (31)	61.8 (63)
tin sheets	11.1 (40)	-	19.4 (40)	-	-	-	-	10.0 (2)	25.8 (8)	19.1 (9)	20.4 (21)
earth/mud	9.7 (35)	2.6 (4)	15.0 (31)	1.9 (1)	2.0 (1)	4.0 (2)	50.0 (3)	25.0 (5)	22.6 (7)	10.6 (5)	13.7 (14)
other	3.9 (14)	-	6.8 (14)	-	-	-	-	10.0 (2)	9.7 (3)	4.3 (2)	3.9 (4)
ROOF			< .001								
metal sheet	56.0 (201)	5.2 (8)	93.7 (193)	5.7 (3)	4.0 (2)	6.0 (3)	83.3 (5)	90.0 (18)	93.5 (29)	100.0 (47)	92.2 (94)
concrete	42.6 (153)	94.8 (145)	3.9 (8)	94.3 (50)	96.0 (48)	94.0 (47)	-	5.0 (1)	-	-	4.9 (5)
other	1.4 (5)	-	2.4 (5)	-	-	-	16.7 (1)	5.0 (1)	6.5 (2)	-	2.9 (3)
FLOORING			< .001								
concrete floor	81.3 (292)	98.7 (151)	68.4 (141)	98.1 (52)	100.0 (50)	98.0 (49)	50.0 (3)	85.0 (17)	48.4 (15)	61.7 (29)	74.5 (76)
earth/mud	18.7 (67)	1.3 (2)	31.6 (65)	1.9 (1)	-	2.0 (1)	50.0 (3)	15.0 (3)	51.6 (16)	38.3 (18)	25.5 (26)
SEPRATE ROOM FOR COOKING			< .001								
yes	64.6 (232)	91.5 (139)	44.7 (92)	90.6 (48)	100.0 (50)	84.0 (42)	33.3 (2)	45.0 (9)	45.2 (14)	51.1 (24)	42.2 (43)
no	35.4 (127)	8.5 (13)	55.3 (114)	9.4 (5)	-	16.0 (8)	66.7 (4)	55.0 (11)	54.8 (17)	48.9 (23)	57.8 (59)
SOURCE OF DRINKING WATER			< .001								
piped into household	40.7 (146)	89.5 (137)	4.4 (9)	94.3 (50)	92.0 (46)	82.0 (41)	-	10.0 (2)	9.7 (3)	2.1 (1)	1.9 (3)
bought	34.3 (123)	5.9 (9)	55.3 (114)	3.8 (2)	4.0 (2)	10.0 (5)	50.0 (3)	55.0 (11)	67.7 (21)	51.1 (24)	53.7 (55)
hand-pipe	15.0 (54)	1.3 (2)	25.2 (52)	-	-	4.0 (2)	50.0 (3)	5.0 (5)	12.9 (4)	31.9 (15)	24.3 (25)
well	6.4 (23)	2.0 (3)	9.7 (20)	-	4.0 (2)	2.0 (1)	-	5.0 (2)	3.2 (1)	6.4 (3)	13.6 (14)
public tap	3.6 (13)	1.3 (2)	5.3 (11)	1.9 (1)	-	2.0 (1)	-	-	6.5 (2)	8.5 (4)	2.9 (5)
SANITATION FACILITY			< .001								
pit latrine (no septic tank)	53.5 (192)	13.1 (20)	83.5 (172)	13.5 (7)	26.0 (13)	-	83.3 (5)	70.0 (14)	93.5 (29)	76.6 (36)	86.3 (88)
modern flush	26.5 (95)	41.8 (64)	15.0 (31)	43.4 (23)	44.0 (22)	38.0 (19)	16.7 (1)	25.0 (5)	6.5 (2)	21.3 (10)	12.7 (13)
pit latrine (septic tank)	19.5 (70)	45.1 (69)	0.5 (1)	43.4 (23)	30.0 (15)	62.0 (31)	-	5.0 (1)	-	-	-
no facility	0.6 (2)	-	1.0 (2)	-	-	-	-	-	-	2.1 (1)	1.0 (1)

p-value from chi-squared tests with Bonferroni correction for multiple comparisons

The most common material used for roofing among all households was metal sheeting. However great disparities were observed between squatter and non-squatter households, whereby concrete was almost universally reported by households in non-squatter areas (95%), with the majority of households in squatter areas was tin sheeting (94%, $p < .001$). Similarly, although the most common material used for flooring was concrete, a significantly higher proportion of households in the non-squatter (99%) than squatter settlements (68%) reported having floors made from concrete ($p < .001$). Notably, the squatter settlement of Chandani Tole had the lowest proportion of households with mud floors of all squatter settlements. Table 4.4 also shows that 35% percent of respondents were living households where they slept in the same room as where they carried out cooking activities. While only 9% of non-squatter residents reported living under such conditions, 55% of squatter residents reported doing so ($p < .001$).

Wide variations between non-squatter households and squatter households in terms of access to drinking water and sanitation facilities were observed (Table 4.4). A significantly greater proportion of non-squatter households reported piped water into the premises, access to modern flush toilet, and toilets connected to septic tanks. Among non-squatter settlements, although the majority of households reported water piped into households, those in Old Baneshwor had the greatest variation in source of drinking. Among squatter settlements, while all settlements reported that the majority of households reported buying water from tanker-trucks or from shops, a greater proportion of households from Gaigaun reported doing so. In addition, a lower proportion of households from Gaigaun reported a modern flush toilet compared to all other households.

This housing information was then used to develop a second proxy of SES based on the quality of households characteristics. The initial correlation matrix consisted of nine variables. After employing the same inclusion criteria as the asset-based wealth index, the final correlation matrix consisted of eight variables. Principal Components Analysis revealed two components or factors with eigenvalues >1.0, with the first component accounting for 46.6% of the variation. Using the factor scores from the first principal component as weights, a proxy index of “wealth” was constructed for each household. As mentioned earlier, this housing-based wealth proxy was highly

correlated with the location of residence variable (r = .827), and was therefore not used in any further analysis.

4.2.5 Trends in maternal healthcare utilisation

The women were grouped into three groups according to the time since their last birth, namely ">10 years" denoting women who had given birth to their most recent (last) pregnancy more than 10 years before the survey; "5-10 years" denoting women who had given birth to their most recent (last) pregnancy between 5 to 10 years before the survey; and "<5 years" denoting women who had given birth to their most recent (last) birth in the five years before the survey. Table 4.5 shows the trends in maternal healthcare practices according to these three delivery periods. In terms of ANC utilisation, there was a significant increase in the proportion of women attending at least one ANC visit ($p < .001$) and those attending the recommended "four or more" recommend visits ($p < .001$) over the three time periods (Table 4.5). Similar to ANC utilisation, the proportion of deliveries taking place in health facilities among the study population has increased by 24% over the three times periods ($p < .001$), while PNC utilisation has gradually increased by 26% ($p < .001$).

Table 4.5 also shows the trends in utilisation among non-squatter and squatter settlements. While the uptake of antenatal, delivery, and postnatal care has increased in both settings, women living in squatter settlements have consistently reported lower utilisation than women living in non-squatter areas. For example among women who delivered their most recent (last) birth more than 10 years before the survey, 77% of women living in non-squatter settlements reported attending ANC (at least one visit), compared to just 33% of women living in squatter settlements. This trend was also observed for utilisation of "four or more" ANC visits, place of delivery, and PNC attendance, and it was also repeated across all time periods (Table 4.5).

Table 4.5: Changing trends in maternal health practices of *mothers* in non-squatter and squatter settlements of Ward 34 (N = 359)

	GRAND TOTAL *% (N)* PERIOD OF LAST BIRTH				*NON-SQUATTER* *% (N)* PERIOD OF LAST BIRTH				*SQUATTER* *% (N)* PERIOD OF LAST BIRTH			
CHARACTERISTICS	TOTAL	>10 years	5-10 years	<5 years	TOTAL	>10 years	5-10 years	<5 years	TOTAL	>10 years	5-10 years	<5 years
TOTAL	100.0 (359)	38.2 (137)	27.9 (100)	34.0 (122)	100.0 (153)	45.8 (70)	27.5 (42)	26.8 (41)	100.0 (206)	32.5 (67)	28.2 (58)	39.3 (81)
AGE AT FIRST PREGNANCY				p =.349								
<20	51.5 (185)	54.7 (75)	52.0 (52)	47.5 (58)	41.2 (63)	50.0 (35)	35.7 (15)	31.7 (13)	59.2 (122)	59.7 (40)	63.8 (37)	55.6 (45)
20-23	33.7 (121)	27.7 (38)	35.0 (35)	39.3 (48)	41.2 (63)	31.4 (22)	47.6 (20)	51.2 (21)	28.2 (58)	23.9 (16)	25.9 (15)	33.3 (27)
24+	14.8 (53)	17.5 (24)	13.0 (13)	13.1 (16)	17.6 (27)	18.6 (13)	16.7 (7)	17.1 (7)	12.6 (26)	16.4 (11)	10.3 (6)	11.1 (9)
ANTENATAL CARE ATTENDANCE				p < .001								
no	26.2 (94)	44.5 (61)	18.0 (18)	12.3 (15)	11.1 (17)	22.9 (16)	-	2.4 (1)	37.4 (77)	67.2 (45)	31.0 (18)	17.3 (14)
yes	73.8 (265)	55.5 (76)	82.0 (82)	87.7 (107)	88.9 (136)	77.1 (54)	100.0 (42)	97.6 (40)	62.6 (129)	32.8 (22)	69.0 (40)	82.7 (67)
ANTENATAL CARE FREQUENCY[a]				p < .001								
fewer than four visits	37.7 (134)	54.8 (74)	30.3 (30)	24.8 (30)	15.8 (24)	30.4 (21)	-	7.3 (3)	54.2 (110)	80.3 (53)	52.6 (30)	33.8 (27)
four or more visits	62.3 (221)	45.2 (61)	69.7 (69)	75.2 (91)	84.2 (128)	69.6 (48)	100.0 (42)	92.7 (38)	45.8 (94)	19.7 (13)	47.4 (27)	66.3 (53)
PLACE OF DELIVERY				p < .001								
home	43.7 (156)	56.9 (78)	39.0 (39)	32.8 (40)	21.6 (33)	35.7 (25)	11.9 (5)	7.3 (3)	60.2 (124)	79.1 (53)	58.6 (34)	45.7 (37)
health facility	56.3 (202)	43.1 (59)	60.0 (61)	67.2 (82)	78.4 (120)	64.3 (45)	88.1 (37)	92.7 (38)	39..8 (82)	20.9 (14)	41.4 (24)	54.3 (44)
POSTNATAL CARE ATTENDANCE				p < .001								
no	35.8 (128)	50.4 (69)	30.0 (30)	24.6 (30)	17.6 (27)	31.4 (22)	7.1 (3)	4.9 (2)	49.5 (102)	70.1 (47)	46.6 (27)	34.6 (28)
yes	64.2 (230)	49.6 (68)	70.0 (70)	75.4 (92)	82.4 (126)	68.6 (48)	92.9 (39)	95.1 (39)	50.5 (104)	29.9 (20)	53.4 (31)	65.4 (53)

Note: [a]two women from the squatter area could not remember how many times they had attended ANC during their last pregnancy; p-value from chi-squared tests with Bonferroni correction for multiple comparisons

4.2.6 Factors associated with utilisation of maternal healthcare

For this section, analysis of maternal healthcare utilisation practices was limited to women who reported giving birth to their most recent live birth in the 10 years preceding the survey. By limiting the recall period to 10 years, we attempted to minimise recall bias. Therefore, of the 356 women who reported ever giving birth to a live baby, 134 were excluded from further analysis because their last birth occurred more than 10 years preceding the survey. Thus the following analysis applied only to the 222 women who reported giving birth to the most recent (last) live birth in the 10 years preceding the survey. The mean recall period was 4.7 years (SD = 2.9), and the median recall period was 4 years (Range: 2 days – 10 years).

In the sections that follow, the demographic characteristics and utilisation practices of the selected sample are presented according to individual, community, and health system factors as proposed by Andersen's model of healthcare use.

4.2.6.1 *Demographic characteristics of the sub-sample*

The mean age of respondents was 28.4 years (*SD* = 5.82) with no difference found between women living in squatter and non-squatter areas (p = .678). The mean age of respondents at their most recent birth was 23.8 years (*SD* = 4.9), with no difference found between women living in squatter and non-squatter areas (p = .562). In terms of caste, women belonging to "High" caste groups made up over 50% of the total sample, approximately 58% of women reported primary school education or less, and 34% were primiparous (Table 4.6). Fifty-eight percent of mothers reported not being engaged in paid employment (not earning). Just under 50% reported their first pregnancy before the age of 20, with women from squatter settlements (Mean = 19.3, SD = 3.6) on average reporting their first pregnancy at a significantly younger age than women from non-squatter areas (Mean = 20.7, SD = 3.1, p = .005). The majority of the sample (62%) lived in squatter settlements, and had given birth in 2008 or prior (Table 4.6). About 60% reported a live birth in the five years preceding the survey, with no difference in the mean age at their most recent birth between mothers living in squatter settlements (Mean = 4.4 years, SD = 2.9) and those from non-squatter areas (Mean = 5.1 years, SD = 2.9, p = .071).

4.2.6.2 *Frequency of ANC*

Thirty-six percent of women who have given birth in the 10 years preceding the survey gave birth at home. Prevalence rates for ANC utilisation by individual, community, and health-system factors are presented in Table 4.6. Underutilisation of ANC was low, with approximately 27% of women reporting attending the “fewer than four” ANC visits. Bonferroni corrections found that a higher proportion of “Middle” caste women attended “fewer than four” than “four or more” ANC visits, while a lower proportion of “High” caste women attended “fewer than four” than “four or more” ANC visits. Eighty-three percent of women who reported attending “fewer than four” ANC visits had achieved primary school level education or less compared to 17% of women who reported some secondary education ($p < .001$). Benferroni corrections also found that a lower proportion of women who were “employed” attended “fewer than four” than “four or more” ANC. In terms of asset-wealth, a greater proportion of the poorest women attended “fewer than four” than “four or more” ANC visits, while a lower proportion of the least poor women, attended “fewer or more, than “four or more” visits. Ninety-five percent of women who attended “fewer than four” ANC visits lived in squatter settlements ($p <.001$).

Table 4.6: Frequency of antenatal care visits by mothers who gave birth in the ten years prior to the survey (N =222)

CHARACTERISTICS	*TOTAL % (N)*	*FOUR OR MORE % (N)*	*FEWER THAN FOUR % (N)*	*P-VALUE*
TOTAL	100.0 (220)	72.7 (160)	27.3 (60)	
INDIVIDUAL PREDISPOSING FACTORS				
Maternal age at most recent birth				.568
<20	19.1 (42)	19.4 (31)	18.3 (11)	
20-23	24.5 (54)	26.3 (42)	20.0 (12)	
24+	56.4 (124)	54.4 (87)	61.7 (37)	
Caste				<.001
low	20.5 (45)	17.5 (28)	28.3 (17)	
middle	27.3 (60)	20.6 (33)	45.0 (27)	
high	52.3 (115)	61.9 (99)	26.7 (16)	
Education				<.001
primary or less	57.7 (127)	48.1 (77)	83.3 (50)	
secondary and above	42.3 (93)	51.9 (83)	16.7 (10)	
Number of offspring				.082
two or more	65.9 (145)	75.0 (100)	62.5 (45)	
one	34.1 (75)	25.0 (60)	37.5 (15)	
INDIVIDUAL ENABLING FACTORS				
Employment status				.029
employed	15.5 (34)	19.4 (31)	5.0 (3)	
semi-employed	26.4 (58)	26.4 (39)	31.7 (19)	
not earning	58.2 (128)	56.3 (90)	63.3 (38)	
Asset-wealth				.001
poorest	33.6 (74)	23.8 (38)	60.0 (36)	
middle	33.6 (74)	35.6 (57)	28.3 (17)	
least poor	32.7 (72)	40.6 (65)	11.7 (7)	
NEED FACTORS				
Age at first pregnancy				.135
<20	49.1 (108)	45.0 (72)	60.0 (36)	
20-23	33.2 (73)	36.3 (58)	25.0 (15)	
24+	17.7 (39)	18.8 (30)	15.0 (9)	
EXTERNAL FACTORS				
Residence location				<.001
squatter	62.3 (137)	50.0 (80)	95.0 (57)	
non-squatter	37.7 (83)	50.0 (80)	5.0 (3)	
Year of birth				.099
2008 and prior	70.0 (154)	66.9 (107)	78.3 (47)	
2009 and later (4ANC/Free delivery policy)	30.0 (66)	33.1 (53)	21.7 (13)	

Notes: two women from the squatter area could not remember how many times they had attended ANC during their last pregnancy; p-value from chi-squared tests with Bonferroni correction for multiple comparisons;

Unadjusted results shown in Table 4.7 indicate that caste and education were significant predisposing factors associated with underutilisation of ANC. Women belonging to “Low” and “Middle” caste groups were more likely to underutilise ANC compared to “High” caste women, while women with primary school education or less were more likely to underutilise ANC than woman who reported some secondary education (Table 4.7). Both enabling factors included in the model, employment status and asset-wealth, were also significantly associated with underutilisation of ANC. Results indicate that women in the poorest and middle asset-wealth tertiles, and those living in squatter settlements more likely to underutilise ANC, while women who were “employed” were less likely to underutilise ANC than women who were “not earning” (Table 4.7). At the community level, the location of residence within Ward 34, also had a significant effect on underutilisation of ANC, with women living in squatter settlements, more likely to attend “fewer than four” ANC visits.

Since this study used several explanatory variables that might be correlated to each other, such as “residence location” and “asset-wealth”, “employment status” and “education”, and “maternal age at most recent birth” and “number of children”, multicollinearity checks were carried out. These checks found that explanatory variables included in the multivariate models were not highly correlated to each other (see Appendix M), and thus final models were adjusted for potential confounders by including them in the model.

After controlling for explanatory factors, the multivariate regression analysis indicates that caste was the most important individual level factor associated with ANC was wealth, with the poorest women almost four times more likely to attend fewer than four ANC visits than their least poor counterparts (Table 4.7). In addition, women belonging to “Middle” caste groups, were more than three times more likely to attend “fewer than four” ANC visits than their “High” caste counterparts.

Table 4.7: Factors associated with the underutilisation of antenatal care ("fewer than four" visits) by mothers who gave birth to a live baby in the ten years prior to the survey (N = 222)

	UNADJUSTED			*ADJUSTED*		
CHARACTERISTICS	uOR	95% CI	*p-value*	aOR	95% CI	*p-value*
INDIVIDUAL PREDISPOSING FACTORS						
Maternal age at most recent birth						
<20	0.83	0.38 – 1.84	.652	0.61	0.15 – 2.46	.484
20-23	0.67	0.32 – 1.42	.297	0.85	0.29 – 2.46	.765
24+	reference			reference		
Caste						
low	**3.76**	**1.69 – 8.37**	**.001**	1.78	0.66 – 4.82	.254
middle	**5.06**	**2.43 – 10.54**	**<.001**	**3.40**	**1.35 – 8.57**	**.010**
high	reference			reference		
Education level						
primary or less	**5.39**	**2.56 – 11.37**	**<.001**	1.74	0.64 – 4.74	.275
secondary and above	reference			reference		
Number of offspring						
two or more	1.80	0.93 – 3.51	.084	1.21	0.39 – 3.77	.744
one	reference			reference		
INDIVIDUAL ENABLING FACTORS						
Employment status						
employed	**0.23**	**0.07– 0.80**	**.020**	0.87	0.36 – 2.09	.747
semi-employed	1.15	0.59 – 2.25	.674	0.98	0.20 – 4.90	.979
not earning	reference			reference		
Asset-wealth						
poorest	**8.80**	**3.57 – 21.71**	**<.001**	**3.78**	**1.29 – 11.09**	**.016**
middle	**2.77**	**1.07 – 7.16**	**.035**	0.98	0.31 – 3.07	.977
least poor	reference			reference		
NEED FACTORS						
Age at first pregnancy						
<20	1.67	0.72 – 3.88	.236	1.62	0.45 – 5.84	.461
20 – 23	0.86	0.34 – 2.20	.338	1.04	0.30 – 3.64	.955
24+	reference			reference		
EXTERNAL FACTORS						
Residence location						
squatter	**19.00**	**5.7 – 63.19**	**<.001**	**9.16**	**2.13 – 39.47**	**.003**
non-squatter	reference			reference		
Year of birth (Aama)						
2008 and earlier	1.79	0.89 – 3.60	.101	2.09	0.84 – 5.21	.479
2009 and later (4ANC/Free delivery policy)	reference			reference		

Notes: two women from the squatter area could not remember how many times they had attended ANC during their last pregnancy; Multivariate model adjusted for possible confounders by including them in the model

At the community level, the location of residence also remained significantly associated with underutilisation, with women living in squatter settlements more than nine times more likely to attend “fewer than four” ANC visits compared to their non-squatter counterparts (Table 4.7). In all cases, the magnitude of the effect (odds ratio) reduced in size after adjustment.

The finding that squatter residents are more likely to underutilise ANC supports our hypothesis that women living in squatter settlements have poorer ANC utilisation practices than non-squatter residents.

4.2.6.3 *Place of delivery*

Thirty-six percent of women who reported a live birth in the ten years before the survey gave birth at home. Chi-squared analysis of the prevalence of place of delivery according to individual, community, and system level factors are shown in Table 4.8. Of the individual factors, a greater proportion of women from “Low” than from “Middle’, and “High” caste groups reported home deliveries. Similarly, home deliveries were more common among women who had achieved primary level education or less, and those that had two or more children (Table 4.8). Chi-squared analyses with Bonferroni corrections also indicated that that a lower proportion of women who were employed, and women who were in the “least poor” tertile, reported home versus health facility deliveries. A higher proportion of women who reported their first pregnancy before the age 20, also gave birth at home versus a health facility, while a higher proportion of women who reported “fewer than four” ANC visits, reported home than health facility deliveries. At the community-level, a higher proportion of women from squatter settlements reported home deliveries, compared to their non-squatter counterparts, while a higher proportion of women whose most recent (last) birth was born in 2008 or earlier, reported home than health facility deliveries (Table 4.8).

Table 4.8: Place of delivery of women who gave birth to a live baby in the ten years prior to the survey (N = 222)

CHARACTERISTICS	*TOTAL % (N)*	*HEALTH FACILITY % (N)*	*HOME % (N)*	*P-VALUE*
TOTAL	100.0 (222)	64.4 (143)	35.6 (79)	
INDIVIDUAL PREDISPOSING FACTORS				
Maternal age at most recent birth				.365
<20	18.9 (42)	21.7 (31)	13.9 (11)	
20-23	24.3 (54)	23.8 (34)	25.3 (20)	
24+	56.8 (126)	54.5 (78)	60.8 (48)	
Caste				.017
low	20.7 (46)	18.9 (16)	24.1 (99)	
middle	27.5 (61)	22.4 (26)	36.7 (34)	
high	51.8 (115)	58.7 (17)	39.2 (28)	
Education				<.001
primary or less	58.1 (129)	44.1 (63)	83.5 (66)	
secondary and above	41.9 (93)	55.9 (80)	16.5 (13)	
Number of offspring				.001
two or more	66.2 (147)	58.0 (83)	81.0 (64)	
one	33.8 (75)	42.0 (60)	19.0 (15)	
INDIVIDUAL ENBLING FACTORS				
Employment status				.007
employed	15.3 (34)	21.0 (30)	5.1 (4)	
semi-employed	26.1 (58)	24.5 (35)	29.1 (23)	
not earning	58.6 (130)	54.5 (78)	65.8 (52)	
Asset-wealth				<.001
poorest	33.3 (74)	29.4 (42)	40.5 (32)	
middle	34.2 (76)	28.0 (40)	45.6 (36)	
least poor	22.4 (72)	42.7 (61)	13.9 (11)	
INDIVIDUAL NEED FACTORS				
Age at first pregnancy				.004
<20	49.5 (110)	41.3 (59)	64.5 (51)	
20-23	32.9 (73)	37.8 (54)	24.1 (19)	
24+	17.6 (39)	21.0 (30)	11.4 (9)	
frequency of ANC[a]				<.001
fewer than four	27.3 (60)	13.4 (19)	52.6 (41)	
four or more	72.7 (160)	86.6 (123)	47.4 (37)	
EXTERNAL FACTORS				
Residence location				<.001
squatter	62.9 (139)	47.6 (68)	89.9 (71)	
non-squatter	37.4 (83)	52.4 (75)	10.1 (8)	
Year of birth (Aama)				.017
2008 and earlier	69.8 (155)	64.3 (92)	79.7 (63)	
2009 and later (4ANC/Free delivery policy)	30.2 (67)	35.7 (51)	20.3 (16)	

Notes: [a]two women from the squatter area could not remember how many times they had attended ANC during their last pregnancy; p-value from chi-squared tests with Bonferroni correction for multiple comparisons

At the individual level, the most important factor associated with home delivery after adjusting for explanatory variables, was found to be women's frequency of ANC attendance. Women who attended "fewer than four" ANC visits remained more likely to delivery at home than women who attended the recommended "four or more" ANC visits (Table 4.9). In addition, women with primary level education or less, and women from the "middle" wealth tertile, remained more likely to deliver at home than women who had some secondary education, and women from the "least-poor" tertile, respectively (Table 4.9). In addition, women who were "employed" had a decreased likelihood of home delivery compared to women who reported "not earning" (Table 4.9). Caste, young age at first pregnancy and parity were no longer significantly associated with home delivery after adjustment (see Table 4.9). At the community level, living in urban squatter settlements remained associated with home deliveries, with results showing that women living in squatter settlements were almost five times more likely to give birth at home than their non-squatter counterparts. At the health system level, women who gave birth before the introduction of the free delivery policy (2008 and earlier), were almost four times more likely to give birth at home than women who gave birth after the free delivery policy (Table 4.9). With the exception of "year of birth", the magnitude of the effect (odds ratio) reduced in size after adjustment.

The finding that squatter residents are more likely to deliver at home, supports our hypothesis that women living in squatter settlements underutilise delivery care compared to non-squatter residents.

Table 4.9: Factors associated with underutilisation of delivery care ("home delivery") by respondents who gave birth to a live baby in the ten years prior to the survey (N = 222)

	UNADJUSTED			*ADJUSTED*		
CHARACTERISTICS	*uOR*	*95% CI*	*p-value*	*aOR*	*95% CI*	*p-value*
INDIVIDUAL PREDISPOSING FACTORS						
Maternal age at most recent birth						
<20	0.58	0.27 – 1.25	.164	0.31	0.07 – 1.31	.110
20-23	0.96	0.50 – 1.85	.893	1.62	0.56 – 4.67	.370
24+	reference			reference		
Caste						
low	1.91	0.93 – 3.91	.078	0.37	0.13 – 1.09	.072
middle	**2.46**	**1.28 – 4.70**	**.007**	0.51	0.19 – 1.38	.185
high	reference			reference		
Education						
primary or less	**6.45**	**3.27 – 12.73**	**<.001**	**2.69**	**1.07 – 6.75**	**.035**
secondary and above	reference			reference		
Number of offspring						
two or more	**3.08**	**1.61 – 5.93**	**.001**	1.36	0.45 – 4.11	.586
one	reference			reference		
INDIVIDUAL ENABLING FACTORS						
Employment status						
employed	**0.20**	**0.7 – 0.60**	**.004**	**.21**	**0.05 – 0.92**	**.038**
semi-employed	0.99	0.52 – 1.86	.964	.60	0.25 – 1.44	.252
not earning	reference			reference		
Asset-wealth						
poorest	**4.23**	**1.92 – 9.31**	**<.001**	1.30	0.45 – 3.79	.629
middle	**4.99**	**2.28 – 10.93**	**<.001**	**3.93**	**1.33 – 11.66**	**.013**
least poor	reference			reference		
NEED FACTORS						
Age at first pregnancy						
<20	**2.88**	**1.25 – 6.63**	**.013**	3.57	0.99 – 12.85	.051
20 – 23	1.17	0.47 – 2.91	.731	1.92	0.56 – 6.59	.299
24+	reference			reference		
Frequency of ANC[a]						
fewer than four	**7.17**	**3.72 – 13.83**	**<.001**	**4.86**	**2.03 – 11.64**	**<.001**
four or more	reference			reference		
EXTERNAL FACTORS						
Residence location						
squatter	**9.79**	**4.39 – 21.81**	**<.001**	**4.82**	**1.60 – 14.48**	**.005**
non-squatter	reference			reference		
Year of birth (Aama)						
2008 and earlier	**2.18**	**1.14 -4.17**	**.018**	**3.81**	**1.51 – 9.62**	**.005**
2009 and later (4ANC/Free delivery policy)	reference			reference		

Notes: two women from the squatter area could not remember how many times they had attended ANC during their last pregnancy; Multivariate model adjusted for possible confounders by including them in the model

4.2.6.4 *Postnatal care attendance*

Among women who gave birth in the ten years before the survey, 27% reported not being “checked” after giving birth. Chi-square tests shown in Table 4.10, suggest that a lower proportion of “high” caste women reported forgoing verses attending PNC. A greater proportion of women with primary level education or less, and those with two or more children did not attend PNC. Bonferroni corrections suggested that a greater proportion of women who were not-earning and those that were in the poorest wealth tertile did not attend PNC versus attending. No PNC use was also more commonly reported among women who had attended fewer than four ANC visits, those who had given birth at home, and those who lived in squatter settlements (Table 4.10).

Table 4.10: Postnatal care utilisation by women who gave birth to alive baby in the ten years preceding the survey (N = 222)

CHARACTERISTICS	*TOTAL % (N)*	*PNC % (N)*	*NO PNC % (N)*	*P-VALUE*
TOTAL	100.0 (222)	73.0 (162)	27.0 (60)	
INDIVIDUAL PREDISPOSING FACTORS				
Maternal age at most recent birth				.088
<20	18.9 (42)	21.6 (35)	11.7 (7)	
20-23	24.3 (54)	25.9 (42)	20.0 (12)	
24+	56.8 (126)	52.5 (85)	63.3 (41)	
Caste				.047
low	20.7 (46)	19.1 (31)	25.0 (15)	
middle	27.5 (61)	24.1 (39)	36.7 (22)	
high	52.3 (115)	56.8 (92)	38.3 (23)	
Education				<.001
primary or less	58.1 (129)	49.4 (80)	81.7 (49)	
secondary and above	41.9 (93)	50.6 (82)	18.3 (11)	
Number of offspring				.008
two or more	66.2 (147)	61.1 (99)	80.0 (48)	
one	33.8 (75)	38.9 (63)	20.0 (12)	
INDIVIDUAL ENABLING FACTORS				
Employment status				.022
employed	15.3 (34)	19.1 (31)	5.0 (3)	
semi-employed	26.1 (58)	26.5 (43)	25.0 (15)	
not earning	58.6 (130)	54.3 (88)	70.0 (42)	
Asset-wealth				.001
poorest	33.3 (74)	29.0 (47)	45.0 (27)	
middle	34.2 (76)	31.5 (51)	41.7 (25)	
least poor	32.4 (72)	39.5 (64)	13.3 (8)	
INDIVIDUAL NEED FACTORS				
Age at first pregnancy				.135
<20	49.5 (110)	46.3 (75)	58.3 (35)	
20-23	32.9 (73)	33.3 (54)	31.7 (19)	
24+	17.9 (39)	20.4 (33)	10.0 (6)	
Frequency of ANC[a]				<.001
fewer than four	27.3 (60)	15.0 (24)	60.0 (36)	
four or more	72.7 (160)	85.0 (136)	40.0 (24)	
Place of delivery				<.001
home	35.6 (79)	17.9 (29)	83.3 (50)	
health facility	64.4 (143)	82.1 (133)	16.7 (10)	
EXTERNAL FACTORS				
Residence location				<.001
squatter	62.6 (139)	51.9 (84)	91.7 (55)	
non-squatter	37.4 (83)	48.1 (78)	8.3 (5)	
Year of birth (Aama)				.488
2008 and earlier	69.8 (155)	68.5 (111)	73.3 (44)	
2009 and later (4ANC/Free delivery policy)	30.2 (67)	31.5 (51)	26.7 (16)	

Note: two women from the squatter area could not remember how many times they had attended ANC during their last pregnancy; p-value from chi-squared tests with Bonferroni correction for multiple comparisons

Unadjusted analysis suggest that of the individual level factors, underutilisation of PNC is more likely among women belonging to “Middle” caste groups, women with primary level education or less, multiparous women, those of lower socio-economic status, those that attended “fewer than four” ANC visits, and those that delivered their most recent pregnancy at home (Table 4.11). On the other hand, women who reported a full-time salaried job (employed) were less likely to forgo PNC. At the community level, women who lived in squatter settlements were more likely to underutilise PNC (Table 4.11). After adjusting for explanatory variables, at the individual level, the most important factor associated with underutilisation of PNC was the need factor home delivery, with women who delivered at home more than 13 times more likely to forgo PNC, compared to their counterparts who delivered in a facility. Women who attended fewer than four ANC visits, were also more likely to report underutilisation of PNC. In addition, women who reported their first pregnancy between the ages 20-23 were also more likely to forgo PNC than their older counterparts (Table 4.11). Other individual level factors such as caste, education, number of offspring, employment status, and asset-wealth, were no longer associated with PNC attendance after adjusting for explanatory variables Similarly, the community level factor “location of residence was no longer associated with underutilisation of PNC after adjustment (Table 4.11).

The finding that squatter residents were no more likely to attend PNC than their non-squatter counterparts does not support our hypothesis that women living in squatter settlements have poorer PNC utilisation practices than non-squatter residents.

Table 4.11: Factors associated with the underutilisation of postnatal care by women who gave birth to a live baby in the ten years preceding the survey (N = 222)

	UNADJUSTED			*ADJUSTED*		
CHARACTERISTIS	uOR	95% CI	*p-value*	aOR	95% CI	*p-value*
INDIVIDUAL PREDISPOSING FACTORS						
Maternal age at most recent birth						
<20	2.41	0.99 – 5.89	.053	0.24	0.05 – 1.21	.084
20-23	1.69	0.80 – 3.55	.167	0.41	0.13 – 1.34	.142
24+	reference			reference		
Caste						
low	1.94	0.90 – 4.17	.092	1.06	0.32 – 3.50	.925
middle	**2.26**	**1.13 – 4.52**	**.022**	0.89	0.29 – 2.74	.834
high	reference			reference		
Education level						
primary or less	**4.57**	**2.22 – 9.41**	**<.001**	1.04	0.33 – 3.30	.948
secondary and above	reference			reference		
Number of offspring						
two or more	**2.55**	**1.26 – 5.16**	**.010**	0.82	0.22 – 3.05	.767
one	reference			reference		
INDIVIDUAL ENABLING FACTORS						
Employment status						
employed	**0.20**	**0.06 – 0.70**	**.012**	0.47	0.08 – 2.82	.407
semi-employed	0.73	0.37 – 1.47	.375	0.53	0.19 – 1.43	.209
not earning	reference			reference		
Asset-wealth						
poorest	**4.60**	**1.92 – 11.02**	**.001**	1.11	0.32 – 3.83	.868
middle	**3.92**	**1.63 – 9.43**	**.002**	1.51	0.44 – 5.26	.514
least poor	reference			reference		
INDIVIDUAL NEED FACTORS						
Age at first pregnancy						
<20	2.57	0.99 – 6.69	.054	3.60	0.79 – 16.36	.098
20 – 23	1.94	0.70 – 5.34	.202	**5.23**	**1.77 – 23.22**	**.030**
24+	reference			reference		
Frequency of ANC						
fewer than four	**8.50**	**4.33 – 16.69**	**<.001**	**4.20**	**1.59 – 11.11**	**.004**
four or more	reference			reference		
Place of delivery						
home	**22.93**	**10.42 – 50.47**	**<.001**	**13.20**	**4.96 – 35.14**	**<.001**
health facility	reference			reference		
EXTERNAL FACTORS						
Residence location						
squatter	**10.21**	**3.89 – 26.84**	**<.001**	2.47	0.58 – 10.41	.219
non-squatter	reference			reference		
Year of birth (Aama)						
2008 and earlier	1.26	0.65 – 2.45	.488	0.88	0.29 – 2.65	.826
2009 and later (4ANC/Free delivery policy)	reference			reference		

Notes: two women from the squatter area could not remember how many times they had attended ANC during their last pregnancy; Multivariate model adjusted for possible confounders by including them in the model

4.2.7 Section summary

Analysis of the demographic and socio-economic characteristics of women living in Ward 34 indicated that squatter residents were less educated, had limited income opportunities, less assets, and lived in poorer quality households than their non-squatter counterparts. This study has also shown that over the last 20 years, there was an upward trend in the utilisation of antenatal, delivery, and postnatal care in Ward 34. Despite the observed increase in uptake among both non-squatter and squatter residents, the study showed that women living in squatter settlements have consistently underutilised maternal healthcare services. Among women who gave birth in the ten years before the survey, squatter residents were more likely to attend fewer than four ANC visits and deliver at home than their non-squatter counterparts. With regards to place of delivery, analysis also suggested that home deliveries were more likely among women who reported a childbirth in 2008 or earlier. Results from this study also suggest that a lack of contact with health facilities during pregnancy is associated with home deliveries and an increased likelihood to forgo PNC. After birth, home delivery was associated with underutilisation of PNC.

4.3 PHASE TWO: ACCESS TO MATERNAL HEALTHCARE

The purpose of phase two was to investigate access to maternal healthcare facilities among women living in squatter and non-squatter settlements of Ward 34. To comprehensively explore access, data from patient-charts were retrieved from the study-clinic and a R-HFA was carried out on the facilities attended by women living within Ward 34.

Section 4.3.1 begins by presenting utilisation of the study-clinic, namely utilisation of antenatal (Section 4.3.1.1) and postnatal (Section 4.3.1.2) care. Section 4.3.2 then presents the findings from the R-HFA for which attributes of accessibility, including physical availability (4.3.2.1), infrastructure and maintenance (Section 4.3.2.2), technical capacity (Section 4.3.2.3), and affordability (4.3.2.4) are presented for each facility included in the R-HFA.

4.3.1 Utilisation of the study-clinic

All women who attended the study-clinic between June/July (Asadh) 2010 and March/April (Chaitra) 2013 were included in this study. During this period, total of 176 women attended the study-clinic to receive maternal healthcare either during pregnancy and/or after birth. Data pertaining to all 176 women were used in this section.

4.3.1.1 *Utilisation of antenatal care*

A total of 108 individual women sought ANC from the study-clinic between June/July 2010 and March/April, 2013. At the time when data collection ceased, all but seven women had not given birth to their index pregnancy. Since the aim of this study was to report the utilisation of antenatal and postnatal care services and its components, these women have been included in the analysis presented below[1].

Three of the 108 clients experienced two different pregnancies during the study period. Therefore, the study-clinic provided ANC for 111 pregnancies (cases) for 108 clients over a 34 month period. Overall, the 111 pregnancy cases attended a total of 267 ANC visits for an mean of 2.4 visits (SD =1.7) per pregnancy case. Figure 4.2 shows the monthly attendance of ANC patients to the study-clinic over the study

[1] At the end of data collection (March/April 2013), all seven women who had not yet delivered were in their last trimester. Only two of these women attended the study-clinic in the last month of data collection, while the remainder had not attended the clinic in two or more months.

period. The study-clinic provided a mean of 7.8 ANC visits (SD = 5.0) per month. The highest number of ANC cases was seen in the year 2068 (2011/12), when the study-clinic averaged 10.9 visits per month (SD = 5.9), while the lowest number of ANC visits were provided in the year 2067 (2010/11) averaging 6.5 ANC visits per month (SD = 4.7). These figures suggest that utilisation of the study-clinic among women living in Ward 34 was low.

	NEPALESE	Baisakh	Jestha	Asadh	Shrawan	Bhadra	Ashoj	Kartik	Mangsir	Poush	Magh	Falgun	Chaitra	TOTAL
	GREGORIAN	Apr/May	May/Jun	Jun/Jul	Jul/Aug	Aug/Sep	Sep/Oct	Oct/Nov	Nov/Dec	Dec/Jan	Jan/Feb	Feb/Mar	Mar/Apr	VISITS
YEAR	2010/11			4	6	5	4	3	2	3	9	11	18	65
	2011/12	13	25	12	17	8	15	13	7	6	5	7	3	131
	2012/13	6	6	7	7	9	9	4	6	5	4	6	2	71
	2013/14	N/A	N/A											0
	TOTAL	19	31	23	30	22	28	20	15	14	18	24	23	267

Key
study period
outside study period

Figure 4.2: Monthly attendance of ANC patients at study-clinic over study period

Note: the Nepali calendar is called the Nepali patro and is approximately 56.7 years ahead of the Gregorian (western) calendar. The Nepali year starts in April, and the length of the Nepali months varies between 29 and 32 days.

Demographic characteristics of ANC clients

The majority of women presenting at the study-clinic belonged to “middle” caste groups. The mean age of ANC clients was 22.4 years (SD = 4.6), and approximately one in 10 women presenting at the study-clinic for ANC were aged less than 18 years (Table 4.12).

Just under 50% of clients had previously given birth. Almost 57% of clients reported giving birth for the first time before reaching the age of 20, with 26% of all clients reporting giving birth for the first time before reaching the age of 18. Among women who had previously given birth, about half had given birth to their preceding birth in a health facility, and the other half at home (Table 4.12). Of the 108 women that attended the study-clinic for ANC, 14 (13%) had experienced a previous pregnancy that had resulted in the death of the foetus in utero or the child within the first year of life, including one pregnancy for which the study-clinic had provided ANC.

Table 4.12: Demographic characteristics and pregnancy history of ANC clients (N =108)

PARAMETRES	*% (N)*	*MEAN (± SD)*	*MEDIAN (RANGE)*
DEMOGRAPHIC CHARACTERISTICS			
Caste			
low	25.0 (27)		
middle	43.5 (47)		
high	31.5 (34)		
Current age (years)	100.0 (108)	22.4 (± 4.6)	22.0 (14.0 – 35.0)
<20	31.5 (34)	17.7 (± 1.2)	18.0 (14.0 – 19.0)
20-23	34.2 (37)	21.6 (± 1.3)	22.0 (20.0 – 23.0)
24+	34.2 (37)	27.5 (± 3.2)	26.0 (24.0 – 35.0)
Index pregnancy <18 years	11.1 (12)	16.3 (± 0.9)	16.0 (14 – 17)
PREGNANCY HISTORY			
Gravida	100.0 (108)	1.9 (± 1.3)	2 (1 – 8)
1	46.3 (50)		
2	33.3 (36)		
3+	20.3 (22)		
Parity	100.0 (108)	0.8 (± 0.9)	1 (0 – 4)
0	49.1 (53)		
1	34.3 (37)		
2+	16.7 (18)		
Age at first birth (years)	100.0 (108)	19.6 (± 3.3)	19.0 (14.0 – 33.0)
<20	56.5 (61)	17.4 (± 1.4)	18.0 (14.0 – 19.0)
20-23	30.6 (33)	20.8 (± 0.9)	20.0 (20.0 – 23.0)
24+	13.0 (14)	26.0 (± 2.9)	25.0 (24.0 – 33.0)
First birth < 18 years	25.9 (28)	16.1 (± 0.9)	16.0 (14.0 – 17.0)
Previous place of delivery			
nulliparous	49.1 (53)		
home	24.1 (26)		
health facility	26.9 (29)		
Previous adverse pregnancy outcome	13.0 (14)		
ANC ATTENDANCE FOR INDEX PREGNANCY			
Gestational age at first ANC (weeks)	100.0 (111)	21.8 (± 9.4)	20.9 (4.9 – 40.0)
trimester 1	21.6 (24)	9.7 (± 2.8)	10.0 (4.9 – 13.9)
trimester 2	44.1 (49)	19.3 (± 3.5)	19.1 (14.0 – 26.0)
trimester 3	34.2 (38)	32.6 (± 4.0)	32.2 (27.1 – 40.0)
Frequency of ANC	100.0 (111)	2.4 (± 1.7)	2.0 (1 – 7)
1	42.3 (47)		
2-3	32.4 (36)		
≥ 4	25.2 (28)		

For their index pregnancy, on average, clients presented to the study-clinic for the first time in their second trimester at a mean gestational age of 21.8 weeks (SD = 9.4). One in five cases attended the study clinic for the first time in their first

trimester. In terms of "frequency of ANC" since women attended ANC wherever they desired, this study reports the number of visits women attended at the study-clinic only. Of the 111 pregnancy cases seen at the study-clinic, 47 attended just one visit: seven presented in their first trimester (Mean = 8.5 weeks, SD = 3.1), 21 in their second trimester (Mean = 20.0 weeks, SD = 3.4), and 19 in their third trimester (Mean = 33.4 weeks, SD = 4.2). Only 25% of pregnancies attended four or more ANC visits at the study-clinic (Table 4.12).

4.3.1.2 *Utilisation of postnatal care*

A total of 106 individual clients sought PNC from the study-clinic between June/July (Asadh) 2010 and March/April (Chaitra) 2013. The 106 clients attended a total of 131 PNC visits over the 34 month period, for an average of 1.2 visits (SD = 0.5) per client. Figure 4.3 shows the monthly attendance of PNC patients over the study period.

The study-clinic provided a mean of 3.9 PNC visits per month (SD = 2.4). The highest number of PNC visits was seen in the year 2069 (2012/2013), with a mean of 4.2 visits per month (SD = 1.9), while the lowest number of PNC visits were provided in 2068 (2011/2012), with an average of 3 visits per month (SD = 1.4).

	NEPALESE	Baisakh	Jestha	Asadh	Shrawan	Bhadra	Ashoj	Kartik	Mangsir	Poush	Magh	Falgun	Chaitra	TOTAL
	GREGORIAN	Apr/May	May/Jun	Jun/Jul	Jul/Aug	Aug/Sep	Sep/Oct	Oct/Nov	Nov/Dec	Dec/Jan	Jan/Feb	Feb/Mar	Mar/Apr	VISITS
YEAR	2010/11			0	1	2	7	3	4	5	4	6	13	45
YEAR	2011/12	6	2	4	4	4	2	1	3	3	3	1	3	36
YEAR	2012/13	3	5	6	4	6	7	5	2	5	1	5	1	50
YEAR	2013/14	N/A	N/A											0
	TOTAL	9	7	10	9	12	16	9	9	13	8	12	17	131

Key
study period
outside study period

Figure 4.3: Monthly attendance of PNC patients at study-clinic over study period

Note: the Nepali calendar is called the Nepali patro and is approximately 56.7 years ahead of the Gregorian (western) calendar. The Nepali year starts in April, and the length of the Nepali months varies between 29 and 32 days.

Demographic characteristics PNC clients

The majority of women presenting at the clinic belonged to "Middle" caste groups. The mean age of clients was 23.5 years (SD = 5.0), with approximately one in 10 women aged less than 18 years (Table 4.13). Of all 106 PNC cases, nine clients reported a total of six previous neonatal deaths, one infant death, three stillbirths, and

seven “spontaneous abortion” (Table 4.13). Over 55% of clients were primiparous. Forty-four percent of clients reported giving birth for the first time before the age of 20, with about 20% reporting their first birth before the age of 18 (Table 4.13).

Table 4.13: Demographic **c**haracteristics and pregnancy history of PNC clients (N = 106)

PARAMETRES	*% (N)*	*MEAN (± SD)*	*MEDIAN (RANGE)*
DEMOGRAPHIC CHARACTERISTICS			
Caste			
low	33.0 (35)		
middle	37.7 (40)		
high	29.2 (31)		
Current age (years)	100.0 (106)	23.5 (± 5.0)	23.0 (16.0 – 36.0)
<20	22.6 (24)	17.5 (± 1.1)	18.0 (16.0 – 19.0)
20-23	32.1 (34)	21.5 (± 1.2)	22.0 (20.0 – 23.0)
24+	45.3 (48)	27.9 (± 3.6)	27.0 (24.0 – 36.0)
Index (last) birth <18 years	9.4 (10)	16.4 (± 0.5)	16.0 (16 – 17)
PREGNANCY HISTORY			
Gravida	100.0 (106)	1.8 (± 1.1)	1.0 (1.0 – 8.0)
1	55.7 (59)		
2	25.5 (27)		
3+	18.9 (20)		
Parity	100.0 (106)	1.7 (± 0.9)	1.0 (1.0 – 4.0)
1	55.7 (59)		
2	28.3 (30)		
3+	16.0 (17)		
Age at first birth (years)	100.0 (106)	20.4 (± 3.5)	20.0 (13.0 – 33.0)
<20	44.3 (47)	17.5 (± 1.4)	18.0 (13.0 – 19.0)
20-23	35.8 (38)	20.9 (± 1.0)	21.0 (20.0 – 23.0)
24+	19.8 (21)	26.1 (± 2.9)	25.0 (24.0 – 33.0)
First birth < 18 years	19.8 (21)	16.2 (± 1.0)	16.0 (13.0 – 17.0)
Previous adverse pregnancy outcome	8.5 (9)		
PNC ATTENDANCE FOR INDEX BIRTH			
Timing of PNC (days)	100.0 (106)	32.9 (± 16.0)	39.0 (3.0 – 68.0)
45 days or under	73.6 (78)	27.0 (± 14.1)	28.0 (3 – 45.0)
over 45 days	26.4 (28)	49.6 (± 5.5)	47.0 (46 – 68)
Number of PNC visits	100.0 (106)	1.3 (± 0.5)	1 (1 – 3)
1	80.2 (85)		
2	19.8 (21)		
3	3.8 (4)		

The majority of PNC clients attended the study-clinic once, and on average this visit occurred 33 days after delivery. Approximately three in four women sought PNC

within the recommended 45 days after birth (Table 4.13). Differences in timing of PNC were observed according to parity, with clients who were primiparous (Mean = 30.5 days, SD = 16.0), attending PNC earlier than women who were multiparous (Mean = 36.0 days, SD = 15.6).

4.3.2 Access to maternal healthcare facilities in Ward 34

With the aim of identifying where women living in Ward 34 were accessing maternal healthcare services in Kathmandu, a R-HFA was carried out among the health facilities attended by clients of the study-clinic, and SSI participants of phase three of this study. A total of 13 health facilities were approached, and all agreed to participate in the R-HFA. These included eight hospitals, one maternity nursing home, one health post and three clinics. Eight of the 13 facilities were privately owned, three were government owned, while one hospital and the study-clinic were privately owned but received some government assistance (autonomous).

Generally in Nepal, a hospital constitutes a high-level facility with investigative laboratories, a range of qualified health providers (doctors, nurses, midwives, and laboratory technicians among others), surgical theatres, a blood bank, and essential drugs and supplies. In terms of delivery care, hospitals are expected to be able to provide BEOC and CEOC. Maternity homes on the other hand, may have most of what the hospitals have but are generally not expected to have a surgical theatre or blood bank. Health posts and clinics are outpatient facilities providing antenatal and postnatal care only. For the purposes of assessing access to maternal healthcare services among women living in squatter and non-squatter areas of Ward 34, a scoring system based on that used by Boller at al., (2003) was used. The findings are presented below according to their location within or outside of Ward 34.

4.3.2.1 *Physical availability of maternal healthcare services*

Four of the facilities were located within Ward 34, while the remaining nine were located outside of Ward 34 (Figure 4.5). Of the four facilities located within Ward 34, one was a government facility, which provided antenatal, delivery and, postnatal care. The remaining three facilities were community-level facilities (clinics and health posts), offering only outpatient services.

Overall, scores for physical availability were lowest (worst) for clinic-level facilities, which operated during normal working hours (10:00 – 16:30) (see Appendix N for

raw scores). The highest (best) scores were received by hospital-level facilities with extended and weekend opening hours, and 24-hour emergency services (Figure 4.4).

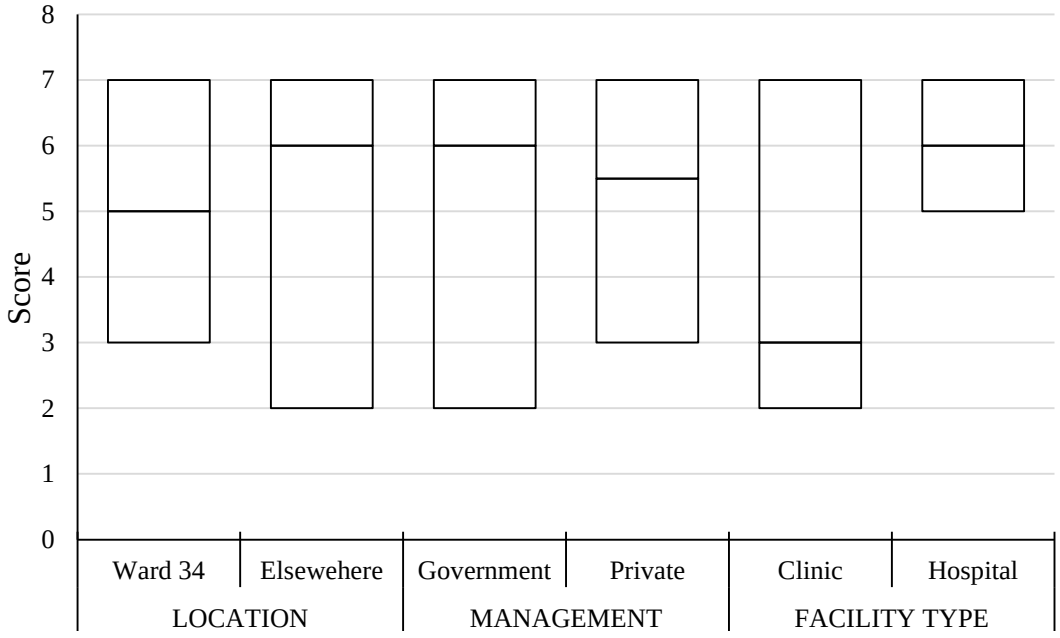

Figure 4.4: Comparison scores for physical availability
(Minimum, Median, and Maximum scores; Maximum possible score: 7 points)

Two facilities shared the lowest score for accessibility, one was located within Ward 34 (Facility 3), and the other located outside the Ward (Facility 12), (Appendix N). Facility 3 was a private clinic, in which one single service provider, a qualified gynaecologist/obstetrician, saw antenatal and postnatal clients between 11:00 and 14:00, Sunday to Friday. Facility 12, a government health-post, operated Sunday to Friday, 10:00 – 16:00. In contrast, Facility 4, a private clinic located within Ward 34, scored highly in terms of "physical availability" due to extended opening hours, operating seven days a week (16:00 and 19:00), (Appendix N).

No facilities were located within squatter settlements. All four facilities located within the administrative boundaries of Ward 34, could be reached by foot within 30 minutes. All nine facilities located outside of the Ward, with the exception of Facility 9, could be accessed by public transport within 60 minutes (Figure 4.5). Proximity, therefore, affected the overall score only slightly.

All 13 facilities provided antenatal and postnatal care, and eight facilities provided delivery services, with 24-hour emergency care, seven days a week. Two of the facilities offering “24/7” care, were within 20 minutes travel time from the squatter settlements, including one government facility (Facility 2) located within Ward 34, and one private teaching hospital (Facility 7) located just outside of the Wards’ administrative boundaries (Figure 4.5).

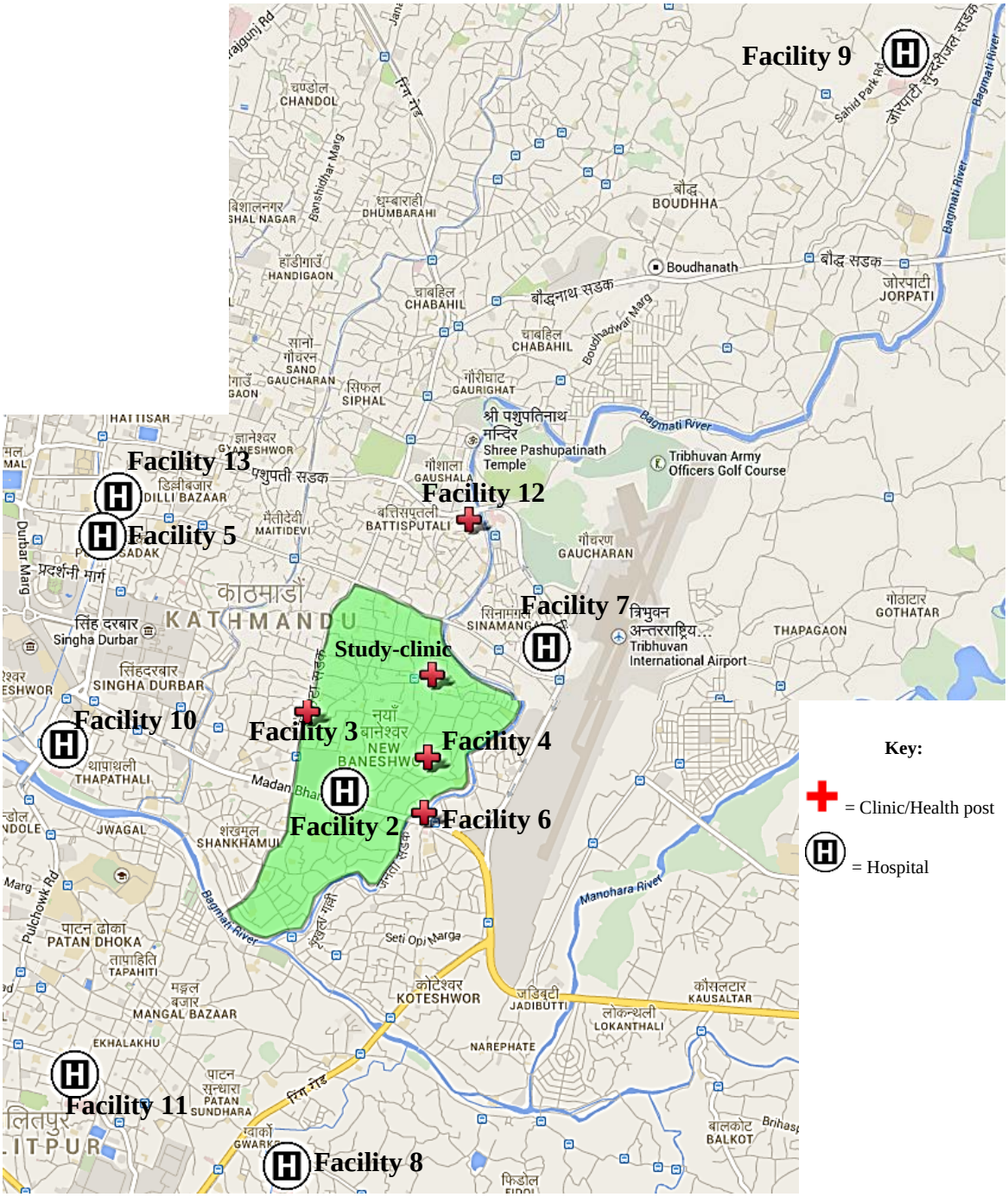

Figure 4.5: Map of health facilities visited during R-HFA
(*Source: Google Maps, 2014)*

4.3.2.2 *Physical structure and maintenance*

The physical structure and maintenance of facilities varied considerably; however overall, Ward 34 had access to well-maintained facilities. In addition, private facilities were better maintained than government facilities, while hospitals were better maintained than clinic-type facilities (Figure 4.6).

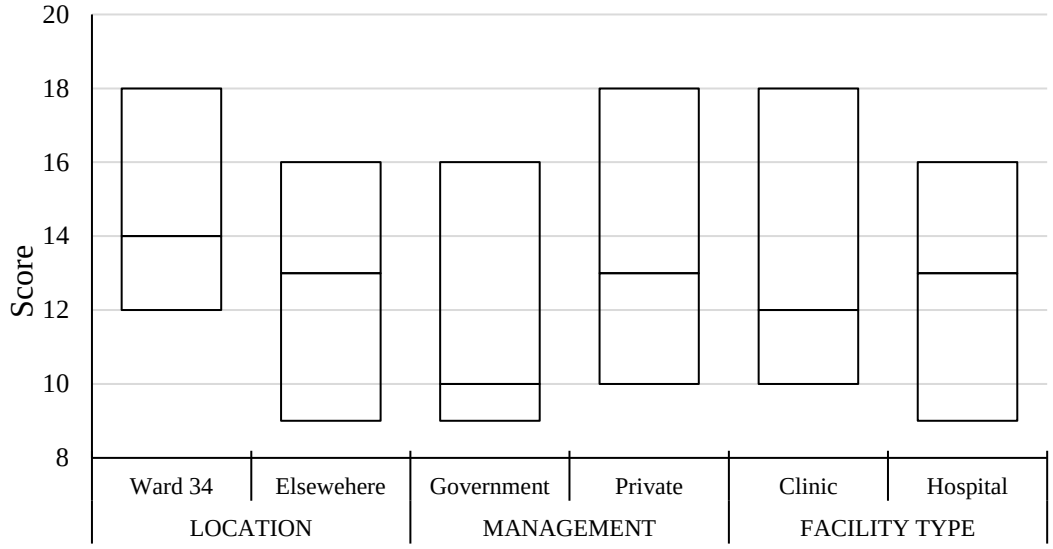

Figure 4.6: Comparison score for physical infrastructure and maintenance
(Minimum, Median, and Maximum scores; Maximum possible score: 18 points)

Facilities 9, 10, and 12 received lowest (worst) scores for physical structure and maintenance. For Facilities 10 and 12, the score primarily reflected the overall general maintenance of ageing building, which became quickly overcrowded, and subsequently affected the cleanliness of the facility, in particular the toilets. Both of these facilities were government-run. For Facility 9, the scores reflected the cleanliness and maintenance of the facility (see Figure 4.7 – 4.10 for examples of scoring of infrastructure and maintenance).

The highest (best) score for physical structure and maintenance was received by Facility 3, a privately owned clinic located within Ward 34, which saw patients primarily by appointment and referral, implying less clients, and subsequently cleaner toilet facilities, walls, and floors. The second highest score was shared by Facilities 2 and 7 (Figure 4.8). Facility 2 was a government hospital located within Ward 34, which provided services primarily for defence personnel, however the

general public could also attend. This facility was built in 2009 and thus boasted freshly painted walls, reasonably clean floors and toilets, with abundant space and seating for waiting patients and family members. Facility 7 was located just outside the boundary of Ward 34 (Figure 4.8). This facility was built in 2002 and had significant renovation and construction work in 2008 and 2010. The hospital had ample space to conduct both “general” and “private” maternal outpatient clinics during normal working hours. Although toilet facilities, walls, and floors were aged in the older parts of the building, they were clean and well maintained throughout.

Figure 4.7: Examples of moderately maintained walls
(Facility 11 (left) and Facility 12 (right))

Figure 4.8: Examples of adequate and clean waiting areas
(Facility 2 (left) and Facility 7 (right))

Figure 4.9: Waiting areas with minimal crowds, unpolished yet clean floors
(Facility 8 (left) and Facility 13 (right))

With regards to toilet facilities, while “flush” toilets were available in all facilities, non-functioning toilets were encountered often, either due to maintenance or due to due to inconsistent water supply experienced throughout in Kathmandu. It must be highlighted that Kathmandu as a whole suffers from inadequate water supply, which compromises basic hygiene practices at health facilities. For example as can be seen in Figure 4.10 and 4.16, a “bucket” (for collecting tap water) is always available within each cubicle. The water collected in these buckets served for flushing, in instances where no running water was available. However no toilet paper was provided at any facility, meaning that the water within the bucket may also be used for self-cleaning. While poor water supply impacted the general cleanliness of toilet facilities, unhygienic conditions such as that shown in Figure 4.11 were not considered normal. Although this particular facility had a functioning “flush” toilet system, the general maintenance of the walls and floors within the toilet was very considered poor.

Figure 4.10: Examples of toilets maintenance
(Moderately-clean toilet facility at Facility 2 (right); Very clean toilet at private Facility 7 (left))

Figure 4.11: Example of unclean toilet facilities at private Facility 9
(Non-functioning modern flush system (Right); Mop for floor on sink to wash hands (Right))

During our visits, it was also observed that many of the facilities suffered from overcrowded service and waiting areas. This can be seen in Figure 4.12, where due to inadequate and overcrowded waiting areas, accompanying family members and friends could be found sitting on the floor in corridors, staircases and windowsills, and even sleeping outside facilities. In service areas, the general delivery wards, beds were always occupied, with multiple female and male family members found sitting on the beds with the woman in labour, (Figure 4.13).

Figure 4.12: Overcrowded and insufficient waiting areas
(Facility 10)

Figure 4.13: Crowded and delivery care (left); and antenatal clinic (right)
(Facility 10 (left) and Facility 11 (right))

A further observation was the impact of the outpatient "ticketing appointment" system employed at most hospitals-level facilities, on the overcrowding and general uncleanliness. This ticketing system meant that no appointments were pre-scheduled, and all clients must first purchase a "ticket" in order to receive care (Figure 4.14 and 4.15). These consultations were on a "first-in" basis, whereby the earlier a patient arrives at the facility, the greater the chance they will be one of the first to purchase a ticket and therefore see the doctors. Late arrival generally meant longer queues to purchase a ticket and subsequently longer waiting time to see the doctor. While this system was employed at all private and public facilities visited during this study, private clinics (including those run in hospitals) primarily see clients by appointment and referrals, therefore, patients are fewer or there is no queue to see a doctor. With this in mind, waiting areas and general maintenance and cleanliness were not related to facilities being "private" or "public." Instead, it was found that the physical

structure and maintenance scores, including the observed crowdedness, was related to the age of the buildings, whereby hospitals had been built for much smaller populations and patient load.

Figure 4.14: Queuing for a "ticket" at private facilities.
(Facility 7 built in 2002 and renovated in 2008 and 2010 (left). Facility 11, built in 1982, with renovations in 1996 and 2004 (right))

Figure 4.15: Lining up for a "ticket" at public facilities.
(Facility 2 was built in 2009 (left); and Facility 10 was built in 1959, with latest building added 1975 (right))

4.3.2.3 *Technical capacity*

All 13 facilities provided antenatal and postnatal care. In terms of prophylactic treatment provided during antenatal and postnatal visits, all facilities reported the routine administration or prescription of all drugs as specified in the national ANC guidelines. In terms of equipment and diagnostic approach, hospitals fared better than clinics. The majority of facilities from which women living in Ward 34 sought care, were sophisticated hospitals with well-equipped pathology and imaging

departments, able to provide comprehensive laboratory and imaging diagnostic services.

Overall, scores varied between 18 and 24 points, with hospital-level facilities scoring higher than clinic-level facilities (Figure 4.16). Eight of the nine hospital-level facilities were had the capacity to provide basic and comprehensive delivery services, which accounts for their higher scores compared to clinic-level facilities (Appendix N). Seven of the facilities were hospitals and one was a maternity nursing home with CEOC capabilities. Two of these facilities were within 20 minutes travel time to the squatter area, including one government facility (Facility 2) was located within Ward 34, and one private teaching hospital (Facility 7) located just outside the Wards' administrative boundaries (Figure 4.5).

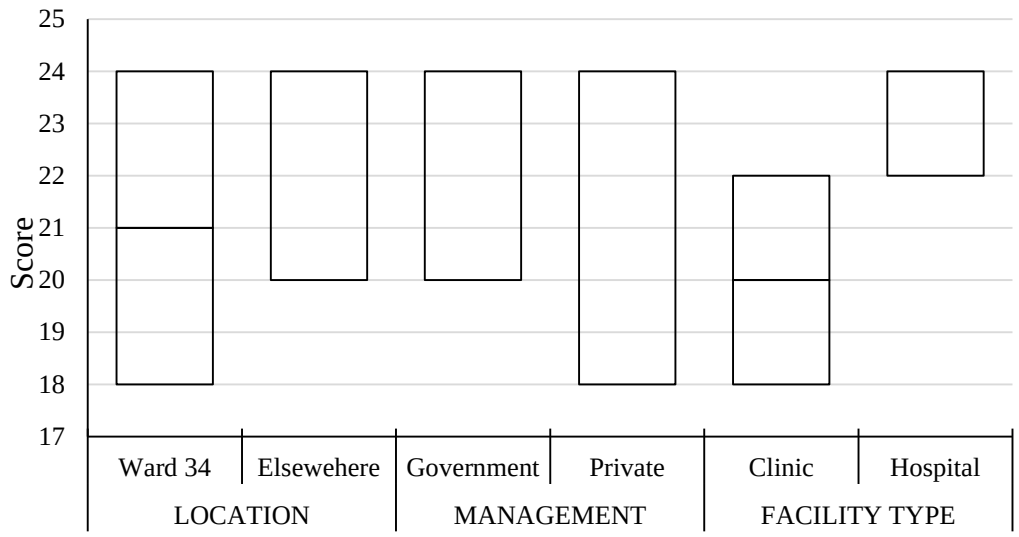

Figure 4.16: Comparison scores for Technical Capacity
(Minimum, Median, and Maximum scores; Maximum possible score: 24 points)

Overall, the study-clinic scored the lowest (worst) at 18. Other clinic-type facilities (Facilities 3, 4 and 12) also received low scores, primarily because they had less equipment, generally referring clients to hospital-level facilities or private laboratories for diagnostics such as ultrasounds and comprehensive laboratory testing (Figure 4.17). Nevertheless, in comparison to the other clinic-type facilities which tested clients routinely for urine albumin with rapid test kits, the study-clinic did not routinely carry out this test. In addition, in Facilities 3 and 4, the doctors providing

ANC offered continuity in care through to the time of delivery (at a specified hospital), and postnatally, including immunisation for newborns. This “continuity of care” through pregnancy, birth, and the postnatal period was not offered by the study-clinic or Facility 12.

Figure 4.17: Facility-based laboratories
(A hospital (Left) versus a clinic –level laboratory (Right))

4.3.2.4 *Affordability*

Facilities 7, 8, 9, and 10 reported the implementation of both the 4ANC and Free delivery (Aama) programmes, which entitled women to “free” ANC check-ups, prophylactic treatment, and all types of deliveries including caesarean sections. In addition, Facility 12, a government health-post also implemented the 4ANC, while the study-clinic also provided free ANC check-ups and free prophylactic treatment albeit not under the 4ANC programme. These facilities were all considered “affordable” due to their provision of free services to all maternity patients. Facility 2, a government facility, had not implemented the *Aama* programmes, however it charged clients the amount deemed by the government as “sufficient” to cover costs of antenatal and delivery care. Facility 11 on the other hand, implemented fee-exemptions for the poor, whereby outpatient care was provided for free and delivery care was provided at a reduced cost. These two facilities (Facility 2 and Facility 11) were considered semi-affordable due to their reduced costs. All other facilities were considered not affordable due to their private, for profit management authority (see Appendix N).

An additional finding was that some private teaching hospitals provided different services as part of the *Aama* programme. For example, the registration fee varied

widely between teaching hospitals, and was higher than government facilities. In addition, while all teaching hospitals provided essential prophylaxis and investigations such as routine blood and urine examinations for free as part of *4ANC* programme, at the time of delivery, intensive care for sick newborns and longer duration of stay for mothers incurred extra costs.

Among all 13 facilities included in this study, clinic-level facilities had the lowest overall accessibility scores, primarily as a result of low scores in physical availability and technical capacity (Figure 4.18). Facilities within Ward 34 had a lower median score compared to facilities elsewhere, however scores also varied more widely for facilities located outside of Ward 34.

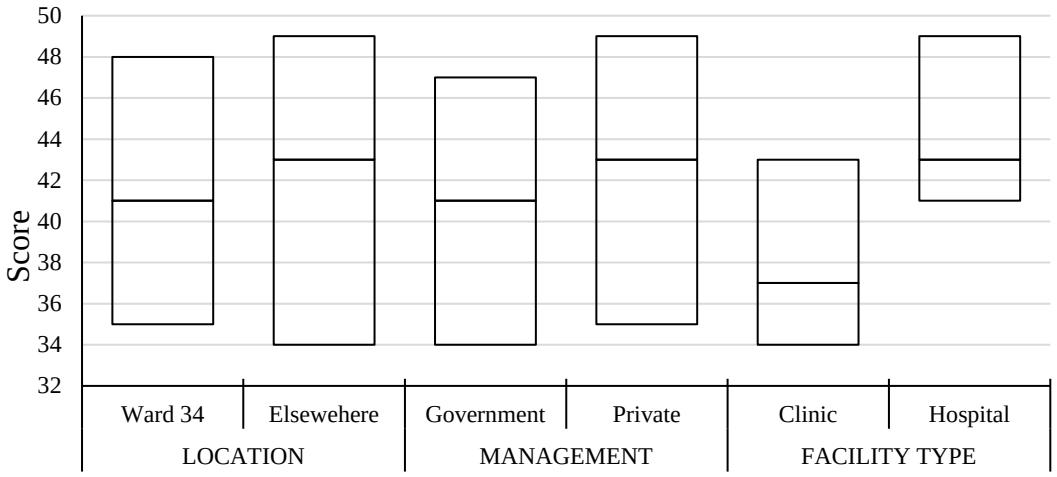

Figure 4.18: Comparison scores for overall access
(Minimum, Median, and Maximum scores; Maximum possible score: 51 points)

4.3.3 Section summary

Overall, this study has found that the utilisation of the study-clinic was reasonably low among residents of Ward 34, with the average client attending two ANC visits and not returning for care after delivery. This study also found that comprehensive maternal healthcare is widely available and accessible from government and private facilities located within and outside their immediate communities. This suggests that women are willing to travel reasonable distances to receive the type of care they perceive to be necessary.

The majority of facilities attended by women living in Ward 34 were sophisticated hospital-level facilities with high technical capacity to provide comprehensive antenatal, delivery, and postnatal care. Differences in physical availability were mostly observed between small clinic-type facilities that operated within normal working hours, and large hospitals, with 24 hour emergency departments. Facilities differed widely in their physical structure and maintenance, primarily due to the age of building. Often facilities built for much smaller populations and patients loads were overcrowded and in need of maintenance and repair. In terms of affordability, five of the 13 facilities were considered not affordable due to their lack of pro-poor schemes. Two of the four facilities located within Ward 34, and six of the nine facilities located outside of Ward 34, had implemented pro-poor schemes, such as removed or reduced user fees, or providing incentives.

Of all the facilities included in this study, the highest overall score for accessibility was recorded by a private teaching hospital located within walking distance from the squatter area, while the second highest score was recorded by a government facility located within Ward 34, implying that good technical and affordable care, from clean, well maintained facilities was available for residents of Ward 34.

4.4 PHASE THREE: FACILITATORS AND BARRIERS TO MATERNAL HEALTHCARE

This section reports the results of SSIs and FGDs carried out among women who reported a live birth since in the previous two years. In addition, SSIs with service providers from the study-clinic were carried out to ask them about their views on their clients' utilisation practices. The purpose of this phase was to gain a deeper understanding of the contextual factors that facilitate or hinder the utilisation of maternal healthcare among women living in squatter and non-squatter areas of Ward 34.

First, a summary of the socio-demographic characteristics of the participants is presented. This is then followed by the presentation of major themes drawn from the interviews according to each obstetric period. Since women participating in SSIs and the FGDs were asked to consider the same issues, and responses were found to be similar. The findings derived from both SSIs and FGDs are therefore presented in an integrated manner. In addition, women's responses were triangulated from SSIs and FGDs with those from service providers. Representative excerpts from interviews and discussions have been used to support our themes, these are presented in *italics*.

4.4.1 Sample size

Eighty-three women participated in the SSI and 29 in four FGDs. To ensure heterogeneity in the sample, participants were purposefully recruited to gather information from squatter and non-squatter residents of Ward 34 who had received antenatal or postnatal care at the study-clinic *(users)*, and those who had not received antenatal or postnatal care at the study-clinic *(non-users)*. Altogether the sample consisted of 55 *users* (41 non-squatter and 14 non-squatter) and 57 *non-users* (27 squatter and 30 non-squatter), (Table 4.14). Among SSI informants, 40 were *users* (26 squatter and 14 non-squatter) and 43 were *non-users* (18 squatter and 25 non-squatter). Of the four FGDs, two groups were held with *users* (both made up of squatter residents) and two groups with *non-users* (one group of squatter and one non-squatter residents). Each group was made up of between five and eight women. The overall sample was skewed towards squatter residents. Data on the number of women approached for this phase of the study were not recorded.

4.4.2 **Demographics**

The socio-demographic characteristics of the 112 participants are summarised in Table 4.14. The median age of participants was 23.5 years (Range: 16 – 36), with almost half of all respondents of women aged 24 years or above. The majority of the sample was made up of women from middle caste groups, 67 of the 112 women reported some secondary education, for a median of 8th grade education (Range: no education to Masters degree). As per the recruitment criteria, all women had given birth to a live baby in the two years prior to the interviews. Sixty-four of the 112 respondents were primiparous, however the number of live birth reported by women ranged from 1 to 4 (Table 4.14). Information on employment and family living arrangements were collected for participants of SSIs only. As is typical in Nepal, the majority of informants were not engaged in any income generating activities, and as is becoming more common in Kathmandu, the majority lived in nuclear family structures.

It is noteworthy to highlight that while in this study we predominantly discuss differences squatter and non-squatter areas, during field work while visiting women at home, clinic *users* living in non-squatter areas were generally considered to be "poor". Often, they reported employment as domestic workers, and lived in one-room households. The implications of the sampling method employed for the results of this study is discussed in details in Chapter six.

Table 4.14: Summary of socio-demographic characteristics of the 83 SSIs and 29 FGDs informants

		LOCATON OF RESIDENCE		*UTILISATION OF STUDY-CLINIC*	
PARAMETRES	*TOTAL % (N)*	*NON-SQUATTER %(N)*	*SQUATTER %(N)*	*NON-USER %(N)*	*USER %(N)*
CURRENT AGE					
<20	18.8 (21)	9.1 (4)	25.0 (17)	15.8 (9)	21.8 (12)
20-23	33.9 (38)	29.7 (13)	36.8 (25)	29.8 (17)	38.2 (21)
24+	47.3 (53)	61.4 (27)	38.2 (26)	54.4 (31)	40.0 (22)
CASTE					
low	20.5 (23)	6.8 (3)	29.4 (20)	14.0 (8)	27.3 (15)
middle	48.2 (54)	52.3 (23)	45.6 (31)	49.1 (28)	47.3 (26)
high	31.3 (35)	40.9 (18)	25.0 (17)	36.8 (21)	25.5 (14)
EDUCATION					
primary school or less	40.2 (45)	31.8 (14)	45.6 (31)	31.6 (18)	49.1 (27)
secondary and above	59.8 (67)	68.2 (30)	54.4 (37)	68.4 (39)	50.9 (28)
EMPLOYMENT STATUS[#]					
not earning	73.5 (61)	64.1 (25)	81.8 (36)	67.4 (29)	80.0 (32)
semi-employed	20.5 (17)	25.6 (10)	15.9 (7)	27.9 (12)	12.5 (5)
employed	6.0 (5)	10.3 (4)	2.3 (1)	4.3 (2)	7.5 (3)
PARITY					
1	56.8 (64)	59.1 (26)	55.2 (37)	62.8 (27)	55.0 (22)
2	33.3 (37)	40.9 (18)	28.4 (19)	30.2 (13)	32.5 (13)
3+	9.9 (11)	-	16.4 (11)	7.0 (3)	12.5 (5)
FAMILY TYPE[#]					
nuclear	54.2 (45)	53.2 (21)	54.5 (24)	51.2 (22)	57.5 (23)
joint	45.8 (38)	46.2 (18)	45.5 (20)	48.8 (21)	42.5 (17)
TOTAL	100.0 (112)	39.3 (44)	60.7 (68)	50.7 (57)	49.1 (55)

Collected only for SSIs and thus the sample size is only 83

4.4.3 Facilitators and barriers to antenatal care

Facilitators and barriers to utilisation of ANC among women living in Ward 34 are summarised in Table 4.15. Using Andersen's model as our conceptual framework, facilitators and barriers were categorised into three themes, namely (i) individual predisposing factors; (ii) individual enabling factors; and (iii) external factors. Each of the themes is discussed in detail in the following section and quotes are provided to illustrate the themes. Sixteen women from the 83 SSIs, and six from the 29 FGD attended fewer than four ANC visits.

Table 4.15: Main facilitating factors and barriers to utilising ANC from semi-structured interviews and focus group discussions with Ward 34 residents

FACILITATORS (90)	BARRIERS (22)	BASIC THEMES	ORGANISING THEMES
It is good to know/ necessary Prevention of complication Concern for health of the mother and child	More traditional thinking (6) Lack of perceived benefit, carelessness or laziness *(Alcchi)* Embarrassment or shame *(Laaja)* Fear of medicines and testing *(Dara)*	Beliefs & attitudes	Individual predisposing factors
	First-time mothers (9)	Parity	
High education (43)	Low or no maternal education (12)	Education	
Knowledge	Lack of awareness about when to start ANC Lack awareness of frequency Lack of awareness about where to go for ANC (2)	Knowledge	Individual enabling factors
Involvement in decision making (47) Husband encouragement (13) Neighbourhood sister advice (15) Recommendation from family members ("seniors") (16) Availability of companion (59)	Lack of advice about when to start ANC and where to go No-one to accompany (5) No-one to look after children & housework Traditional family dynamics ("take permission")	Support system	
	Lack of money to pay for USG and blood test (3)	Finances	
	Squatter settlements (13)	Community	External factors

4.4.3.1 ***Individual predisposing factors***

Facilitators

Women who attended the recommended number of visits seemed to take attending ANC as a given, often verbalising the necessity or importance of attending ANC check-ups during pregnancy "*to prevent various diseases for child"*, and *"to prevent difficulties later"* in the pregnancy or at the time of birth. Women also expressed the benefits of having experienced a previous pregnancy, in terms of knowing what to do when a pregnancy is suspected and confidence to travel alone to and access the necessary care. This was repeatedly expressed as *"I already knew from the first baby."*

In two of the FGDs held with women living in squatter settlements, cited the influence of education on ANC attendance was highlighted. In their discussions, informants made reference to education as a mediator of "knowledge" and "understanding" of the need and importance of ANC:

> *"Women who are educated are capable, knowledgeable, that type of women visit health service. The women who don't have any knowledge they don't visit"* (FGD-squatter)

Of the SSIs informants, 47 of the 83 women had some secondary education, with 43 of these attending "four or more" ANC. During SSIs however, only one woman from the non-squatter area verbalised "education" as the reason for attending the recommended number of ANC visits:

> *"I started at 4 months [gestational age], altogether I attend 7 times… we are educated, so we know"* (27 years, G1P1, 12th grade, non-squatter)

Barriers

Of the 83 women who participated in the SSIs, 6 of the 16 who attended "fewer than four" ANC visits, exhibited more traditional health beliefs and attitudes towards ANC and its components. In all three FGDs held with women living in squatter settlements, women cited the influence of "traditional ways of thinking" on ANC utilisation, however it was not mentioned in the FGD held with non-squatter residents. As per the excerpt above, having a more "traditional way of thinking" was

often associated with low education, with informants repeatedly using the phrase *"they do not understand"* to describe women's lack of perceived need and importance of regular ANC visits during pregnancy. This is exemplified in the quotation used below:

> *"In some house there is more traditional way of thinking. They think it is not necessary to go [to ANC]… they do not understand that in modern time, we have to think of safety of mother and baby and check…people say 'health is wealth', and mother's health is related to baby's health"* (FGD-squatter)

In SSIs, these traditional beliefs and attitudes were often describe as "careless" (*khala nagarnu)* or "lazy" (*alchi*) behaviour, fear (*dara*), or shame (*laaja*). These feelings and behaviours were cited as the underlying reasons for women's late entry into ANC, which subsequently led to a reduced number of visits, as well as women's purposeful resistance of the recommended prophylactic treatment. For example, in the excerpt below, a mother of three from the squatter settlement, displayed a somewhat indifferent attitude towards care during pregnancy when she reported that she was "lazy to go" to ANC, attending just one ANC visits two days before delivery. During the interview, she spoke about how in her village, where she had lived during her two previous pregnancies, female community health volunteers visited her for ANC, while in Kathmandu she had to "*go"* and seek care:

> *"I thought it may be good to check baby in stomach, prevent danger later, so I went… just lazy to go that's why [I did not attend earlier]… two days later I had labour pain and went to hospital."* (31 year old, G3P3, no education, squatter)

A further example of this "careless" behaviour can be seen in the verbalisation of a 28 year old illiterate mother from the non-squatter area. In this case although the woman reported intellectually knowing about the importance of ANC and visited a private clinic for treatment, she initiated ANC at 5 months' gestation, attending for care three times. Over her three visits however, she did not adhere to the recommended prophylactic ANC treatment:

> *"I know it is necessary to go for check-ups for our health and also for the baby, but I did not like to go [to ANC check-ups]…. They called me to come one month later at the time of vaccine [TT injection]; but I did not go… I just do not like… I also did not take iron tablets even if I buy… I do not like…I*

started to eat the tablets and then people tell me it will make the foetus grow big and be difficult at delivery time, so I left and did not eat." (28 year old, G2P2, no education, non-squatter)

As per the case above, the phrase "do not like" *(mana naparaune)* was commonly expressed during our interviews among women who displayed such "careless" behaviour. Further probing however revealed that women often gave two main reasons for not attending ANC, the first was due to shame *(laaja)*, and second due to fear (*dara*). For example, when a 17 year old first-time mother from the squatter area was questioned further about why she did "*not like to go*", she responded she was embarrassed to seek care. This feeling of shame was also raised in the FGDs, where women explained that the use of the use of the word *laaja* implies "shame" and "embarrassment" at revealing their pregnant state to community members, primarily because it inadvertently reveals that they are sexually active. In addition in hospital settings, being touched and examined by medical professionals, especially males, also arouses these feelings of embarrassment. Women in the FGDs were able to clarify this further:

"Some say that they are shameful to go… this means that they will have to go outside and be seen by neighbours and friends and maybe suffer a little harassment [friendly teasing and questioning] from them. At the hospital they also have to see the doctors and some may be male. This is why it may be shameful for them… but they do not understand the necessity and importance that there may be the danger" (FGD–squatter)

Other women reported fear *(dara)* of medicines or diagnostic testing recommended by doctors. For example a 20 year old woman from the non-squatter settlement expressed *dara* as the reason for her discontinued attendance to ANC, after initiating care at 6 weeks' gestation:

"At fifth month [of pregnancy] they advised me to receive TT [injection] and come more times, but I am afraid and did not take it… I also did not take any tablets they give… I was scared what all things can do to the baby and did not take it." (20 year old, G1P1, 6th grade, non-squatter)

As mentioned earlier, in women's verbalisations, the preservation of traditional beliefs and attitudes was often co-expressed with low educational attainment. This is

in line with our quantitative (unadjusted) results obtained from Phase one (Table 4.7, pg. 141). In this study, among the total 83 women who participated in the SSIs, 12 of the 16 women who attended "fewer than four" ANC visits, had primary level education or less. Two FGDs also mentioned a lack of education as a barrier to ANC. In the FGDs women's verbalisation were able to link the well-established effect of education on shaping health beliefs and attitudes:

> *"Women who do not go to ANC are lazy, they are careless, they think like their mothers who have delivered without checking. They may not understand things properly; they are not educated and have no information, so they do not know; also there is no good social worker or volunteer who can tell and inform them. Educated women go because they know it is necessary and it is for good them."* (FGD-squatter)

Unlike our quantitative results from Phase one (Table 4.7, pg. 141), in the interviews and FGDs carried, first-time mothers were identified as having a special predisposition to underutilising ANC. In two FGDs, one held with women living in squatter and one in non-squatter settlements, informants discussed the lack of "knowledge" about appropriate ANC practices among women who have never experienced pregnancy before:

> *"At first time pregnancy we do not know anything. Some may not know exactly how many times to go, they should know it is four times, staff usually suggest to visit at 3 months to 9 month, every month, but some may not know this at first pregnancy."* (FGD–squatter)

Among women from non-squatter settlements, informants also made reference to the difficulties in communicating with care providers, especially among women who are inexperienced in matters related to pregnancy and child birth:

> *"W1: In first pregnancy we don't know anything, so we need good counselling from our doctor and we need cleanliness too. W2: If people have first baby they do not know anything, there is difficulty to speak."* (FGD-non-squatter non-user)

4.4.3.2 ***Individual enabling factors***

Facilitators

The importance of knowledge as a facilitating factor to attending the recommended number of ANC visits was a theme that emerged from all four FGDs. All groups discussed attending ANC *"every month after three months"* or *"when they call us for pregnancy checkup,"* as is the norm in Nepal. Among non-squatter residents, this was verbalised by a woman who described the appropriate action that should be taken from the moment a woman suspects a pregnancy:

> *"…First there are symptoms of pregnancy like nausea that's when we know ourselves. Then we need to confirm if we are pregnant. Nowadays it is easy by urine test and we do not need to go to hospital just to determine pregnancy. After that, we have heard that we need to check. It is not like our mothers and grandmothers who delivered at home without checking. Now we know we have to check-up well and follow doctor recommendations, do video x-ray [ultrasound]. But some sisters do not follow these. Later they regret when there is problem and baby is not healthy."* (FGD-non-squatter)

Among those who participated in the SSIs, 67 of 83 women reported initiating ANC at a median gestational age of three months (Range: 1 – 7), with a median number of six ANC visits (Range: 4 – 15), suggesting that most women demonstrated adequate knowledge about when to initiate, and how many times to go to ANC. During interviews, attendance was often expressed as *"started to go from the 3rd month to 9th month, every month."*

Forty-seven of the 67 women who reported attending "four or more" ANC visits during the SSIs, also reported being involved in decision making with regards to their own ANC attendance. In the interviews however, informants reported that although they had discussed with family members about *where* to go for care, they often expressed "knowing" to attend, thus taking ANC attendance as a given, as opposed to a decision that had to be made. This is exemplified by three verbalisations below. The first verbalisation in particular, spoken by a woman living in the non-squatter settlement, reported that there is widespread knowledge and practice about attending for care during pregnancy:

> *"In my family I had already one daughter, mother-in-law also advice, but everybody is aware to go [for ANC] now, so I also know. Even in village. Peers also advice."* (26 years, G2P2, 10th grade, non-squatter)

The two following quotes also convey a certain degree of autonomy in attending ANC:

> *"There was not such decision, I just go to check"* (24 years, G1P1, Bachelors degree, non-squatter)

> *"I decided myself that I go to the clinic and check, there was not much discussion in the family"* (22 years, G3P3, no education, squatter)

A further enabling factor that emerged was women's supportive environment. Forty of the 67 women who attended "four or more" ANC visits, reported that their family members had advised and encouraged them to attend ANC. Advice and encouragement often came from "*seniors*" (16/67). These included mothers-in-law and sisters-in-law who were often adviced about where to seek care and when to start, based on their own experiences of care. In other cases however, women's husbands *(shriman)* were credited with encouraging and advising them to attend for ANC (13/67). In these cases, women reporting *knowing* from husbands about where to go and when because their husbands had taken it upon themselves to find out, relying primarily on informal "word-of-mouth" communications with friends. This was exemplified by a first-time mother from the non-squatter area, who lived with only male members of her husband's family:

> *"My husband recommended [private clinic]….my husband knew [about the clinic] because others also go there... he knows from his friends"* (25 year old, G1P1, 10th grade, non-squatter)

This active husband involvement in seeking the best maternal services for women was also mentioned in the FGDs:

> *"I know all about [private clinic] from my husband… I have to go for check-up, that was my decision, but husband advised me where… He knows all… somehow by looking and asking friends who have visited for check-up he found that place."* (FGD-squatter)

In the absence of extended family members, women sought advice from "neighbourhood sisters" (15/67) who had previous experiences with seeking care in

Kathmandu. In other cases, women reported having their own knowledge about where and when to go for care (11/67).

Having a companion to help them navigate the transport to their chosen facility. A companion to help interact with care providers and payment processes was also an important facilitating factor highlighted by the data. Much like encouragement and advice, companionship to attend ANC was reported from husbands (30/67), senior family members (22/67), and neighbourhood sisters (7/67). The excerpts presented below represent the two most commonly given reasons for the type of help women needed a companion during ANC. In the first quote, a mother of two who lived in a nuclear family structure with her husband and children, reported needing her husband's help to attend ANC:

> *"… during check-up husband helped me… I knew it [hospital] from previous pregnancy, but it is difficult to go with child, so husband come with me to hospital. Here in the [study] clinic, it is near, so I went alone."* (30 year old, G2P2, 10th grade education, squatter)

In the case below, the first-time mother, who also lived in a nuclear family, relied on her sister-in-law for knowledge on how to reach the facility that her family had recommended:

> *"I knew to go, but, my sister-in-law decided where to go because she has checked herself before; so I also go to the same place… My family also advised me to check at the same place. My sister-in-law knew all about the clinic, so she went with me."* (25 year old, G1P1, 5th grade education, non-squatter)

Eight of the 67 women who attended four or more ANC visits reported attending on their own. Four of the women attended the study-clinic, for which companions were generally considered unnecessary due to proximity. Two of the remaining four women attended facilities that they considered "near", and therefore easy to reach. Another woman reported attending alone because of her experience with her first pregnancy, while the remaining woman lived in nuclear family in the squatter area, reported attending alone because she had no friends to help her.

Barriers

Four of the 16 SSIs informants who attended "fewer than four" ANC visits, reported the absence of a traditional support system as a reason for attending fewer than four ANC. Specifically, three of these women reported the unavailability of an escort to accompany them to the health facility. All three were experiencing their first pregnancy. The reliance of first-time mothers on escorts is exemplified by the verbalisation below, in which a woman reported just one ANC visit at six months' gestation. In this case, the woman's husband was working abroad for the majority of her pregnancy, while she dwelled with her husband's brother in the squatter area:

> *"…I thought it may not be necessary to go earlier, nothing wrong so I went just one time to [public hospital]… My husband is abroad working, so there is no one to accompany me to the hospital; I am living here [in Kathmandu] with my brother-in-law and babu [baby]. Fupu (father's sister), always tell me to go and visit for check-up, so one day my sister came and take me to visit for check-up… I did not know anything!"* (21 year old, G1P1, 8th grade, squatter)

A mother of three who lived in a nuclear family structure, reported that caring for her small children prevented her from attending the recommended number of visits:

> *"I went many times with the second child, with this last son I went just one time… When I know [I am pregnant] at fifth month, I visited [the hospital] for my child [immunisation] and did my check-up. The doctor told me to come back and have video-x-ray [ultrasound] but I could not because I have two small children. To go with them is difficult"* (33 years G4P3, 5th grade, squatter)

This lack of family support was confirmed during the FGD held with women living in non-squatter areas of Ward 34. In their discussion, the informants explained that in the context of a traditional village-setting in Nepal, senior female family members are considered the usual sources of advice and support. In Kathmandu however, where many women live in nuclear family structures, the lack of traditional support from senior female family members can present challenges for ANC attendance:

> *"There are mother-in-laws and often elder sisters or sister-in-laws in villages, they usually notice when menses stops, and usually their seniors know what to do and where to go…but if they are here [in Kathmandu] alone,*

> *there is no-one to suggest to go, take care of children, or accompany… it becomes difficult."* (FGD–non-squatter)

A lack of financial resources also emerged as the barrier to ANC. Among the SSI informants, 3 of the 16 reported not attending the required ANC visits due to financial constraints. All three women lived in the squatter settlements. Despite the free care policy implemented at government facilities, two woman faced limitations in meeting the transport costs needed to reach the government health facility. This was exemplified by the verbalisation of a first time mother who attended just one ANC time at eight months' gestation:

> *"… husband and I walk for one hour to reach [government facility] for check-up… If services are free, transportation facility also needs to free, we would go! We usually do not have much money."* (25 years, G1P1, 10th grade, squatter)

A woman reported not attending her fourth ANC visit due to her inability to afford an ultrasound. Under Nepal's current "basic" ANC programme, certain components of ANC such as ultrasounds and comprehensive blood testing are not provided for "free" at any facility. These tests, although routinely recommended by health professionals in Kathmandu, were unaffordable to women with financial constraints. These findings support our results from the quantitative phase of this thesis (Table 4.7, pg. 141), where the poorest women face challenges in attending the recommended number of ANC visits.

The conservation of more traditional family dynamics was also highlighted as potential barrier to ANC in all three FGDs held with women living in squatter settlements. In the excerpt below, the discussion stressed the powerful influence traditional power structures within the family unit among women living in squatter settlements:

> *W1: Some house members do not give permission. W2: Yes, usually women want to go [to ANC], but sometime mother-in-law do not want you to go, some husbands are also not supportive. W3: It's all traditional thinking, you have to take permission from your house, they say 'why to go? I give birth in the field without any check-up, you can give birth easily.'"*(FGD squatter non-user)

The need for support from senior family members to enable women to access finances for ANC, was emphasised by a woman during one of the three FGDs:

> *"If there is no support of money by family, you have problem just to go to [public hospital]…I have to pay for transport for up [there] and down [back], 30 rupees, after that ticket charge also, 20 rupees, [registration], it's too difficult! At one time visit, they give us medicines for 280 [rupees], video x-ray also, 450 rupees. If women have money they buy, if no money they don't buy. Video x-ray is good and necessary, we need to know how the baby is and it also shows mother's condition… [For] all these, money is needed."* (FGD-squatter)

Finally, 2 of the 16 SSI informants reported that their underutilisation of ANC was the results of a lack of knowledge pertaining to the location of medical facilities, and the number of visits that should be attended. Both women lived in the squatter settlements, however one of the women was an 18 year old first-time mother, while the other was a 21 year old second-time mother. In both cases, the women were the most senior female family members in their households.

4.4.3.3 ***External factors***

Thirteen of the 16 women from the SSIs who did not attend the recommended number of ANC visits lived in squatter settlements. Thus similar to quantitative findings, this study found that at the community-level, living in squatter settlements negatively influenced utilisation of ANC. In all three FGDs with women living in squatter settlements, women discussed the population characteristics of *sukumbasi* residents, who often have low education, lack access to usual sources of support, as well as financial resources and time to attend ANC:

> *"Among sukumbasi there are many living on own, no family, they may not understand things properly, they are not educated, and receive no information and no advice. There is also no good social worker or volunteer like in village, who can tell and inform you… no advice is given to them and they themselves do not know."* (FGD–squatter)

The FGDs further discussed the role of community perceptions on the cost of services as a deterrent to attending ANC visits:

> *"We live in slum area, where economic status is poor and some of them think it cost much money. So how to visit there? And some of them don't know*

about it. No advice given to them and they themselves do not know where is free and where it is not free. They may think that checking everywhere would incur money and so they do not go. Because of their experiences or if they have heard it from others [that care is expensive], they think everywhere is also expensive, may be this is the reason. Only when we have knowledge and information that services are available free, we are tempted to go, but others do not know. Some private hospitals [nearby] also provide some free services and incentives, but they are expensive, their medicines are more expensive, ticket [registration] is more expensive. So women just consider "what happens, happens."" (FGD–squatter)

4.4.4 Facilitators and barriers to delivery care

In Table 4.16, the themes of the factors influencing women's place of delivery are summarised. As per ANC, we used Andersen's model of healthcare use as our conceptual framework. Twelve of the 83 women who participated in the SSIs, and three of the 29 women from the FGDs, reported giving birth to their most recent pregnancy at home. We categorised facilitators and barriers into three themes, namely (i) individual predisposing factors; (ii) individual enabling factors; and (iii) external factors. Each of the themes is discussed in detail in the following section and quotes are provided to illustrate the themes.

Table 4.16: Main facilitating factors and barriers to utilising delivery care from semi-structured interviews and focus group discussions with Ward 34 residents

FACILITATING FACTORS (97)	BARRIERS (15)	BASIC THEMES	ORGANISING THEMES
Prevention of complications and death		Beliefs & attitudes	Individual predisposing factors
ANC attendance (60) ANC counselling to deliver in facility (15)		Perceived need	
	Low education (8)	Education	
Reputation (19) Affability (9) Cleanliness (6)	Previous unpleasant experiences (5) Uncleanliness / Overcrowded Expectation that care will be of low quality, and fraught with delays	Perceived quality	
	Unexpected or "sudden" onset of labour Premature birth (3) Night-time onset of labour (2)	Timing	
Money to pay for private services (16)		Finances	Individual enabling factors
Recommendation from friends / family (24)		Support system	
"Free" (Aama) (22)	"no money" (2)	Health system	External Factors
Room rental/occupancy patter Lack of traditional birth assistants		Urban community	

4.4.4.1 ***Individual predisposing factors***

Facilitators

Seventy-one of the 83 women who participated in the SSIs and FGDs reported giving birth to their most recent pregnancy in a health facility. As per ANC, women who had given birth in health facilities believed that care during delivery was important to *"save our lives if something goes wrong"*, and was often stated as a given rather than as a decision to be made. This was consistently verbalised in all four FGDs held among women from both squatter and non-squatter settlements:

> *"In the house there is no help, in hospitals there are all facilities and staff, doctor can treat… If blood is needed, who can give at home? There are no equipment at home. At home the men often think that pain and difficulty during delivery is normal, so we can die."* (FGD-squatter)

> *"Nowadays women usually like to go to hospitals [for delivery], before and before [a long time ago], women used to like home delivery… now in modern time no, we know it is better to go to hospital."* (FGD-non-squatter)

Sixty of the 71 informants who gave birth in a health facility also attended "four or more" ANC visits, suggesting that ANC attendance was associated with health facility deliveries. This was consistent with the findings from the household survey (Table 4.9, pg. 145). Fifteen of the 71 women who gave birth in health facilities specifically mentioned doing so as a consequence of advice given by healthcare providers during ANC. This is exemplified by a 33 year old mother from the squatter area, who initiated ANC at three month's gestation, and attended six visits:

> *"…When there is labour pain, if expected delivery date is over, they told me that we should immediately visit hospital. I followed what they told to me."* (33 year old, G3P3, 3rd grade, squatter)

This was confirmed in three FGDs, with women also referring to the impact of visiting health professionals during pregnancy on the family unit:

> *"Nowadays, we are told by doctors [to deliver in health facilities] and when we are told by doctors, family members do not obstruct"* (FGD-squatter)

A further predisposing factor which emerged as facilitating health facility deliveries was perceived quality of care provided. Forty-five of the 71 women who delivered in a health facility perceived the care at their chosen facility was good, often making reference to the facility's reputation among the community (19), the comprehensive services available, especially if an emergency should occurred (11), affability of doctors and staff (9), as well as comfort (6) which included cleanliness and maintenance of facility. Probing about the type of care women had received inevitably led to discussions on the perceived quality of care at public versus private facilities, with 55 of the 71 SSI informants who gave birth in a health facility did so in government facilities, while 16 of the 71 in private facilities. Private care was considered much better than government care, however it was also considered out of reach for poor families.

Barriers

Perceived quality of care was the main predisposing barrier to obtaining delivery care among our respondents. Among the 12 women in the SSI who delivered at home, five did so due to reasons related to *expected* the quality of care at government facilities, their most accessible facility for delivery.

Among these five cases, three reported unpleasant experiences during a previous birth as the main reason for not delivering in a health facility. For example, in the case below, a 21-year-old mother expressed that during her previous delivery, the crowded wards and unavailability of beds had caused her to suffer an embarrassing experience. Consequently, she was "determined" to deliver her subsequent birth at home:

> *"What to say… first one [baby] was delivered in hospital, but I feel uncomfortable and embarrassed at hospital, so I give birth at home for the second one [baby]… At the time of first baby, there was too much nuisance in hospital… There is too many people and no bed for admission. I waited a long time for general bed, and I give birth in that general bed, with other women and their families there! So I didn't visit this time. I was determined to stay at home this time…"* (21 year old, G2P2, 3rd grade, squatter)

The remaining two women, both first-time mothers, expressed anxiety at the prospect of mistreatment from health workers. In one of these cases a woman gave birth at

home because she had heard about the hospital environment and the treatment of women who had not attended ANC in that same facility:

> *"… My husband was telling me to go to hospital, but what I hear is that if there is no bed in [public hospital], they just keep us on the floor… There is so [much] crowd, and also I had no card [ANC card], and that make difficult to admit in [pubic hospital]. For that they keep you on floor, others wanted to take me to hospital, but I wanted home because of no papers [ANC card]."* (26 years old, G1P1, 5th grade, non-squatter)

Staffs attitudes and behaviours at government facilities were raised in two of the FGDs held with women living in the squatter settlements:

> *"Some get afraid so they don't go [for delivery]. Even when family says to go to hospital, women themselves say "I will not go". W2: Yes I have heard that the women who get afraid during delivery, nurse shouts at them. W3: What I heard is that if you shout during pain they scold you, otherwise they do not say anything."* (FGD squatter user)

It seems therefore, that the expectation that care will be fraught with mistreatment, dismissiveness, and delays in obtaining care, prevented women from seeking care during delivery. These results indicate that for some women, government facilities represented their only opportunity for an institutional birth.

In addition, although not overtly mentioned in the interviews and discussions, 8 of the 12 women who gave birth at home, had primary level education or less. This was consistent with our quantitative findings (Table 4.9, pg. 145) where low education increased the likelihood of a home delivery by almost three-fold.

4.4.4.2 ***Individual enabling factors***

Facilitators

Women's accessibility to financial resources enabled them to overcome the perceived lower quality of care at government facilities where women often stated hearing or experiencing *"careless"* behaviour of staff. Thus women who had access to financial resources avoided the unpleasantness of government facilities by paying for private care. For example, a two mother from the non-squatter settlement who gave birth to her first pregnancy at a government facility reported:

> *"Yes, it is expensive but no tension. In government facility, it may not cost that much, but we may have troubles and problems, crowd and uncleanliness."* (29 year old, G2P2, 12th grade, non-squatter)

The need for financial resources to attend private facilities, as a way to overcome the difficulties experienced in the government healthcare system, was also raised in all four the FGDs:

> *"If we have sufficient money then why should we go for government facility? W2: Yes, of course. We would visit better and nearer place [facility]."* (FGD-non-squatter)

Family support was a further enabling factor that was mentioned by women who delivered in health facilities. As with ANC, families were more concerned about *where* women would deliver, rather than whether or not women would deliver in health facility or at home.

> *"I decide myself with husband, but sisters also recommended…they said that in [public facilities], care is not much good."* (19 year old, G1P1, 12th Grade, non-squatter)

In these cases, women reported relying on family members to take them to the health facility for delivery, as exemplified by this woman during one of the FGDs:

> *"My family all wanted a good baby and so all my family want me to deliver at hospital, they took me just as my labour started."* (FGD-squatter)

Barriers

Of the 12 women that delivered at home, five reported doing so as a result of the "unexpected" onset of delivery. This theme encompassed deliveries which occurred during "unexpected" time of day (or night) (2/5), as well as premature deliveries (3/5). All five women had attended "four or more" ANC visits and reported an intention to deliver in a hospital setting. Nevertheless, the "unexpected" onset of labour presented too many difficulties for women and their families to overcome. This is exemplified by a woman who experienced a premature live-birth during the early hours of the day when public transport was very difficult to find:

> *"The first one [baby] was delivered at hospital, at this time, it was night…family went for taxi, but it was late and I gave birth in home…. neighbours mother help me to give birth"* (23 years old, G2P2, 6th grade, non-squatter)

Another woman reported travelling to the hospital soon after the onset of labour pain. However, once at the hospital and examined, she was sent back home because she was found to not be in labour:

> *"I had stomach pain for two days, so I went to hospital because I think it is delivery time, but they said everything is ok and there is no delivery. So I came back home. After 4-5 days there was home delivery… I was not sure if it was labour pain and suddenly baby was born."* (22 years old, G3P3, no schooling, 4anc, Squatter).

Two women, one from the squatter and one from the non-squatter settlement, described financial limitations as the main reason for a home delivery. Both of these women had attended fewer than four ANC care visits and cited economic reasons for doing so. In the FGDs, this was confirmed among women from squatter settlements, who reported that despite the *Aama* programme, financial resources may still be needed at the time of delivery:

> *"Even if delivery is said to be free, if operation [caesarean section] happens, than it costs money. We want normal [vaginal delivery], but suddenly they do operation [caesarean section], so some people don't go because of status [poverty]."* (FGD-squatter)

Thus despite the free-delivery policy implemented at government and some private hospitals, the high costs associated complications, including caesarean delivery or simply long hospital stays, acts a barrier to institutional deliveries. In the FGD, the "fear" of high costs associated with long hospital stays was expressed by a woman who chose to deliver at home:

> *"For this child, I think that if I need to go to hospital, I have to pay money. My husband is only one earning and earn little, so I wish I should not go to hospital for delivery. If we stay in hospital there is possibility of living there for 15 days to 1 month, so I think why to pay so much money at hospital? Eventually, I was successful to deliver at home due to God's wishes."* (FGD squatter users)

In the FGDs women also reported that a lack of support or having no-one to accompany them at the time of delivery was a factor that influenced their decision to remain at home at the time of delivery. We have reported these findings under "external factors," since many women made reference to hospital policies.

4.4.4.3 ***External factors***

Facilitators

With regards to external factors, two FGDs, one with squatter and one with non-squatter women, made reference to the urban tenure or occupancy pattern in Kathmandu, whereby the possibility of giving birth in such small living spaces, may have encouraged women to deliver in health facilities:

> *"If there is labour at home, many do not have many rooms, some just have rented one or two rooms. The room may get dirty, so they decide to go to hospital and see the doctor…"* (FGD non-squatter)

Further probing did not occur about the use of the word "dirty," however, the interviewer and transcribers described a more physical implication of the word, rather than a religious or traditional meaning.

The unavailability of traditional birth attendants in urban areas was also proposed as a possible facilitator of institutional deliveries:

> *"For home delivery there is Sudeni [traditional midwife], even in village there are some, but here [Kathmandu] there is no service of Sudeni, and we don't know about delivery at home, so it is better to go to hospital."* (FGD-squatter)

Another facilitating factor discussed in the SSIs and FGDs was the *Aama* or free delivery programme, where 22 of the 55 women who gave birth in a government health facility, reported doing so because it was *"free"*, or because costs incurred were considered *"cheap"*:

> *"Because it is cheap…why to go other places? We do not have much money, other places, they charge the bed fee, that's why! We have to pay more in other place, there [facility with Aama Programme] we have to pay only for medicine, others are free."* (23 years, G2P2, 3rd grade, non-squatter)

> *"In public hospital people say that they [health providers] do not care much and there is negligence. But I went to public because I do not have much money…"* (24 years, G1P1,8th grade, squatter)

This was confirmed in the FGDs the women specifically mentioned the incentive:

> *W1: We do choose government facility for free, some of us have not much money. W2: Yes, at initial time [a long time ago], we have to pay money, but nowadays it is free, we give birth, we receive treatment, and they also provide money for all those that visit the facility.* (FGD-non-squatter)

Since all of the informants in this phase had given birth after the implementation of the *Aama* policy (2009 onwards), this finding also supports the results from Phase one, in which mothers who gave birth before the *Aama* policy was implemented, were more likely to be born at home than mothers who gave birth after the policy was introduced.

4.4.5 Facilitators and barriers to postnatal care

The themes of the factors influencing women's utilisation of PNC among women living in Ward 34, are summarised in Table 4.17. As per ANC and delivery, we used Andersen's model of healthcare use as our conceptual framework. Forty of the 112 women who participated in the SSIs and FGDs reported no PNC attendance. Among SSI participants only, 34 of the 83 women did not attend PNC. We categorised facilitators and barriers into three themes, namely (i) individual predisposing factors; (ii) individual enabling factors; and (iii) external factors. Each of the themes is discussed in detail in the following section and quotes are provided to illustrate the themes.

Table 4.17: Main facilitating factors and barriers to utilising PNC from semi-structured interviews and focus group discussions with Ward 34 residents

FACILITATING FACTORS (72)	BARRIERS (40)	BASIC THEMES	ORGANISING THEMES
Caesarean section Stich removal		Beliefs and attitudes	Individual predisposing factors
Need for family planning Need for child vaccine after home delivery	Not needed	Perceived need	
	Lack of awareness about PNC	Knowledge	Individual enabling factors
Private delivery	No advice to “follow-up” for routine check-up at discharge	Health system	External factors

4.4.5.1 ***Individual predisposing factors***

Facilitators

In the SSIs, 18 of the 49 women reported returning to a health facility for PNC between a few days to two weeks after delivery for suture removal and incision checks after procedures such as caesarean sections or episiotomies, This is illustrated by the excerpt below from a 27 year old first-time mother who experienced a caesarean delivery because she had passed her estimated due date. In this case, the woman had attended eight ANC visits, and had given birth in a government facility:

> *"I have operation [caesarean section], and due to operation I needed to go to check-up… I went two times to check up and at 45 days for vaccines (Depo Provera) for me and the baby."* (27 year old, 2nd grade, G2P1, non-squatter)

Nine of the 49 women attended because they had experienced "problems" after delivery. Among these women, six reported "infection" of the suture or wound, two went back due to breast abscess, and remaining woman reported developing oedema. Three of these women were re-admitted for further care.

The remaining 22 of 49 women reported attending PNC around 45 days after delivery, coinciding with child-vaccination schedule for Nepal, and the recommended initiation of contraceptive use. This is exemplified by a woman from the squatter settlement who had attended the study-clinic for PNC.

> *"No, I did not have any problems so no visit. After 45 days, we get vaccine for the child and me also, the depo [Depo Provera] vaccine. At that time they gave me also Vitamin A"* (32 years old, G4P3, 5th grade, squatter)

Barriers

The main barrier to emerge from the data with regards to PNC was the perception that care after delivery was curative rather than preventative, and therefore not needed. During the SSIs 26 of the 34 women who did not attend PNC, expressed *"I did not have any problems"* as the reason for not attending PNC. This belief or attitude towards PNC was confirmed during the FGDs:

> *"If any difficulties they will visit for checkup, if no problem they don't visit. Why to visit if there is nothing happens? No need of checkup."* (FGD-non-squatter)

4.4.5.2 ***Individual enabling factors***

Barriers

Nine of the 34 women who did not attend PNC reported not knowing about PNC. Six of these women were first-time mothers, and all but one, had given birth in public health facilities:

> *"No, they did not tell... I don't know, they didn't say anything"* (17 year old, G1P1, 4th grade, squatter)

> *"I did not know about checking after delivery, they did not tell"* (17 years old, G1P1, 8th grade, non-squatter)

4.4.5.3 ***External factors***

Facilitators

Thirteen of the 16 women who gave birth in private facilities reported attending for PNC. Ten of these women reported suffering from conditions that required follow-up including caesarean operation (4), tear (2), wound infections (2), and breast abscess (2). This is illustrated by the excerpt below from a 27 year old first-time mother who had experienced a caesarean delivery due to a "large size" baby. In this case, the woman had sought care from a specific (private) doctor during pregnancy, with the same doctor providing care during delivery and postnatal phases:

> *"I did not have any problems, so it [PNC] is not necessary. But I went on the 11th day after operation [caesarean], I visit for stich removal…but I have not any problems. We Nepali do not go unless there is a problem and help is needed."* (26 year old, Masters Degree, G1P1, non-squatter)

Barriers

One universal theme that emerged from the interpretation of the qualitative data with regards to postnatal care, was the reported advice given to women on discharge after delivery, in particular women who had a normal vaginal. Overall, 21 of the 83 women interviewed during the SSIs, reported being told to return at 45 days with the baby for immunisation or before, if they experienced complications.

> *"They [hospital] only tell to come back at 45 days for baby to vaccine… but I did not go there [to hospital] because there was no-one to look after the house, so I couldn't go, so at 45 days I went just near to [study] clinic…"*
> (25 year old, G1P1, 10th grade, squatter)

"They told me I should go if the operation [wound] is infected and I have problems, so I went once. When I went, they checked stitch [suture], they said that was good, contain no pus. If the suture part get pain or there is any pus you need to follow-up, if that isn't happen no need to follow-up…"

(33 years, G3P3, 3rd grade, squatter)

The HA from the clinic, the person "in-charge" of the day-to-day study-clinic and had been working at the clinic for one and half years, commented that PNC uptake was low among women in Ward 34:

"Very few women come for PNC [to the study clinic]…after delivery, they are immediately discharged from hospitals, so they do not receive good counselling on danger signs. Often, women do not know that if they continue with bleeding or vaginal discharge it can be dangerous, so PNC [utilisation in the study clinic] is very low. They come only at 45 days and that is either for the depo [Depo Provera] injection or for baby vaccine. They do not care about bleeding or discharge."

According to the government guidelines however, all women should be attending three PNC visits: First visit within 24 hours of delivery, second visit on the third day and third visit on seventh day after delivery.

4.4.6 The study clinic

Table 4.18 shows the facilitating factors and barriers mentioned among the 55 clinic-users interviewed during the SSIs (40) and the FGDs (15). Overall, 41 informants lived in squatter and 14 lived in non-squatter settlements. The median age of clinic-users was 23 years (Range: 16-35), reported a median of 4th grade education (Range: no education to Masters degree), and 32 of the 55 were primiparous. In terms of maternal healthcare, 43 of the 55 received "four or more" ANC (not all from the study-clinic), 43 of the 55 gave birth to their most recent pregnancy in a health facility, and 43 of the 55 attended PNC.

4.4.6.1 *Individual predisposing factors*

Facilitators

Nine of the 40 women interviewed during the SSIs, mentioned the "kind" and "patient" counselling given by the clinic staff. For example, in the case below the

two-time mother reported she had sought care from the same government facility for both of her pregnancies. After the birth of her most recent baby, she reported that seeking care from her usual facility with a newborn was unappealing due to the long waiting queues, crowded facilities, and lack of counselling. This prompted her to ask friends about where they had gone for PNC, who recommended the study-clinic:

> *"It [the study clinic] is comfortable, they advise in kind manner. In [other] facilities it is crowded, they don't provide any advice after injection. We received injection and sent us back to home. I always visit here [study clinic]. We get good advice. They said to come at this time for injection, no need to wait in queue, easy."* (29 years old, G2P2, 4th grade, non-squatter)

In the FGDs, women confirmed the affability of the clinic personnel towards its clients. This is exemplified below by verbalisations from two FGDs held with women from squatter settlements. In the first excerpt presented, a woman compared the manner in which messages are delivered at the study-clinic to other facilities in Kathmandu, while in the second excerpt a woman expressed how the study-clinic personnel had encouraged women from the squatter settlement to utilise maternal health services through their "kind" counselling:

> *"At pregnancy I went to check up; they provided good information kindly; instructions on what to do and not to do… 'do not lift heavy loads at pregnancy', 'do not travel much', 'no high heel shoes' like that, and also food vegetables and meat to intake"* (FGD–squatter)

> *Staff behaviour is good, as soon as we reach there, they ask: 'What is the problem? Why did you come here?' In some places, staff are rude, but not there [study clinic]"* (FGD–squatter)

Table 4.18: Main facilitating factors and barriers to utilising the study-clinic from semi-structured interviews and focus group discussions with Ward 34 residents

FACILITATING FACTORS	BARRIERS	BASIC THEMES	ORGANISING THEMES
Good counselling Affability		Perceived quality	Predisposing
Near Easy / comfort		Transportation	Enabling
No need for companion		Support system	
Free care policy	"Simple" check only No equipment / tests No delivery capabilities	Health system	External factors

4.4.6.2 ***Individual enabling factors***

Facilitators

As per the excerpts above, women often commented on the easiness of attending care at the study-clinic. During the SSIs, 33 of the 40 women described attending the study-clinic as "easy," primarily mentioning the close-proximity (28) of the study clinic to their households. The proximity, in combination with minimal crowds or reduced waiting time (8), also meant that women did not feel the need for a companion (14), with women verbalising this as *"It is near, I went alone."* This was exemplified by the verbalisation of a 19-year-old first-time mother, who lived with her husband and child in a single room household in a non-squatter settlement. In this case, the woman initiated ANC care at two months' gestation at a government facility, and over the course of her pregnancy attended seven ANC visits at the study-clinic:

> *"One of my friends told me [about the study-clinic], but I visit for check-up at [public hospital] for first time. We have to wait there [in public hospital], wait wait wait in line. Here [study-clinic], no line and the sisters are kind and good [competent], also it is near, husband is working so it's easy there [at the study-clinic]. First time I visited, I feel good, and I continued to go. [Public hospital] is too crowded, wait for long time"* (19 years, G1P1, no formal education, non-squatter)

4.4.6.3 ***External factors***

Facilitators

Among squatter populations, the "free" maternal healthcare provided at the study-clinic was considered to provide much needed services for its clients. During SSIs, 15 of the 40 women commented on the "free" provision of ANC care and its components, as well as the savings made on transportation costs, as the main reason for attending the study clinic.

In the example below, a woman from squatter area described a lack of finances as a reason for forgoing certain diagnostic tests unavailable from the study-clinic and available, but for a fee, at government facilities. Despite her lack of access to finances, the woman attended a total of five ANC visits over her pregnancy, three at the study-clinic and two at a government facility:

> *"I went [to the study-clinic] clinic due to my friends. They told me it is good and also cheap. After that the health person in clinic suggested me to go to [government hospital] for more [comprehensive] check-up. I went [to government hospital] two times, checked blood and urine, I also checked my elder child but could not do video x-ray [ultrasound]... My husband is drunken and spent money in alcohol. I could not save money."* (20 years old, G2P2, no education, 5 ANC visits, Squatter)

The importance of the provision of "free" services at the study-clinic was confirmed by women's discussions in both FGDs held with squatter residents who had used the study-clinic. In particular, women voiced the affordability of care at the study-clinic and the important savings in transport as a consequence of its proximity to their households:

> *"W1: Sometimes, someone may not have money but she can get services like in hospital. So, there is no need of you must have money. W2: It is giving good services for those who are weak and poor. They do not need to spend on bus. W3: It is near and providing us services in easy way. No money is spent."* FGD–squatter

Interviews with the health service providers from the study-clinic confirmed the financial limitations of the majority of its clients:

> *"The women from squatter area come here because it is free. They have problem even to pay 10 rupees [US$ 0.10] of ticket [registration fee charged at the study-clinic], they come here because it is free; iron free and TT vaccines free. While going to public hospitals they have to invest time and money on bus fares which are important to them."* (ANM study-clinic)

Barriers

Since the study-clinic was a part of a wider Community Urban Project aimed at providing "basic" care for the urban poor living within Ward 34, women's perceptions of the "basic" care provided is this discussed under "external factors"

The main barrier to utilising the study-clinic was the "basic" level care it provided. Within this theme, women made special note of the qualification of health providers, and availability of diagnostic equipment.

For example, a woman who had attended the study-clinic to confirm her pregnancy status, reported not returning for further care due to the lack of qualified-doctors, which was important to her:

> *"Some sisters from a nearby shop took me to check and confirm my pregnancy there [study clinic]. After that, they [study-clinic] called me to come after two months but I went to [public hospital]. I visited a second time to check but there was no doctor to do check-up, so I went to [public hospital] and that is why I didn't come back...simple check-up only."* (19 years, G2P2, 5th grade, 5 ANC visits, non-squatter)

The woman below also commented on the lack of doctors at the study-clinic. In this case, the woman had attended the study-clinic just once at 17 weeks' gestation. The "proximity" of the study-clinic and the "cheap medicine" it provided, were the reasons she cited for utilising the clinic. However, indifferent to the care provided at the study clinic, the woman sought all subsequent care hospital-level facilities:

> *"I have gone just once to the [study] clinic, then I went other places. I would not go to the clinic if they provide all services. Not many people go there and there is no crowd… only staff are there, no doctor when we go"* (32 years, G3P3, 10th grade, squatter)

Eighteen of the 40 clinic-users interviewed during the SSIs mentioned the lack of diagnostic equipment and treatment capacity available at the study-clinic similar as a reason for seeking care from facilities other than the study-clinic. For example, in the case presented below, a 22 year-old mother who attended the study-clinic for her first ANC visit reported being forced to seek care elsewhere during a pregnancy complication:

> *"…At the time of second visit, I went there [study clinic] because I lost blood, but they told they cannot cure blood loss, and told me to go to [public hospital] immediately, so I went. They [public hospital] do more tests [compared with clinic], so I remained going to hospital from then"* (22 years, G3P3, 3rd grade, 4 ANC visits, squatter)

During the FGDs, clients of the study-clinic also mentioned the unavailability of human and physical infrastructure drove women to seek care from other facilities, who often did not return to the study-clinic for follow-up appointments:

"If there is more difficulty, we are going out [to seek care outside the community], because other places have more equipment and specialised doctors, otherwise we are going to the [study] clinic" (FGD–squatter)

"If it [the study clinic] can give more services that would also good….sometimes we have to go to other places because this clinic cannot treat us. If there were facilities for video x-ray [ultrasound] in the clinic, we would not go to other places, no need to pay, and also wait in line. Some women simply do not go because it is a bit far and they are shy" (FGD-squatter)

Thus while the services provide by the study-clinic are considered to be meeting an important gap in healthcare provision aim of this "study-clinic" is to provide healthcare to the poor and vulnerable, the "basic" level care is not fitting for urban population, who value doctor or specialist led care, as well as modern diagnostic equipment. In addition, women in FGDs suggested that the care provided at the study clinic could be expanded to provide delivery services, describing the continuum of care as a preferred process:

"For maternity care, clinic just have ANC…if delivery service, we do not need to go other place. If we can get check-up and services for child birth [at the study-clinic], we will not go other places…we will check ANC and continue with delivery in the same place… Same place of check-up and delivery is better." (FGD-squatter)

The ANM from the study clinic had also been made aware by clients of their desire to have more comprehensive services at the study-clinic:

"We need to provide all lab test services, all the lab tests free, video x-ray [ultrasound], it would be even better if we can have facility for basic deliver here… They [squatter women] want it! Delivery services also they want here." (ANM)

4.4.7 Section summary

Among women living in Ward 34, Kathmandu, where services are available, facilitators and barriers to utilising care during pregnancy, delivery, and postnatal periods varied according to obstetric period.

This study found that individual enabling factors were the most frequently cited factors that facilitated the utilisation of antenatal and delivery care, in particular the support of family and friends. The “free” delivery policy implemented at government facilities was also found to be a facilitating factor for health facility deliveries. While a perceived need for care following caesarean section or suture care after delivery, was the main factor promoting PNC utilisation.

Having more traditional beliefs and attitudes predisposed women to utilise less ANC. The most common barriers identified however, were factors generally considered “enabling”, including the unavailability of traditional support systems, and a lack of knowledge regarding adequate care-seeking behaviour. Of the external factors, living in squatter settlements was found to hinder uptake of ANC. At the time of delivery, “predisposing” factors were the most frequently mentioned factors preventing women from accessing institutional delivery care. Within this theme, women’s own expectations of the quality of care they will receive, and the “unexpected” onset of labour predisposed women to home deliveries were the most common. After delivery, the lack of advice provided by healthcare providers upon discharge regarding the routine PNC attendance, was the main barrier identified.

The study-clinic, located within Ward 34, and providing “free” care, was found to provide good and affable care, and addressed the long waiting queues and crowdedness experienced at government facilities. However, the “basic” level of care provided, was the clinic’s only barrier. Since this facility was set-up to provide the level of care similar to that available in village-settings, women were forced to utilise other facilities to achieve the type of care they perceived was necessary.

4.5 CHAPTER SUMMARY

The three phases of this project have provided new data on maternal and child health among women living in Ward 34.

Phase one of this mixed methods study identified the utilisation trends and practices of women living in Ward 34, and the effect of individual, community, and health system factors on the utilisation of maternal healthcare. Specifically, the study found that women living in squatter settlements were more likely to attend “fewer than four ANC visits, and deliver at home than their squatter counterparts. Multivariate analysis indicated that asset-poverty and squatter residence were significantly

associated with the underutilisation of antenatal and delivery care. The positive effects of entering the maternal healthcare system through adequate utilisation of ANC were also evident in subsequent maternal healthcare uptake. Giving birth before the implementation of the *Aama* programme was also found significantly increase the likelihood of giving birth at home. The *Aama* programme had no effect on antenatal or postanatal care utilisation.

Phase two of this study, showed that in Kathmandu, where maternal healthcare services are physically available, women from squatter and non-squatter settlements alike, opted for sophisticated and well-equipped hospital- rather than clinic-level facilities. Consistent with this notion, the study also found that the study-clinic was underutilised by its target population, even though it was located within close proximity to the squatter areas. The main reason for underutilisation of the study-clinic was that it provided care equivalent to that generally available in village-settings. The study also found that although accessible and affordable facilities were located within or close proximity of Ward 34, women were willing to travel far distances to receive the type of care they considered appropriate. Most facilities attended by women in this study provided some sort of financial assistance, either universally or specifically for poor and vulnerable individuals. The technical capacity of each facility was found to be fairly uniform across all private and public facilities, with the exception of clinic-level facilities which often lacked costly diagnostic equipment. The physical infrastructure and maintenance of facilities varied significantly, where older facilities often suffered from inadequate waiting areas, poor sanitation infrastructure to deal with the sheer volume of people that attended these facilities.

Phase three explored the facilitators and barriers of utilising maternal healthcare. During pregnancy and delivery, enabling and predisposing factors, respectively, were the most common factors that prevented women from attending the recommended number of ANC and giving birth in a health facility. Squatter residence was also identified as important barrier to ANC, but not for delivery or PNC. For PNC care, underutilisation was primarily due to the lack of advice provided by health professionals.

In the following chapter, the key findings from the quantitative and qualitative phases of the study are drawn together and discussed in light of their quality and contribution to the wider literature.

5 DISCUSSION

5.1 INTRODUCTION

The aim of this research project was to learn more about the utilisation of maternal healthcare services by women in Nepal by exploring inequalities between women living in squatter and non-squatter "neighbourhoods" in Ward 34, Kathmandu. The Multiphase mixed methods used in this study for data collection was guided by Andersen's model of healthcare utilisation (Andersen 1995, Andersen and Newman 2005). This chapter begins by presenting the principal findings from this mixed methods study according to the aims of the thesis. The key findings of the study are then discussed with reference to the relevant literature. This discussion is guided by Andersen's model of healthcare use and Bronfenbrenner's bioecological model of human development. This is followed by the strengths and limitations of this study, recommendations for practice, implications for future research, and the conclusion.

5.2 PRINCIPAL FINDINGS OF THIS THESIS

This section presents a summary of response rates, followed by a summary of key findings that address the objectives of this study.

5.2.1 Response rates

The overall questionnaire response rate for phase one was 70%. In the non-squatter area 52% of women agreed to participate, whereas in the squatter settlements the response rate was 95%. Data pertaining to all women who sought care from the study-clinic was used in phase two, while all health facilities approached to participate in the R-HFA agreed to participate. In the third phase, data on the number of women approached in all settings were not recorded.

5.2.2 Utilisation of maternal healthcare among women living in squatter and non-squatter areas

Two general trends were found in healthcare use with regard to women who have ever given birth. First, there has been an increase in the uptake of maternal healthcare services over the last 20 years. This study found that the prevalence of attending "fewer than four" ANC visits for the overall sample decreased from 55% among women who had given birth to their most recent baby more than 10 years before the

survey, to 25% among those who had experienced their most recent birth in the five years before the survey. Home deliveries and underutilisation of PNC also significantly decreased from 57% to 33%, and 50% to 25%, respectively, over the same time period.

The second trend observed was that women living in squatter neighbourhoods have consistently underutilised antenatal, delivery, and postnatal care relative to the non-squatter population. In this instance, the proportion of non-squatter women who attended "fewer than four ANC" decreased from 30% among women who gave birth 10 or more years prior to the survey, to 7% among those who experienced their most recent birth in the five years before the survey. Among women from squatter neighbourhoods however, the corresponding figure decreased from 80% to 34% over the same period. A similar pattern was observed for utilisation of delivery care. Home deliveries among non-squatter residents dropped from 36% among women who gave birth more than 10 years before the survey to just 7% among those who experienced their most recent birth in the five years before the survey, while among squatter residents home deliveries were reduced from 79% to 46% over the same time period. Similarly, PNC underutilisation dropped from 31% to 5% among non-squatter women, and from 50% to 35% among squatter women, over the same time period.

Among women who gave birth in the 10 years prior to the survey, the proportion of women who reported underutilisation of antenatal, delivery, and postnatal care was 27%, 36%, and 27%, respectively.

5.2.3 Access to maternal healthcare services among women living in squatter and non-squatter areas

The study-clinic had low utilisation among women from Ward 34. The study-clinic attended to a total of 111 pregnancy and 106 postnatal cases over a 34 month period. Qualitative results from phase three, showed that while women appreciated the generous and affable care offered at the study-clinic, they were looking for more sophisticated services than the "basic" care provided. The R-HFA showed that women living in Ward 34 travelled outside of their own communities to access services they considered adequate, preferentially utilising hospital-level facilities during pregnancy and delivery. Overall, the R-HFA showed that many women living

in Ward 34 had access to clean, well-maintained facilities, that offer good technical care. Government facilities were generally found to have poorer physical infrastructure than private facilities. In the qualitative interviews, this poorer physical infrastructure, which included factors such as cleanliness and crowdedness, was found to hinder women's utilisation at the time of delivery, especially among poorer women, often resulting in home deliveries. Six of the thirteen facilities included in the study were considered affordable, offering free ANC and or delivery services. A further two were considered semi-affordable, while the remaining five were considered not affordable. The *Aama* programme was cited as a facilitator of delivery care. However, the considerable variability in charges between facilities, caused confusion among some women, who found it difficult to pay the unexpectedly high costs.

Overall, these results suggest that given the availability of hospital-level health services in Kathmandu, the "basic" model of care offered by the study-clinic was not readily accessed nor well utilised. Women preferentially sought both ANC and delivery care from hospital-level facilities, where they could access not only highly qualified health professionals, but also additional services not included as part of the *Aama* programme, such as ultrasound scans and comprehensive blood testing.

5.2.4 Explanatory factors associated with the underutilisation of maternal healthcare

Different barriers and facilitators were found according to each obstetric phase. Multivariate analysis showed that during pregnancy, women living in squatter communities were nine times more likely to attend fewer ANC visits than those who did not. The majority of women who reported fewer than four ANC visits during SSIs, lived in squatter areas. The qualitative interviews provided explanations for squatter women's underutilisation of ANC. Firstly, many women who lived in nuclear family structures cited a lack of traditional support and advice from "senior" family members regarding when to initiate care and how many times to attend. The advice and knowledge from older more experienced women was seen to be especially essential during women's first pregnancy when new mothers were considered to possess very limited knowledge of how, when, and where to go for care. Women who held more traditional beliefs and practices surrounding pregnancy and child birth, were also found to report more traditional family dynamics, with

women typically dependent on senior family members for finances to be able to attend medical care. Those who practiced this more traditional way of life were also more likely to have lower levels of education. From an economic perspective, the poorest women were found to be almost four times more likely to attend fewer than four ANC visits. The qualitative data identified that during pregnancy, the direct and indirect costs incurred in attending multiple visits, such as travel and time away from work, were deterrents to attending the recommended number of ANC visits. Women's perception of the need for services not included as part of the *Aama* programme, such as ultrasound scans and blood testing, further deterred women from accessing care. In this instance, women did not see the benefit of attending routine ANC without undergoing more comprehensive diagnostic testing.

With regards to delivery, in the survey, where women were asked to recall their experiences in the previous 10 years, it was found that those living in squatter neighbourhoods were almost four times more likely to give birth at home than their non-squatter counterparts. The results of the qualitative data collection, undertaken after the commencement of the *Aama* programme showed, however, that of the women who gave birth at home approximately 50% lived in squatter communities. This suggests that the *Aama* programme has had some impact in increasing utilisation among the most underserved women. Overall, while women consistently reported crowded and unclean hospital wards, as well as previous unpleasant experiences in government facilities, the majority of women continued to utilise public facilities due to reduced out-of-pocket costs and transport incentives. Women with sufficient financial means were able to overcome these public health-system factors by attending private care, while poor women chose to deliver at home due to the expectation that the care received would lead to unpleasant experiences.

The positive influence of engaging with the healthcare system during pregnancy was also evident. Women who reported attending fewer than four ANC visits were almost five times more likely to report a home delivery. Women reported taking action as instructed by healthcare providers, and advice given during ANC visits was reported to prevent senior family members from interfering. Postnatally, women who reported attending fewer than four ANC visits and those who had given birth at home, were most likely to forgo PNC. Overwhelmingly, however, women who did not attend PNC were simply unaware of the need to return to health facilities for check-ups

after being discharged. The findings showed that most women who have experienced complications during delivery, such as caesarean section, are overtly told “come back” and be checked as recommended by the national guidelines. In most cases where a normal delivery was reported, women were simply advised to return at 45 days after birth.

Together, these findings support the results from earlier studies carried in high and low income countries, where the abundance of healthcare facilities in urban areas do not guarantee that all residents utilise services equally (Essendi, Mills and Fotso 2011, Heaman, *et al.* 2007, Perloff and Jaffee 1999, Stephenson and Matthews 2004).

The following section will discuss the findings of this study with regard to the extant literature.

5.3 DISCUSSION OF FINDINGS WITH REGARD TO RELEVANT LITERATURE

This section discusses the findings of this thesis using Andersen’s Model of Healthcare Use to describe the community and family level factors influence the utilisation of maternal healthcare among women living in Ward 34, Kathmandu. The discussion is structured according to Bronfenbrenner's bio-ecological framework, outlining first the distal factors, including communities and healthcare systems, followed by the most proximal environments, including the household and individual level factors.

5.3.1 Communities and neighbourhoods

This section first discusses “neighbourhood-level” research from high-income countries, followed by research specifically focusing on slum and squatter communities from around the world.

In recent years, the Government of Nepal has implemented several national schemes in an attempt to improve the utilisation of maternal healthcare among poor and vulnerable women (Barker, *et al.* 2007, Government of Nepal 2006, Upreti, *et al.* 2012). The results of this study suggest that women living in squatter settlements were more likely to underutilise antenatal and delivery care. While the magnitude of the squatter-neighbourhood effect declined considerably after controlling for individual and other external level factors, the effect remained statistically

significant, with women living in squatter settlements nine times more likely to attend “fewer than four” ANC visits, and almost five times more likely to deliver at home than their non-squatter counterparts. This is an important new finding for Nepal, since results suggest that the observed differences in maternity care utilisation were not simply because these neighbourhoods were composed of disadvantaged individuals, but rather that the effects of living in a squatter neighbourhood go beyond what would be expected given the composition of individuals in those neighbourhoods.

Specific to maternal healthcare utilisation, there are two main fields of research from which comparisons can be drawn. The first, is research concerned with neighbourhood-level differences, in which neighbourhoods are either defined by postal or zip code or by sampling frame, in high and low -income countries, respectively. Earlier literature from the U.S. (Perloff and Jaffee 1999), Canada (Heaman, *et al.* 2007), Cambodia (Sagna and Sunil 2012, Yanagisawa, Oum and Wakai 2006), Tanzania (Kruk, *et al.* 2010) and Haiti (Gage and Calixte 2006), suggest that “neighbourhoods” have an independent effect on antenatal and delivery care utilisation. These studies have commonly used large national datasets to test for possible mechanisms through which neighbourhoods enabled or prevented utilisation of maternal healthcare in their respective contexts. Consistently, high neighbourhood concentration of poverty has been associated with inadequate or late entry into ANC (Gage and Calixte 2006, Perloff and Jaffee 1999, Sagna and Sunil 2012); and home delivery (Gage and Calixte 2006, Sagna and Sunil 2012). Additionally, high neighbourhood concentration of lowly educated individuals has also been found to negatively affect the utilisation of antenatal (Gage and Calixte 2006, Heaman, *et al.* 2007, Sagna and Sunil 2012) and delivery care (Sagna and Sunil 2012). Low concentration of health providers in a neighbourhood or increased distance from health facility, has also been associated to underutilisation of care during pregnancy (Gage and Calixte 2006, Perloff and Jaffee 1999) and delivery (Gage and Calixte 2006). Specifically, in low-income countries, studies from Cambodia (Sagna and Sunil 2012) and Haiti (Gage and Calixte 2006) have found that a high prevalence of large family size (Sagna and Sunil 2012), increased distance to health facilities (Gage and Calixte 2006, Sagna and Sunil 2012), and high concentration of poor quality roads (Gage and Calixte 2006), to have negative effects on individual access to

antenatal and delivery care, even after controlling for individual-level factors (Gage and Calixte 2006, Sagna and Sunil 2012). While in Tanzania, high neighbourhood concentration of positive community beliefs and perceptions of the health system, were found to facilitate utilisation of delivery care (Kruk, *et al.* 2010).

While the present study did not focus on the mechanism by which neighbourhoods themselves may prevent women from utilising maternal healthcare, qualitative data suggested that significant effects exists because squatter settlements are neighbourhoods with shortages of resources, either in the form of physical, human, and or financial capital, that impedes residents from knowing about and accessing the necessary care. From a theoretical perspective, this residential segregation of families with low accumulation of resources that continually face exclusion, discrimination, and poverty, may lead to further socioeconomic disadvantage via higher stress, inferior health utilisation practices, homogenisation in resources and social networks, and other disadvantages (Diez Roux 2001, Galea and Vlahov 2005, Galster 2012, Kirby and Kaneda 2005, Leventhal and Brooks-Gunn 2000). The results also suggest that individuals who possess certain characteristics, such as education or individual wealth for example, may be able to overcome neighbourhood-level barriers (Gage and Calixte 2006, Heaman, *et al.* 2007, Perloff and Jaffee 1999)

The second field of research which can help elucidate the barriers faced by women living in slum and squatter areas in accessing maternity care, is the one concerned solely with slum and squatter areas. These studies have been drawn largely from culturally and or economically similar countries like India, Bangladesh, and Kenya that have been dealing with the consequences of uncontrolled urbanisation for many years. Much like the research on neighbourhoods, physical access to facilities, has been found to influence healthcare utilisation among slum resident at the time of delivery. For example, Essendi and colleagues (2011) found that the narrow lanes and passages characteristic of slum areas of Nairobi, Kenya, resulting from the haphazard construction of households, was a major infrastructural barrier for women's access to formal healthcare facilities (Essendi, Mills and Fotso 2011). The onset of labour or complications at night has also been cited as a major barrier, due to the unavailability of public transport near or around the slum areas (Essendi, Mills and Fotso 2011, Stephenson and Matthews 2004). In the present study, the night-time onset of labour was not only reported among squatter residents, but also non-squatter

residents, primarily due to the haphazard urbanisation pattern that has occurred in Kathmandu (Muzzini and Aparicio 2013, Thapa and Murayama 2011, UN-HABITAT 2010). Other possible mechanisms in which living in squatter settlements may have an effect on maternal healthcare utilisation, is through the time a woman has lived in the settlement. For example, one study carried out in Maharashtra, India, compared maternity care utilisation among migrant and non-migrant slum residents (Stephenson and Matthews 2004). The study found that despite reporting almost universal ANC attendance, women living in slum areas who had migrated from rural parts of Maharashtra, continued to display a tendency for home births (Stephenson and Matthews 2004). In contrast, women who had been born into slum areas, were found to almost universally utilise both antenatal and delivery care (Stephenson and Matthews 2004). This "recency-effect" in migration has also been reported more recently in India (Kusuma, Kumari and Kaushal 2013, More, *et al.* 2009) and Bangladesh (Kamal 2012), where women who reported living in urban areas for less than five or even ten years, were found to have poorer maternal utilisation practices, presumably because they adhered more closely to traditional practices, and because those who grew up in slum areas or had lived there for a longer time, benefited from their improved knowledge of the location of maternal health clinic compared with their new rural-to-urban migrants (Kamal 2012, Kusuma, Kumari and Kaushal 2013). Other studies suggest that the underutilisation of maternity services by slum residents, may in fact be reflecting women's adherence to more traditional attitudes towards pregnancy and childbirth. This finding was reflected in the current study, with women from squatter areas more often verbalising more traditional family dynamics including "taking permission" and reported feelings of shyness and embarrassment when seeking care. Pertinent to research on slums, is the community's thriving practice of visiting substandard health facilities, primarily due to their proximity to slum areas (Bazant, *et al.* 2009, Essendi, Mills and Fotso 2011, Izugbara, Ezeh and Fotso 2009, Wahed, Moran and Iqbal 2010, Ziraba, *et al.* 2009). The location of sources of maternal healthcare is discussed in more detail in Section 5.3.2.

One of the major limitations of research carried out among slum residents however, is the lack the inclusion of non-slum residents as "controls", giving rise to the possibility that women who migrate to urban centres but settle in non-slum areas,

have similar utilisation patterns. While this limitation is discussed in more detail in Section 5.4, two recent studies that have investigated maternity care utilisation between slum versus non-slum groups, have both analysed household data collected through the 2005/06 India National Family Health Survey-3 (NFHS-3) (Agarwal 2011, Gupta, Arnold and Lhungdim 2009, Hazarika 2010). One of the aims of the NFHS-3 was to collect data from slum and non-slum areas in eight of India's largest cities in order to determine if poverty, as determined by asset-based wealth, was indicative of place of residence (slum/non-slum) (Gupta, Arnold and Lhungdim 2009). Bivariate and multivariate analysis of the NFHS-3 data by Hazarika (2010) found that living in non-slum compared to a slum area, had no effect on maternity care utilisation (Hazarika 2010). However, in reviewing the same data, Agarwal (2011) called for caution in interpreting the findings of the study, primarily due to the categorisation of India's different slum areas (Agarwal 2011). A deeper look at the definition of slums found that two broad types existed: those "declared" (also referred to as "notified" or "recognised") and "unrecognised" slum areas. The former captured slum areas that have secured legal protection from eviction for a certain period, as well as provision of civic services by government authorities. "Unrecognised" slums on the other hand, are areas that met the definition of slum[2] but had not been previously notified or recognised (Gupta, Arnold and Lhungdim 2009). Much like the *sukumbasi* settlements of Kathmandu, un-recognised slum areas in India, receive no services from government authorities, suggesting that living in officially declared slum areas may not be the worst residential spaces in cities, at least in terms of housing and sanitation infrastructure. Other studies carried out in various cities across India, have also documented the disparity between the two types of slums (Kapadia-Kundu and Kanitkar 2002, Subbaraman, *et al.* 2012, Swaminathan and Mukherji 2012), and argue that living in un-recognised slums resulted in deficiencies in health and social outcomes. Conversely, studies on slum areas that have been "upgraded" or improved, suggest that generalised improvements in roads, sanitation, water, and lighting have the potential to affect various interwoven health and socio-economic outcomes such as secure housing tenure, health, education, and employment opportunities (Parikh, Chaturvedi and George

[2] A compact area of at least 300 population or about 60-70 households or poorly built congested tenements, in unhygienic environment usually with inadequate infrastructure and lacking in proper sanitary and drinking water facilities.

2012, Parikh, Parikh and McRobie 2012, Shrestha 2013, UN-HABITAT 2014). Thus the definition of slum, may explain the lack of effect of slum residence in Hazarika's (2010) multivariate analysis (Hazarika 2010).

However, there are characteristics of slum population groups that are recognised as risk factors for underutilisation of maternal healthcare services. In the present study, for women living in squatter settlements, the isolation of living away from extended family units and native villages, in combination with their limited social networks, primarily made up of women also living in squatter neighbourhoods, made them more vulnerable to receiving inadequate obstetric care (Leal, *et al.* 2011, Raman, *et al.* 2013). Applying social capital principles to maternal healthcare utilisation in urban India, Raman and colleagues (2013) suggested that women's own networks were critical in accessing healthcare, providing not only practical support such as looking after children while a woman is receiving care, but also in encouraging women to seek care (Raman, *et al.* 2013). Nevertheless, in densely populated areas, such as slum and squatter settlements, the concept of *collective socialisation*, where an individuals' behaviour is directly or indirectly influenced by the collective behaviour or beliefs of a group, may be more applicable (Kirby and Kaneda 2005, Kruk, *et al.* 2010, Leal, *et al.* 2011). In their study of social capital among squatter communities in Kathmandu, Sengupta and Sharma (2011) observed that these communities had high levels of social capital emerging from the need to cope with modern urban life and counteract their adverse living conditions and the daily threat of eviction (Sengupta and Sunjeet 2012, Snyder, *et al.* 2011). This type of social capital was also observed in this study, with women reporting becoming aware of the study-clinic through their network of friends and neighbours.

Together, different definitions of neighbourhoods and slums, in combination with the inclusion of diverse explanatory variables, make it difficult to compare the findings of these studies. However, there is uniform support for the broad proposition that women living in disadvantaged communities are potentially missing critical opportunities to improve the course and outcome of their pregnancies.

5.3.2 Health-system factors

This section discusses the effect of health system factors on women's utilisation of antenatal, delivery, and postnatal care. In particular, themes discussed include

Nepal's demand side financing schemes, the *Aama* programme, and the acceptability and adequacy of the existing healthcare system.

Overall, analysis of utilisation practices among women living in Ward 34 who had ever-given birth, indicated that over the last 20 years, women had increased uptake of maternal healthcare. A possible explanation for this increase in maternity care may be simply the urban location of this study, where a greater concentration of health facilities can be found. Previous research analysing the maternal healthcare utilisation in Nepal using 1996, 2001, 2006, and 2011 DHS data, suggested that in 2011 women were 10 times more likely to attend "four or more" ANC visits and eight times more likely to deliver in an institution than in 1996 (Shrestha, Bell and Marais 2014).

However availability of services is only part of the story. As described earlier, women must also be able to access them in order to improve population health. Efforts to enable access of maternity care through the implementation of free care policies and incentive schemes began to be implemented in Nepal since 2005 (Ensor, Clapham and Prasai 2009, Powell-Jackson, *et al.* 2009).

In the present study, the *Aama* programme was shown to be associated with an increase in women's utilisation of delivery care but not antenatal of postnatal care. Previous government reports have found that awareness of the 4ANC programme is low, which may provide an explanation for the lack of effect of the *Aama* programme on ANC utilisation in the present study (Lamichane and Tiwari 2012, Upreti, *et al.* 2013, Upreti, *et al.* 2012). The same reports have found, however, a high level of awareness of the "free delivery" component of the Aama programme, as well as the travel incentive. The present study supports this trend; women chose to give birth in health facilities because it was "free" and, women who gave birth before the implementation of the *Aama* programme were almost four times more likely to give birth at home compared to women who gave birth after. National monitoring reports, have attributed observed increases in the prevalence of institutional deliveries to the *Aama* programme (Lamichane and Tiwari 2012, MoHP 2014, MoHP, New ERA and ICF International 2012, Powell-Jackson, *et al.* 2009, Upreti, *et al.* 2013, Upreti, *et al.* 2012). In other low-resource countries, government-led initiatives have promoted different forms of financing schemes which, much like Nepal's *Aama* programme, seek to increase access to antenatal, delivery, and postnatal care as a strategy to

reduce maternal mortality. For example in Kenya (Bellows, *et al.* 2013), India (Gopalan and Varatharajan 2012, Lim, *et al.* 2010), Bangladesh (Nguyen, *et al.* 2012), and Cambodia (Dingle, Powell-Jackson and Goodman 2013), demand-side financing schemes have also been thought to have significantly increased facility-based deliveries, and all, with the exception of Kenya, are on track to achieve the MDG related to maternal mortality ratios (WHO, *et al.* 2014). Importantly in India (Lim, *et al.* 2010), the implementation of a demand-side financing scheme was reported to lead to a reduction of 3.7 perinatal deaths per 1,000 pregnancies, and 2.3 neonatal deaths per 1,000 live births (Lim, *et al.* 2010).

Despite the removal of service fees, the literature suggests that there can still be substantial costs associated with registration, additional medicines, travel, and lodging (Morrison, *et al.* 2014, Simkhada, *et al.* 2014, Simkhada, *et al.* 2012, Upreti, *et al.* 2013, Upreti, *et al.* 2012). The present study supports these findings, particularly for cases where women required long stays in hospital after delivery, or if they or their babies required intensive care. In fact, a common phrase found in the transcripts was *"only delivery is free"*, with families incurring charges for medicines, bags of blood for transfusions, and bed charges for long stays. Nevertheless, the majority of women cited the *Aama* policy as the reason they had given birth at a government facility. Such "hidden" costs have also been reported in countries like Bangladesh (Nahar and Costello 1998), Tanzania (Kruk, *et al.* 2008). In Bangladesh, despite government facilities being declared exempt from user-fees, Nahar (1998) found that the average cost of normal deliver was US $32, while the average cost of a CS was US$ 118 (Nahar and Costello 1998). In a study of drivers of cost for institutional deliveries in rural Tanzania, Kruk (2012) found that despite the Government's commitment to providing "free" delivery care, nearly 75% of women, reported paying for delivery (Kruk, *et al.* 2008). Hidden costs in both studies were attributed to unofficial medical charges, the cost of porters and cleaners, travel and food expense (Kruk, *et al.* 2008, Nahar and Costello 1998). Prior to the implementation of the Aama policy, Nepali women financed costs for delivery from household budgets or (Hotchkiss, *et al.* 1998, van Doorslaer, *et al.* 2006), with several studies reporting average payments between NRs 1,965 and NRs. 5,336 (US$ 21- US$ 60) for a normal delivery at a public facility (Borghi, *et al.* 2006, Gartoulla, *et al.* 2012, Simkhada, *et al.* 2012). In 2011, a study by Witter and colleagues, found

that despite the *Aama* programme, some costs intended to be covered by health facilities, continued to be passed on to service users (Witter, *et al.* 2011). More recently in 2013, a Rapid Assessment of the *Aama* programme reported that only 43% of women across Nepal received free delivery care (Upreti, *et al.* 2013). The rapid assessment further found that only 9% of women who had a complicated delivery and 3% of women who had a CS delivery received free delivery care. On average women reported paying US $19 and US $63 for normal and complicated deliveries, respectively. Most commonly women reported paying to cleaners and for medicines (Upreti, *et al.* 2013). This in an important finding given that high costs associated with delivery care have the potential to impact the poorest more severely. This point has been previously made by Borghi and colleagues who calculated that for the poorest households, a normal facility delivery was approximately equivalent to three months of household income (Borghi, *et al.* 2006). Moreover, the finding that charges for services varied across facilities that were supposed to be providing free services, adds an element of unpredictability of costs, which not only has the power to deter women from seeking medical care, but also has the potential to drive many poor households into deeper poverty.

While the removal of service fees in Nepal is thought to have led to increased utilisation of delivery care, a report published by the FHD in 2013 reported that natural population growth, a preference for hospital-level facilities, in combination with the *Aama* programme, has put immense pressure on tertiary level facilities in in Nepal (FHD/NHSSP 2013). Managing such high volumes of births in under-resourced facilities has in turn compromised the quality of care provided at a number of facilities (FHD/NHSSP 2013). As highlighted by Andersen's model of healthcare use, women's own experiences with the healthcare system is an important component of healthcare utilisation, primarily because it is women and their families who often decide whether or not to use care based on their opinions, evaluations and experiences with services (Andersen 1995, Andersen and Newman 2005, Simkhada, Porter and van Teijlingen 2010, Simkhada, *et al.* 2014). In this study, particularly at the time of delivery, women described unpleasant experiences either first hand or hearing from close friends and relative. Words such "difficult" and "crowded" were words often used to describe women's experiences in public hospitals, who also recounted stories of mistreatment, unclean facilities, and long waiting times for

medical attention due to high demand. This is consistent with reports from previously published literature from Nepal (FHD/NHSSP 2013, Joshi, *et al.* 2014, Karkee, Lee and Pokharel 2014, Pradhan, *et al.* 2010, Simkhada, *et al.* 2006). Despite these negative description of women's experiences in public facilities, the government system continues to be the most utilised in the country. In this regard, a recent study carried out in the central hill district of Kaski, Nepal, investigating women's perception of quality, found that women perceived the quality of maternity care to be highest at private hospitals, followed by birthing centres, and lowest at public hospitals (Karkee, Lee and Pokharel 2014). Despite public hospitals receiving the lowest score for overall quality of care, 77% of women in the study reported giving birth in public hospitals. The authors proposed that this was due to the higher costs associated with private healthcare, deterring women from these facilities (Karkee, Lee and Pokharel 2014). On the other hand, the authors found that public facilities were chosen over birthing centres because women valued technical quality and competency of health personnel over improved physical infrastructure found at birthing centres (Karkee, Lee and Pokharel 2014). In the present study, it is also possible that the high costs associated with private care, and the belief that low-level facilities provided inferior care, was the reason for women's preference of government facilities.

In the present study women who attended government facilities and received counselling, often expressed dissatisfaction with the advice and interaction with healthcare providers. In their verbalisations, women expressed feeling that they were not given the time and opportunity to ask questions to the health providers due the large number of women seeking care and the hurried nature of the care provided. A journal article commenting on the major problems and key issues in maternal health in Nepal, has previously described overcrowded hospital outpatient departments as a barrier to utilisation due to its impact on privacy and provider-patient interaction time and counselling (Simkhada, *et al.* 2006). In addition, an earlier study carried out in urban and rural areas of the Banke District in the Mid-western of Nepal, reported that the mean duration of ANC consultations at a public health facilities was 10 minutes, varying between 5–15 minutes, with approximately only one minute spent on health education and counselling (Jahn, *et al.* 2001). Similar inadequate contact with health professionals during ANC has been reported in Vietnam (Graner, *et al.*

2013) and Tanzania (Pembe, *et al.* 2010, von Both, *et al.* 2006), where although advice on pregnancy related complications was provided, the health professionals were so busy that women did not have the chance to ask questions and interact meaningfully with the providers. For the present study, such short interaction time and the type of interaction, may help to explain women's lack of deeper understanding of *why* they should continue to attend antenatal care after receiving prophylaxis treatments of TT, an why women should adhere to daily iron tablets. A similar situation was observed with the intake of helminthic prophylaxis, with women often responding *"I do not have worms"* as their reason for not taking deworming medication. Among women who did not attend PNC, comments overwhelmingly suggested that they did not attend as a result of a lack of advice regarding the importance of checking their health after delivery. Given that nationally, public facilities provide antenatal and postnatal care to 84% and 76% of Nepali women, respectively (CBS 2011, MoHP, New ERA and ICF International 2012), this lack of advice and counselling represents a missed opportunity to improve the health of the most needy women and children. The important role of the advice received during ANC, was verified, with some women citing that the instructions recommended by healthcare providers were instrumental in guiding their behaviour during pregnancy, and upon the onset of labour, as well as serving to deter family members from interfering in women's utilisation of services. According to the WHO, contact during pregnancy and postnatal phases is considered paramount in the shaping the views of women and communities, and enabling them to make timely decisions to seek care (MoHP 2014, WHO 2009).

Substantiating the importance of provider-client relationships among slum residents, a study carried out by Izugbara and colleagues (2009), which investigated the persistence of home births in Nairobi, Kenya, suggested that affability and interpersonal aspects of care, such as responsiveness, communication, and hospitality are imperative for poor women. Analysis of qualitative data collected from TBAs, found that ultimately services from TBAs invested time in building strong relationships in the community long before, during and after pregnancies (Izugbara, Ezeh and Fotso 2009). Traditional Birth Attendants were found to provide women with advice and information on contraceptives, as well as antenatal and postnatal care, helped secure birth certificates for children, mediated between women and their

husbands, and organised services to deal with health emergencies (Izugbara, Ezeh and Fotso 2009). The authors proposed that women's preference for a home delivery was strongly influenced by the behaviour of the TBAs, with TBAs investing time and effort in building confidence and trust between themselves and their clients and their families, which unlike the Kenyan government system, was characterised by crowdedness, and provider inattention to clients' concerns (Izugbara, Ezeh and Fotso 2009).

In addition, findings from the present study suggest that in the government system, "poor" women were perceived to receive ill-treatment because they were poor, ultimately deterring women's access to healthcare services. Women often reported being "scolded" or "shouted" at by medical staff for screaming during delivery or for not having adequate clothing for the baby upon discharge from hospital. This lack of affability has been previously reported in Nepal, where providers are perceived to provide better care for family and friends, while also creating disparities in the treatment and utilisation based on caste (Clapham, *et al.* 2008, Karkee, Lee and Pokharel 2014, Morrison, *et al.* 2010, Pandey, *et al.* 2013, Regmi, *et al.* 2009). Marginalisation or pure discrimination against the poor can also prevent the poorest populations from accessing care, either by receiving lower quality care (Ziraba, *et al.* 2009), or at times poorer clients are given lower quality of care even when they use the same facilities as their wealthier neighbours (Pitchforth, *et al.* 2006). This in turn has been shown to translate into reluctance to use services and ultimately the poor are marginalised when they perceive the care to be rude, neglectful, or even abusive (Hulton, Matthews and Stones 2007). Overall, results suggest that improving interpersonal aspects of care during pregnancy, may lead to increased hospital deliveries, especially among poor and disadvantaged women.

Results from this study also indicate that despite the implementation of a standard antenatal and postnatal care package at clinic-level facilities, women in Ward 34 sought technical competency through highly qualified staff and facilities with modern diagnostic technologies. While the study-clinic was commended for service providers' affability towards clients, its location within the community, "easy" access, and free services, these factors were not enough to ensure utilisation. Specifically, the study-clinic lacked equipment and highly trained staff, two key aspects of maternal healthcare previously reported to be highly valued by women in

Nepal (FHD/NHSSP 2013, Karkee, Lee and Pokharel 2014). Women cited traveling outside of their communities to receive antenatal and delivery care, demonstrating women's willingness to overcome travel or location barriers in order to receive the type of care they believed to be adequate and necessary. It is evident therefore, that the Government's response to the address the health of poor and vulnerable population in urban areas, did not match women's expectation of care. As described earlier, the Community Urban Basic Health Service Programme was implemented specially to address the health of urban poor and squatter residents (Kathmandu Metropolitan City 2009). Service delivery in through community urban clinics which provide basic-level care similar to that found sub-health posts in rural areas. The level of care provided by these clinics is indicative of the care that the Government believes poor and disadvantaged populations deserve, should expect, or can afford, thereby reinforcing their exclusion from the standard level of care that is generally available in urban settings. An explanation for this underutilisation of the study-clinic by residents of Ward 34, is provided by More and colleagues, who noticed that in an attempt to identify with their new urban environment, slum residents in Mumbai developed a perceived need for modern medical care, which he called "aspirational" behaviour (More, *et al.* 2009). More and colleagues proposed that one of the aspirations in assimilating to their new urban environment, is to achieve modernity in healthcare, including modern diagnostics and highly qualified health providers (More, *et al.* 2009). It is therefore possible that in their preference for hospital-level over lower-level ANC, poor women and women from squatter settlements were also displaying aspirational behaviour. As shown in the results from the R-HFA, women living in squatter and non-squatter settlements of Ward 34, preferred sophisticated hospital-level facilities that possessed the technical capacity to provide comprehensive assessments and treatments from highly qualified providers. Women's preference for hospital-level facilities has been previously documented in Nepal (FHD/NHSSP 2013, Karkee, Lee and Binns 2013, Karkee, Lee and Pokharel 2014), where women's perception of quality care is primarily based on the presence of equipment, highly qualified health personnel, and interpersonal aspects, such as responsiveness, communication, hospitality.

Finally, a strong association between low frequency of ANC visits and home delivery was also found in the multivariate models of healthcare utilisation. This

finding has been reported previously in Nepal (Shrestha, *et al.* 2012) and among slum communities in Kenya and India (Das, *et al.* 2010, Fotso, *et al.* 2009, Hazarika 2010, MoHP, New ERA and ICF International 2012), confirming the notion that at the very least, ANC provides an entry point to safer delivery in a health facility. In the local context, it is encouraging that the Nepal Government is currently employing the 4ANC and delivery schemes to encourage attendance to a minimum of four ANC visits and HF deliveries (Sunil, Rajaram and Zottarelli 2006, Upreti, *et al.* 2012).

5.3.3 Families and individuals

This section begins by discussing the observed effects of enabling factors, support networks and wealth, in accessing maternal healthcare utilisation. The discussion then focuses on the effect of predisposing factors on utilisation, namely education and primiparity. The effect of young age at first pregnancy, although considered a need factor, has been discussed alongside primipartity. This has been done because in the SSIs and FGDs these two factors were discussed together in women's verbalisations. In addition, the effect of employment on utilisation will be discussed after the role of education. This was done because theoretically, higher educational status is generally associated with better job prospects and greater accumulation of human capital.

In this study, relationships within the household were found to both prevent and enable maternal healthcare utilisation. While women's traditional low status within the household was raised during discussions, it was more a lack family presence in Kathmandu that was found to hinder women's utilisation of maternal healthcare services. This was particularly evident for women living in squatter areas, who expressed difficulty in accessing healthcare without the support of family members, particularly support from mothers-in-law and older sisters-in-law. In this instance, a lack of a companion to help navigate the healthcare system and financial support were reported to hinder women's utilisation of maternal healthcare. This finding supports those of a recent qualitative study investigating financial barriers in attending ANC among Nepali women living in semi-urban and rural settings, in which underutilisation was the result of women's low status within the household, where they must "take permission" from mothers-in-law or husbands to spend on ANC-related costs (Simkhada, *et al.* 2014). Earlier studies carried out in Nepal have also reported a tradition of women being supported by a "companion" in Nepal

(Borghi, *et al.* 2006, FHD/NHSSP 2013, Sapkota, *et al.* 2012). For instance, the 2011 NDHS reported that 60% of women did not receive medical care when needed because they did not want to go alone (MoHP, New ERA and ICF International 2012). This general lack of confidence and autonomy to make decisions about surrounding their health, has typically led them to depend on others for their well-being, and has been previously reported to represent a major barrier in utilisation of maternal healthcare (Brunson 2010, Furuta and Salway 2006, Mullany 2006, Sharma, Sawangdee and Sirirassamee 2007, Simkhada, Porter and van Teijlingen 2010, Simkhada, *et al.* 2014).

On the other hand, the absence of extended and or joint family units in urban settings found in this study, gave husbands the opportunity to play a more supportive role in enabling women's utilisation of maternal healthcare. In Nepal, male involvement with regard to pregnancy and childbirth has been traditionally restricted to expenditure and decision-making to seek or not to seek care, recent studies have indicated men's increased willingness and need to be involved in their wives healthcare (Caltabiano and Castiglioni 2008, Mullany 2006, Sapkota, Kobayashi and Takase 2011, Thapa and Niehof 2013). Like these studies, the current study found that husbands encouraged women to attend healthcare and they actively investigated where their wives could attend for ANC or delivery by asking friends and family. This shift in attitudes and behaviours with regard to male involvement has been previously attributed to the "changing times," whereby younger generations in contemporary Nepal have begun to behave differently than older generations (Mullany 2006, Thapa and Niehof 2013). Younger generations have been found to be less conscious about their communities, even defying their mother's wishes to not become involved in their wife's pregnancy, health, and increasingly attending hospitals or clinics to obtain information related to pregnancy and childbirth (Mullany 2006, Thapa and Niehof 2013). Another possible explanation for the attitudinal shift is the increased exposure to foreign ideologies and other social changes that accompany increasing urbanisation and migration (Caltabiano and Castiglioni 2008, Mullany 2006, Sapkota, Kobayashi and Takase 2011). It is clear therefore, that in Nepal men may constitute an important asset in increasing women's utilisation of maternal healthcare. However, men's involvement also has the potential to result in unintended negative consequences for women and children. This is

particularly the case in instances where the intention of male partners lies in taking tighter control over choices that have traditionally been managed by women, effectively reducing women's already low sense of autonomy. However, on the other hand, under the right circumstances, men's involvement in maternity care can go beyond women's health and promote wider development issues, gender equity and gender relations.

Companionship from senior female family members, was also found to be essential for women in our study, with women citing it as a barrier for not attending ANC and even during delivery. Mullany (2006) has previously reported that hospital policies at the biggest maternity hospital in the country, prevent husbands from entering most areas of the hospital (Mullany 2006). In her study, Mullany reported that men could often be found waiting outside certain women-only areas to talk to care providers to ask questions about their wives health status and instructions on what to if complications occur (Mullany 2006). The effect of such policies was also mentioned in the present study as a factor that added to the "difficulties" experienced at government facilities. Women living in nuclear family units found such hospital policies particular difficult.

Substantial research has also demonstrated that individual or household wealth is strongly related to the use of maternal care services, with poorer women seeking less care due to economic constraints in meeting the direct and indirect costs of treatment (Bazant, *et al.* 2009, Celik 2000, Gage 2007, Magadi, Madise and Rodrigues 2000, Magadi, Zulu and Brockerhoff 2003). Although in the present study poorer women groups were also more likely to underutilise maternal healthcare compared to their richer counterparts, as mentioned earlier, healthcare providers were also cited to act uncharitable towards "poor" women because they were poor. Together, these two factors ultimately discouraged utilisation of maternal healthcare. During pregnancy, women were found not to attend the adequate number of ANC visits because they lacked a deep understanding of the benefits of the "basic" monitoring and interventions offered by the 4ANC package, but also because they lacked the finances to receive more sophisticated services, such as ultrasound scans and blood testing. At the time of delivery, women from lower wealth groups often worried about the rapidly escalating costs for caesarean sections and complications. In Nepal, this concern over costs has been previously reported in the Sarlahi District, where

women and their families felt that the incentive alone was not enough to cover all the expenses they could incur (Morrison, *et al.* 2014). As verbalised during the FGDs, it is also possible that some women may be misinformed about where maternal healthcare is provided for free and where it may incur high costs. In the R-HFA it was found that while some private teaching hospitals were implementing the *Aama* policy, there was variability in what interventions and diagnostics were covered by the policy and the costs of tests and consumables.

At an individual level, the present study found that first-time mothers were particular predisposed to underutilise maternal healthcare, as they were considered inexperienced. An explanation for this for the especial vulnerability of primiparous women may be provided by Brunson (2010), who proposed that while most young women had more knowledge about biomedical approaches maternal health, they did not have the social power to demand services (Brunson 2010). In the present study, primiparous mothers were found to be heavily reliant on their seniors for advice about when to start ANC, where to go for care, and how to get there. This is consistent with previous studies from Nepal, which not only report a dependency on senior family members (Furuta and Salway 2006, Simkhada, Porter and van Teijlingen 2010), but also that most women learn about what to expect during pregnancy or childbirth through their own experiences of first pregnancy and birth, rather than knowledge gained through counselling or teaching (Brunson 2010). Since the quantitative results in the present study did not find an independent effect of being a first-time mother on maternal healthcare utilisation, it is difficult to say whether the vulnerability of first-time mothers are simply because they are younger or because they are characterised by multiple and diverse risk factors. Other studies from Nepal, have found that younger women, who are often experiencing their first pregnancy, are more likely to utilise maternal healthcare because younger women have little or no experience with pregnancy and because they consider themselves a high risk group and fear home deliveries (Halim, Bohara and Ruan 2011, Neupane and Doku 2013). Among slum populations, on the other hand, younger women have been found to underutilise maternity care (Kusuma, Kumari and Kaushal 2013, More, *et al.* 2009, Olusanya, Alakija and Inem 2009). In India, Kusuma and colleagues (2013) proposed that since younger age is associated with migration, younger women's increased likelihood to underutilise maternal healthcare is due to

their decreased knowledge of the location of the health facilities and their lack of knowledge of the government health system in their new urban environment (Kusuma, Kumari and Kaushal 2013).

The bivariate analysis for utilisation of antenatal, delivery, and postnatal care found that women who reported achieving secondary education or higher were more likely to use maternity care during pregnancy, delivery, and postnatally. However after adjusting for individual and community level factors, the independent effect of education remained significant at the time of delivery only, whereby women who reported education of less than secondary, were more almost three times more likely to deliver at home. This predisposition of lowly-educated women to underutilise maternal healthcare services was confirmed during the SSIs and FGDs, where a lack of education was often linked to more traditional beliefs and behaviours surrounding pregnancy and childbirth or women who "*do not know*" about the importance of adequate care during pregnancy and delivery. Many of the studies reviewed in this thesis lend support to the strong linkages between education and various health outcomes, including utilisation (Birmeta, Dibaba and Woldeyohannes 2013, Goland, Hoa and Malqvist 2012, Guliani, Sepehri and Serieux 2012, Sagna and Sunil 2012). Even in studies of women from slum areas the positive effects of maternal educational attainment on healthcare utilisation have been reported (Fotso, *et al.* 2009, Hazarika 2010, Kamal 2012, Kumar and Singh 2013, Kusuma, Kumari and Kaushal 2013, Rahman, Goni and Akhter 2013, Rahman and Islam 2010). Specific to Nepal, analysis of nationally representative datasets from 1996, 2001 (Sharma, Sawangdee and Sirirassamee 2007), 2006 (Furuta and Salway 2006, Neupane and Doku 2012, Neupane and Nwaru 2013), and 2011 DHS (Joshi, *et al.* 2014, Pandey, *et al.* 2013), have consistently shown that women with lower educational status had a higher probability of attending fewer than four ANC visits and starting ANC in later in pregnancy compared to women who had at least some primary level education, even after controlling for individual and contextual characteristics. In terms of delivery care, analysis of the 2001 (Furuta and Salway 2006, Sharma, Sawangdee and Sirirassamee 2007) found associations between increased education and institutional deliveries. More recently, analysis of the 2011 DHS data, Karkee and colleagues (2014) who included birth preparedness variables, failed to find an effect of education on delivery care (Karkee, Lee and Khanal 2014). Analysis of the same

data by Hodge and colleagues (2014), who disaggregated analysis of healthcare utilisation according to ecological zone, did find a significant effect of education on delivery care (Hodge, *et al.* 2014), suggesting that differences in the effect of education on healthcare utilisation between the two studies, may be due to sensitivity of explanatory variables. Smaller studies carried out in different districts across the country however, have consistently found that women who achieve lower education, are more likely to give birth at home compare to women who achieve at least some primary education (Karkee, Binns and Lee 2013, Shrestha, *et al.* 2012, Wagle, Sabroe and Nielsen 2004).

While the pathways on exactly how education influences health is currently unclear; whether through health-specific education, general literacy skills, or influence of higher education on earning capacity. It is believed that educated persons have a higher accumulation of *human capital* which consequently alters the traditional balance of power and decision-making within the household, reduced fatalism and shapes the perceived need of professional healthcare, and consequently enables its utilisation (Caldwell 1979, Elo 1992). Education is not only associated with increased autonomy and decision making, but also frequently linked to better employment opportunities. This link between education and employment may provide an explanation of the observed effect of women's employment on utilisation of delivery care. For example, in Nepal, Furuta and Salway (2006) found that after controlling for several confounding factors, women with higher levels of education were more likely to be involved than not involved in household decision making, and more likely to be employed and have control over their own earnings than be employed and have no control over their own earnings (Furuta and Salway 2006). Although the present study did not collect information on women's control over their own earnings, women who reported being engaged in salaried employment, were less likely to report attending "fewer than four" ANC visits, giving birth at home, and no PNC attendance, than those who were not earning. After adjusting for wealth, education, and other common confounders, the effect of being engaged in salaried employment remained significant only at the time of delivery. Research surrounding employment and women's utilisation of maternity care suggests that paid employment provides women the extra financial capital and confidence to access more healthcare. Alternatively, working women are exposed to knowledge and

attitudes about modern healthcare at their workplaces, thus leading to higher utilisation via both increased demand and an increased financial resources to act on that demand (Furuta and Salway 2006). In this study, women who were semi-employed were most often engaged in occupations such as construction/labour, or housemaids, earning meagre daily wages, often with little to no education. On the other hand, women engaged in salaried jobs, often reported "office" jobs, such as teachers and nurses, and had achieved higher educational status. Therefore, in this study, employment status may not only be reflecting a woman's current financial situation, but also her accrued human capital over her lifespan, where women who are employed in salaried jobs, are more likely to have achieved higher levels of education and therefore have a greater financial resources and confidence to communicate and use modern health services.

Together, the results of this thesis have important implications for Nepal's future development. As seen throughout this study, disaggregating data according to urban versus rural residence has led to the overestimation of the advantages of urban areas and complacency with regard to addressing the needs of urban poor women. It is imperative that the Government continues to develop strategies for urban poor women who are at highest risk of not engaging with the maternal healthcare system. While there are many factors found to influence the utilisation of maternal healthcare, it is generally agreed that those in most need of healthcare (sick and poor) are least likely to receive care (Ahmed, *et al.* 2010, Braveman and Gruskin 2003, Hart 1971, Marmot 2007, Marmot and Friel 2008).

Research evidence presented in this thesis has also demonstrated that the experiences of early childhood can have a profound lifelong impact on a child's health, well-being, productivity, and future earnings. There is a robust body of literature that highlights the importance of the first 1,000 days in influencing a child's trajectory through to adulthood, including schooling, earnings, crime, obesity, heart disease, mental health problems (Black, *et al.* 2013, Mason, *et al.* 2014, Save the Children 2012, Victora, *et al.* 2008).

Research carried out among squatter and slum settlements, where women are characterised by low educational status, higher parity, early childbearing, and uphold traditional health beliefs and practices, suggests they are underutilise maternity services compared to average urban dwellers (Fotso, Ezeh and Oronje 2008, Goli,

Doshi and Perianayagam 2013, Lumanti Support Group for Shelter 2008, Madise, *et al.* 2012, Rahman, Goni and Akhter 2013, Sverdlik 2011, Unger 2013). For their offspring, their low accumulation of different resources, including low human and financial capital, means that children are born into home environments that have the potential to impact their chances of survival and life chances to realise their full potential (Kimani-Murage, *et al.* 2014, Save the Children 2012, Shonkoff, Boyce and McEwen 2009)

Several studies have reported that children living in squatter and slum areas have low vaccination rates and thus lower protection against preventable diseases (Goli, Doshi and Perianayagam 2013, Mutua, Kimani-Murage and Ettarh 2011, Srivastava, *et al.* 2012, Unger 2013). Lack of basic amenities like safe drinking water, proper housing, drainage and excreta disposal also make this population vulnerable to infections, suffering frequent episodes of diarrhoea and other communicable diseases (Kyobutungi, *et al.* 2008, Srivastava, *et al.* 2012, Unger 2013). Such frequent bouts of illness compromises the nutritional status of those living in the slum and squatter settlements, with studies reporting low nutritional status among children living in squatter settlements (Das, *et al.* 2012, Fotso, *et al.* 2012, Ghosh and Shah 2004, Srivastava, *et al.* 2012). As children transition from childhood to adolescence, their low health stock can be exacerbated and even re-created overtime as a result of inequalities that exits and persist from birth to adolescence and later in adulthood. For example, many may also begin their exposure to sexual and reproductive health problems in early adolescence, at a time when a woman's body is not physically mature can lead to complications for both the child and mother (Kumar, Kumar and Kumari 2012, Ramakrishnan, *et al.* 2012). In slums of Bangladesh, as many 79% of ever married women living in 18 different slum areas, reported their first pregnancy before the age of 18 years. Nationally however, only 24.2% of women report early pregnancy (Rahman, Goni and Akhter 2013).

Thus living in slum and squatter settlements not only has immediate health effects on current residents, but also health effects for future generations. While the immediate effects are obvious, the inter-generational effect of being born into and developing under such adversity are not. The expectation in terms of health, according to several theories of human development and health, is that the combination of these familial risk factors adversely impact children's growth and development, not only because

children are born into families with lower economic resources and live in hazardous neighbourhood environments, but also because the hazardous environments have predisposed children to a life-time of health vulnerabilities from the moment of conception, which can later express in the form of disease in adulthood (Barker and Clark 1997, Braveman and Barclay 2009, Bronfenbrenner 1979, Shonkoff, Boyce and McEwen 2009).

While it is acknowledged that not all urban poor live in squatter settlements, and that not all squatter residents are poor, squatter settlements house a higher proportion of poor individuals. As has been discussed in this thesis, the social effects of living in neighbourhoods with high poverty concentrations, can have detrimental effects of future generations (Coleman 1988, Galea and Vlahov 2005, Kirby and Kaneda 2005, Leventhal and Brooks-Gunn 2001). Whether measured in absolute or relative terms, poverty has a negative effect on women and the children that depend on them. Poverty is an important determinant of long and short term maternal nutritional status, food security, adequate care, and education. Poorer mothers are therefore more likely to give birth to low birth-weight and shorter offspring, suggests that socio-economic differences in health, have an important impact on children even before conception and continue to impact negatively throughout the child's life course (Black, *et al.* 2008, Brooks-Gunn and Duncan 1997, Brooks-Gunn, Klebanov and Liaw 1995, Grantham-McGregor, *et al.* 2007). This failure of children to fulfil their developmental potential and achieve satisfactory educational levels, plays an important part in the intergenerational transmission of poverty, potentially resulting in more fragile health and thus greater vulnerability to disease processes for children born to poor mothers.

Over a life course therefore, health disparities in adults, to some extent, can be traced back to early life disparities, suggesting that reducing disparities *in utero,* can contribute to reducing adult health disparities (Braveman and Barclay 2009). It is also clear that it is much more cost effective to intervene in early life to prevent common diseases such as type 2 diabetes and cardiovascular disease, than to treat such diseases later in life when they become present (Shonkoff, Boyce and McEwen 2009, Victora, *et al.* 2008). Furthermore, children who have optimal early development are more likely to lead to increased school years and better performance (Alderman, Hoddinott and Kinsey 2006, Christian, *et al.* 2010, Daniels and Adair

2004, Maluccio, *et al.* 2009, Mendez and Adair 1999, Moock and Leslie 1986), and contribute to society as parents and citizens (Alderman, *et al.* 2001, Grantham-McGregor, *et al.* 2007, Haas, *et al.* 1995, Hoddinott, *et al.* 2008, Save the Children 2009, Thomas and Strauss 1997).

Unfortunately, as this thesis has found, neighbourhood and economic deprivation can expose children to inadequate care (and hence nutrition) from the moment of conception. Their environment as newborns, can further expose them to under-nutrition, while their daily exposure to poor sanitation and hygiene, frequent illness, and reduced healthcare (Brooks-Gunn, *et al.* 1995, Gluckman, *et al.* 2008, Haveman, Wolfe and Spaulding 1991, Shonkoff, Boyce and McEwen 2009), means they are the least likely to overcome early life disadvantages. Previous research has also shown that the underutilisation of maternity services, has been previously associated with an increased likelihood of health and developmental problems in childhood, is a serious issue for the Nepali Government. It is clear that it is much more cost effective to intervene in early life to prevent common diseases such as type 2 diabetes and cardiovascular disease, rather than treat such diseases later in life when they become present (Shonkoff, Boyce and McEwen 2009). Furthermore, children who have optimal early development are more likely to achieve literacy and numeracy, succeed at school, gain better-paid employment, and contribute to society as parents and citizens (Save the Children 2009).

The aim of Nepal's free care policy is to enable the poor and weak in society to access and utilise care, so as to offer them the same life chances, at least in health, as their richer and stronger counterparts. This must not be forgotten. While Nepal has made great strides in increasing healthcare utilisation and reducing maternal and child mortality, as we have pointed out in the literature review, the wealthier population groups have made the greatest advances in utilisation. Efforts therefore must now concentrate on improving access among the most excluded sectors of communities, including the urban poor and squatter populations.

Building a strong foundation for healthy development during the early years of life is an important prerequisite for lifelong well-being, successful communities, economic productivity, and harmonious civil societies. The failure of governments to comprehensively address urban poverty and health, has the potential to undo much of the advances the Nepali Government has made in maternal and child health

(Government of Nepal and UN country Team 2013, WHO, *et al.* 2014). There is a paucity of information on the maternal health of squatter residents in Nepal, which impedes government and non-government sectors from adequately addressing the health needs of this vulnerable and growing population group.

The following section provides a discussion of the strengths and limitations to the mixed methods and methodology used in this study.

5.4 STRENGTHS AND LIMITATIONS

The collection of survey, interview, and focus group data is inherently difficult and problems invariably occur in the most benevolent contexts. The collection of data in developing countries, such as Nepal, where there are limited resources, language barriers, cultural differences, and other major logistic problems is extremely challenging (Durham and Tan 2010, McDonald 2000, Small, *et al.* 1999). Specifically in undertaking research in urban areas, including slum areas, researchers have reported a range of challenges such as insecurity, the desire of many residents to remain anonymous, the difficulties in tracking their movements in and out, and the illegal nature of their tenure (Khan and Zanuzdana 2011, Marx, Stoker and Suri 2013, Pantuliano, *et al.* 2012, Sverdlik 2011). While data collection was challenging in the present study, this should not detract from the valuable contributions this study has made to the fields of urban health and maternal health in Nepal. Particularly the rigour in mixed methods employed throughout this thesis helps to demonstrate the contextual and in-depth nature of maternal healthcare utilisation in Kathmandu.

One of the main strengths of the study is the comparison of maternal healthcare utilisation practices between squatter and non-squatter populations. While most studies related to maternal healthcare utilisation have reported that a higher prevalence of women living in slum and squatter areas underutilise antenatal, delivery, and postnatal care compared to national “average” urban figures, most studies suffer from three broad limitations. First, of the studies that have utilised large databases of nationally representative data or studies that have recruited representative samples from their study areas, very few use “control” groups or non-squatter or slum groups (Agarwal 2011, Hazarika 2010, Kapadia-Kundu and Kanitkar 2002). Second, multivariate analysis investigating the determinants of utilisation of maternity have to date primarily focused on individual-level factors,

with the justification that these are the most proximal to the individual and therefore have the strongest effect on utilisation outcomes. Finally, studies which have focused on understanding the challenges encountered by women living in in slum and squatter settlements, generally recruit small samples for in-depth interviews, which have obvious implications for generalisability (Choudhury, *et al.* 2012, Griffiths and Stephenson 2001, Pitchforth, *et al.* 2006, Stephenson and Matthews 2004). Altogether, these gaps in the research mean that studies are limited in the inferences that can be made about community-level barriers to utilisation. This thesis addressed these gaps by collecting information from control women living in non-squatter areas and compared their practices to that of women living in squatter settlements. Whilst the effect of sampling bias cannot be ruled out for this study, primarily due to the non-random sampling techniques used in all three phases and the over-representation of women living in squatter settlements in phase one, this study has contributed substantial knowledge to the area of urban maternal health.

Throughout the candidature various methodological, technical, environmental, and cultural challenges were encountered. These ranged from long power outages, a common characteristic of low-resource countries, to community-level challenges, such poor access and mistrust. These challenges imposed limitations on the study results including the potential for bias in data collection, analysis, and subsequently interpretation. Therefore the results of this thesis should be considered in light of its limitations. The first challenge was the cross-cultural nature of this study. Although Nepal has commonly reported issues related to the retention of qualified and experienced human resources (Adhikari 2014, FHD/NHSSP 2012, Rai, *et al.* 2001, Sherchand 2013), for this project the frequent staff turn-over ultimately translated to the loss of integral project-specific knowledge and experience.

As the study-clinic acted as the headquarters for all research activities pertaining to this project, the loss of trained and experienced researchers and care-givers may have impacted the project. The loss of trained individuals with in-depth understanding of the aims of the three-year project, data management experience, as well as the loss of more experienced care-givers who were replaced by younger and lower skilled health providers. This loss in human resources may have affected the understanding of the project team of the specific barriers and non-clinical needs of the target population, leaving this hard-to-reach group had to consistently establish a new provider-client

relationship. This may have potentially affected attendance at the clinic, ultimately impacting on the data presented for this project.

A further challenge encountered during this study was the specific characteristics of the study settings and its inhabitants. As described in Section 2.5, non-squatter housing in Kathmandu is characterised by single-room households, or single-floor households within a house. While there are well-known apartment-style sampling methods, in Kathmandu, during field-work it was not possible to determine the number of household within one house just by looking at a building, and even once inside the building. In addition, gated housing commonly found in Kathmandu, and the general mistrust encountered in urban areas compared to small towns or villages have been previously reported to lead to poor response rates and biased samples in low- and middle- income countries (Azevedo, Queiroz and Rezende 2005, Groves and Couper 2012). In squatter settlements on the other hand, although community life resembled more village-style dynamics and potential participants were more willing to participate, personal safety concerns were raised during field-work. The perceived high crime rates and the non-existent street lighting, meant that most of the interviews could only be carried out during the daytime and on weekends (Saturdays). Since the majority of participants were recruited during weekdays, it is possible that the sampling may be skewed to include mostly women who were unemployed or housewives compared to the average population. However, previous studies have suggested that many women in Nepal continue to fulfil traditional family roles characterised by performing home duties and rearing children (Furuta and Salway 2006). Furthermore, increased focus on urban poverty and squatter settlements in the media, had led to an increasing number of local students undertaking Bachelors and Masters research projects in squatter settlements, however no improvements to their living situations. This may have played a factor in the case of focus group discussions, where although interviewers visited all participants the day before the scheduled focus groups, some participants did not attend at all. In all cases however, researchers had requested more women to attend the focus groups than the ideal 6-8 and despite these no-shows, all groups achieved the desired participant number.

In terms of limitations, in phase one, the cross-sectional nature of the questionnaire data meant that the analyses was largely restricted to the examination of associations

between variables as opposed to an examination of causality (Patton 2008). In addition, the secondary data made available through PHD Nepal has implications in terms of the lack of control over exclusion and inclusion criteria, which ultimately reflect differing research priorities between the primary and secondary analyst (Bryman 2008). Since data was not collected with the current research purpose in mind, key variables of interest in the area of utilisation of maternal health services, including paternal education and distance to health facilities, were not collected. The use of study-clinic data was also subject to similar bias in the collection of "variables", primarily because medical records are intended to indicate that the provider has carried out certain physical assessments and according to professional standards.

The inclusion of women who had ever given birth during the household questionnaire, has also potentially introduced recall bias in this study. As a means to minimise recall bias, logistic regression analysis in this study was limited to women who reported their most recent (last) birth in the 10 years preceding the survey. Nevertheless, previous studies have shown that long-term maternal recall of certain aspects of pregnancy and delivery such as place of delivery and ANC care use, both reproducible and accurate 10 to 15 years after birth (Rice, *et al.* 2007, Tomeo, *et al.* 1999, Yawn, Suman and Jacobsen 1998).

In integrating the different phases together, a potential threat to internal and external validity was the difference in time periods covered by the quantitative and qualitative data (Creswell and Plano-Clark 2010, Onwuegbuzie and Collins 2007). In this study, findings from the household survey conducted two years earlier, were used to guide the line of enquiry in the qualitative phase of the study. A potential implication of this time difference is that more pertinent factors to the year in which the qualitative interviews were carried out may have featured more strongly if the interviews had been held concurrently with the questionnaire. For example, since the survey data were collected approximately three years after the implementation of the *Aama* policy, and all previous published research pointed to a socio-economic effect on health facility deliveries, the research team may have accentuated this specific topic at the cost of gaining a broader understandings of more time-relevant issues, while at the same time leading the line of discussion. However, the researcher was well informed with the most recent published data emerging from Nepal, and at the same

time spoke to the staff at the study-clinic to keep abreast of potential barriers recently delivered women were experiencing. In addition, although the sample used in Phase one was not "followed-up" in Phase three, the generic nature of the social groups represented in the two samples makes it is possible to select a separate but similar sample of participants to explain and expand on the findings (Creswell and Plano-Clark 2010, Onwuegbuzie and Collins 2007).

One of the major limitations of this R-HFA is that facilities were not always visited on days when maternity services where being provided, meaning that observational studies of antenatal and postnatal consultations or deliveries were not carried out. The decision to visit some facilities on days when such services were not operating was made primarily on the basis that the aim of the study was not to assess the diagnostic accuracy or the appropriateness of treatment at each facility, but rather to assess the overall access of health facilities as determined by affordability, accessibility, capacity to provide care, and infrastructure. However, common proxy indicators of "quality" of care were used. These indicators are based on the availability of essential equipment drugs and reagents for the provision of basic antenatal, delivery, and postnatal care provision (Boller, *et al.* 2003, MoHP 2013). Using these proxy-measures for quality, raises the possibility that even if facilities reported providing free prophylactic treatment of iron, for example, they may not routinely do so due to stock-outs or other reasons, which are reported to occur frequently in public health facilities in Nepal (Mehata, *et al.* 2012, MoHP 2013). On the other hand, even if facilities provide these treatments to women, it does not ensure their adherence to the recommended treatment, primarily due to their own beliefs and ideas about the benefits of such prophylactic treatment.

Another concern which may have affected the credibility of the data collected is issue of positionality, where the interviewer and the researcher could have been considered as "educated elites." It is therefore essential to recognise that the researchers' characteristics and identity could influence not only how participants perceived the researchers, but also their interactions with the researchers, their responses, and ultimately study findings (Finlay 2002, Holloway and Biley 2011, Sultana 2007). As Sultana (2007) pointed out this was particularly important in international settings such as Nepal, where foreigners are generally considered "*dhani"* (rich) and "*thulo mancheharu"* (important people), but most importantly in

the squatter area where the most vulnerable are encountered (Sultana 2007). While most people would freely speak to the researchers, the foreigners' presence in the *sukumbasi basti,* aroused much curiosity and often resulted in children following the researchers around, asking to have their photo taken. The hospitality shown to researchers, with offers of "*chiya"* (tea), and stools to sit on all emphasised the squatter's genuine generosity and welcoming nature towards the researchers. For the researchers however, it meant that they had to be more careful about such gestures, for example sitting on a stool while everybody else sat on the floor, could reinforce the "superiority" of the researchers. The researchers therefore ensured that mundane behavioural codes and even outfits were in line with that of squatter residents. For example simple acts such as greeting residents with the more respectful "*namaskar"* rather than "*namaste"*, removing shoes when entering people's homes, sitting on the floor, and accepting offers of tea were intentionally adopted. The researchers also endeavoured to buy necessary products from local shops, including sandals, umbrellas, hats, snacks, and cold drinks. In addition, during field work the researchers spent time casually chatting to potential participants about what they were doing in the squatter settlements, since the presence of a foreigner (*bideshi*) was unusual.

Despite all efforts to reduce the effects of researchers' positionality, an inherent limitation of in the analysis of qualitative data the findings are biased, arising from using and interpreting the language of others through our own words, knowledge, experiences (Winchester 1996). In this study however, an additional layer of bias has been added in the transcription and translation process from Nepali to English (Eremenco, Cella and Arnold 2005, Winchester 1996). As described in Section 3.7.4, all interviews were conducted in Nepali, by a local Nepali female health worker. Due to the principal investigator's inability to speak Nepali, the digital voice recordings of the interviews were then transcribed and translated to English by two separate translators, after which a final version was compiled using both translations. While this was done to ensure the quality of the translation, research aimed at extracting qualitative information from cross-cultural low-resource country contexts, give rise to further limitations and potential biases (Eremenco, Cella and Arnold 2005, Winchester 1996). To reduce such cross-cultural biases and enhance credibility of results, throughout the data analysis process the researcher discussed her theories and

findings with several Nepali health professionals, mothers, and even midwives, to ensure that the findings are interpreted with context and cultural sensitivity.

Despite these challenges and limitations, a major advantage of this study was the mixed method design. Sale and Brazil (2004) suggests that to ensure the quality of mixed methods research, the methods employed must meet certain criteria by which both quantitative and qualitative components of investigation can adhere to issues of validity, reliability, and transferability and generalisability, through pre-testing instruments, sampling, data quality control, and triangulation (Sale and Brazil 2004).

To ensure the researcher gained a comprehensive understanding of the process of seeking maternal healthcare in Kathmandu, including squatter settlements, the researcher made three separate field visits throughout the duration of the study, each time remaining in-country for a total of eight to ten weeks. Although the primary aim of each visit was data collection and thus engaging for long periods of time with the community and study setting, the researcher also ensured that other activities were also undertaken. For example, visiting sister-clinics established under the Community Urban Basic Health Service Programme as per the study-clinic, visiting local NGOs involved in urban and squatter health, such as Lumanti and HERD. These visits were made to gain further information and insight on issues facing urban residents, in particular the urban poor and squatter residents, as well as to retrieve study reports available only in hard copy in Nepal. In addition to literature produced by local NGOs, a comprehensive review of available documents, including previous theses (available from local university libraries), policy documents, and reports related to urban health and poverty, have been reviewed. This broader scope of the literature, has helped the researcher to gain a deeper understanding of the discrimination and exclusion experienced by urban poor and squatter communities in all facets of life, and aids in the proposition of plausible contextual reasons why women living in squatter settlements may be missing out on the best quality of care. International studies and reports on the other hand have been used to not only guide this study but also to corroborate our findings.

Due to the complex research setting and the unique experiences of vulnerable populations, this study triangulated not just paradigms, but also data sources in order to strengthen the credibility or truth value of findings (Khan and Zanuzdana 2011, Liamputtong 2009, 2009, Mays and Pope 2007, Patton 1990, Patton 1999). Between

methods triangulation (or methodological triangulation) occurred in the use of quantitative (household questionnaire) and qualitative (SSIs and GHDs) methods (Jick 1979, Patton 1990, Patton 1999). In phase three, within methods triangulation, with data collected from individual SSIs and FGDs. Especially among vulnerable populations, the use of two methods is believed to capture important yet different information (Jick 1979, Liamputtong 2009, Patton 1999). For example Liamputtong (2009) suggested that SSIs allows researchers to understand individual's own experiences, attitudes, opinions and contexts, while group discussions allow for a community view of issues (Bazeley 2009, Lambert and Loiselle 2008, Liamputtong 2009, Patton 1999). In addition, data from various data sources was collected, to allow the study the use of multiple "world views," where women and health providers, squatter and non-squatter residents, provide a different perspective to reality (Jick 1979, Liamputtong 2009, Patton 1999).

Creswell (2000) suggested that credibility can be enhanced by "peer debriefing", which is the review of research instruments, data, and process by someone who is familiar with the research (Creswell and Miller 2000, Liamputtong 2009). Liampung (2009) highlighted that "peer debriefing" can also be used during data collection to help to clarify the researcher's perspectives, thus serving to enhance credibility (Liamputtong 2009). For all phases of this research project, this type of rigor-check was very important as the researcher was not a Nepal native. During Phase one, peer debriefing occurred during field work or at the end of each day between enumerators and interviewers to check for missing values, questionable information, and entry errors and completeness. During phase two (R-HFA) and three (interviews and focus groups), the interviewer and the researcher debriefed during fieldwork. During the R-HFA the scores were constantly discussed and justified, while during the individual interviews and group discussions, the researcher enquired about the interviewers' perceptions of the participants or cultural nuances that emerged during certain interviews. These daily discussions enabled the researcher to better understand what women meant, the health system in Nepal, while reinforcing areas that needed probing in future interviews. According to Liampung (2009), debriefing can also help the researcher to promote reflexivity, which refers to the ways in which the researcher and the research process have shaped the collected data, as well as the biases the researcher brings to the study (Finlay 2002, Liamputtong 2009).

5.5 RECOMMENDATIONS FOR FUTURE STUDIES

Kathmandu has recorded a rapid annual population growth rate of over 4% since the late 1970s, and is expected to continue to grow at the same pace until 2020 (Muzzini and Aparicio 2013). Although the squatter population in Nepal remains small relative to countries such as India, Bangladesh, and Kenya, the inability of the government to keep pace with the demand for infrastructure and services, can only fuel the growth and expansion of squatter communities in Nepal. Investigating the factors that prevent urban women from utilising maternity services, is necessary in order to begin to address the observed urban disparity in healthcare. The section that follows provides recommendations for future research related to maternal healthcare utilisation among urban women.

Firstly, more research on the provision of maternity healthcare services among women living in squatter areas is needed. While it is clear that not all women living in squatter settlements are poor and not all urban poor live in squatter settlements, squatter settlements represent "neighbourhoods" with high concentrations of disadvantage, which can have an affect women's utilisation of necessary care through the spread of information, ideas, and even behaviours can spread through networks of people (Coleman 1988, Galea and Vlahov 2005, Heaman, *et al.* 2007, Montgomery and Hewett 2005, Sagna and Sunil 2012). Given the changing profile of disadvantage in Nepal, this study has shown that significant inequity was experienced within urban areas due to a lack of access to water, sanitation, durable housing, and safe and secure living areas. To elucidate this disadvantage, it is important that local government authorities comprehensively document existing squatter neighbourhoods and their inhabitants in order to better address their living situation and health. Further analysis of the DHS could also focus on disaggregating common maternal and child health indicators according to "neighbourhood" poverty concentration in each development region and ecological zone. Such "neighbourhood" level research could begin by employing analysis of the DHS data as per the studies by Sagna and Sunil (2012) and Gage and Calixte (2006), where the primary sampling unit was used as their proxy for "neighbourhood" or community. These studies demonstrated that living in neighbourhoods with higher concentration of low education and poverty were more likely to underutilise maternal healthcare,

even after adjusting for individual level factors (Gage and Calixte 2006, Sagna and Sunil 2012).

Future research efforts could also concentrate on following women's trajectory from early pregnancy through to the postnatal period (45 days after birth) as has been done by a study in the Kaski District of Western Nepal (Karkee, Lee and Binns 2013), or for an indefinite period of time, as has been done previously in Nepal (Vaidya, *et al.* 2008). These study designs could help to give a more accurate picture about women's experiences in utilising maternity care in Kathmandu. While challenges in terms of sampling, due to adhoc shelter construction, relatively small number squatter residents, and high population mobility, represent constraints in squatter and slum research, as the topic of urban health advances globally, easy-to use and affordable technologies may alleviate some of the complexities faced by researchers (Thomson, *et al.* 2014). Longitudinal study designs could offer many new insights into squatter populations in Nepal, including insights into the long-term effect on children's growth and development. This type of study design could also address some of the weaknesses of the cross-sectional study design used in this thesis.

Since a woman's satisfaction with healthcare is important in shaping future utilisation practices (Andersen 1995, Andersen and Newman 2005), the government must ensure that increased demand for care does not compromise the quality of care provided by government facilities (FHD/NHSSP 2013). As a cost-effective recommendation, further analysis of the data collected through surveys related to health services, for example the Service Tracking Survey (2012), may be performed (Mehata, *et al.* 2012). As per Boller (2003), points could be allocated to the characteristics recorded, which in turn can allow for a calculation of an overall score different attributes known to proxy quality of care (Boller, *et al.* 2003). This approach could determine the strengths and weaknesses of health facilities in the endeavour to provide intervention measures for improving maternal healthcare (MoHSS and ICF Macro 2010), and provide an updated picture of the availability and quality of maternal healthcare infrastructure, resources, and services across the country (Boller, *et al.* 2003, MoHSS and ICF Macro 2010).

5.5.1 Implications for health services in Nepal

Evidence suggests that bridging equality in early life, in the first 1,000 days is crucial to provide future generations equal early life, childhood and adulthood opportunities. Together, the findings from this thesis suggest that there are vast intra-urban inequalities in women's healthcare utilisation, which can in turn lead to a widening of the health gap between the "haves" and the "have nots" in the future. A potential solution to of this challenge lies *in-utero,* and ensuring equal access to quality maternal healthcare.

The government must actively ensure that the *sukumbasi* are not excluded from essential services due to their illegal tenure of land, as it is their exclusion from education, employment and health in their rural homes that have pushed them to migrate to urban areas to try to engage in the urban economy.

In this study, healthcare providers were reportedly uncharitable towards "poor" women because they were poor. Affability towards clients from all social stratums must be addressed in order to ensure the most vulnerable women are engaged in the maternal healthcare system from pregnancy through to childbirth, and after delivery. The WHO recommends the engagement of all women in appropriate ANC as the means to positively alter the health trajectory of both mothers and their offspring. Findings from this study suggest that women from asset-poor households and those that live in *sukumbasi basti,* were more likely to attend fewer than four ANC visits, and as such, strategies must be better targeted to meet the needs of low-resource pregnant women (young, with low educational achievement, involved in wage employment). Moreover, programmes targeting the health of residents living in squatter areas should comprehensively address the underlying structural economic, behavioural, and service orientated barriers to good health and reproductive lives.

As this study has shown, while clinic-level care can have advantages over hospital-level care, women primarily sought care from hospital-level facilities, where women perceived they would receive a higher level of care, encompassing more sophisticated services from highly qualified staff. Women's perception about the type of care that will be offered is important primarily because it is women themselves who will choose whether or not to receive healthcare and where to attend care (FHD/NHSSP 2013, Karkee, Lee and Pokharel 2014, Pradhan, *et al.* 2010, Simkhada, *et al.* 2006). Thus to successfully target the health of the urban poor and

at the same time alleviate outpatient departments at hospital-level facilities, the healthcare sector must re-gain the trust of service-users at lower-level facilities. It is recommended that the provision of maternal healthcare services through the Community Urban Basic Health Service Programme be upgraded to provide the level of care provided at primary healthcare centres, equipped with modern diagnostic tools, and highly qualified trained staff, and generators to ensure availability of electricity. This level of health service provision may attract more clients, increase client confidence in the government healthcare system and therefore help in diverting women from overcrowded outpatient departments in hospital-level facilities.

In addition, since primary healthcare centres currently do not provide ultrasound, instead relying on referrals to the main maternity hospital in Kathmandu, a mobile ultrasound programme, as has been piloted in rural areas of the country may alleviate the current pressure on outpatient clinics experienced at hospital-level facilities (Maru, *et al.* 2010, Nepal Health Sector Support Programme 2013). Finally, the cleanliness and physical infrastructure of government facilities needs to be given especial attention, with the state of toilet and water infrastructure at selected hospital and clinics visited during the R-HFA considered dire.

5.6 CONCLUSION

This thesis examined women's utilisation of maternal services during pregnancy, delivery, and postnatal periods in Ward 34, Kathmandu, Nepal. Phase one of this study investigated if differences in utilisation existed between women living in squatter and non-squatter settlements of Ward 34. A R-HFA of the facilities visited by women living in Ward 34, as well as the qualitative exploration of women's own experiences in seeking care, were able to provide context to the study. Using the Bio-ecological theory as a meta-framework, this thesis has identified distal and proximal factors that impact on women' utilisation of maternal healthcare.

Among women who had given birth in the ten years before the survey, 27%, 36%, and 27% of women were found to underutilise antenatal, delivery, and postnatal care, respectively. Analysis suggested that women living in squatter settlements have consistently underutilised maternal healthcare compared to those living in non-squatter settlements. A survey on the type of facilities used by women revealed that although the basic interventions are the same everywhere, poor physical

infrastructure and overcrowding may be compromising the quality of care women receive. Nonetheless, women preferred to receive care during pregnancy and delivery at hospital-level facilities, equipped with highly qualified staff and modern technology In FGDs and SSIs, these health-system factors were also found to influence women's utilisation of maternal healthcare services. Additional barriers preventing utilisation of maternal healthcare services were related to beliefs and attitudes towards care, lack of support in their urban environment, and lower socio-economic status. For some women, government facilities represented the only chance for an institutional delivery, and the expectation of the type of treatment they will receive there, prevented them from utilising these.

Despite these obstacles, there is every chance that the maternal health of Nepali women will continue to improve. It is possible for inequalities to be diminished if the Government and NGOs undertake further research and address the issues that have been highlighted in this thesis. In recent decades, important improvements have been made in women in improving the health and status of women in Nepal. Today, more girls than ever before are attending school, women's labour force participation has increased, more women are giving birth in health facilities, and less women are dying from pregnancy and childbirth related causes. These improvements are the result of Government investment in women, acknowledging the healthy future of society depends on the health of the children of today and their mothers, who are guardians of that future. Efforts must now focus on the poor and vulnerable, particularly those in urban settings.

Many interventions targeted at mothers are proven not only to be effective in reducing maternal and child deaths but also improving the growth and development of children into adulthood, while bringing important benefits to governments and economies. To ensure that all families benefit from the available interventions and to reduce disparities between squatter and non-squatter residents, findings from this study indicate that efforts focusing on addressing community-level and the health-system-level factors may bring about widespread improvements in addressing disparities.

At the community-level, efforts must focus on decreasing the social exclusion of the *sukumbasi* from public services. Changes in the Government's attitude towards squatter settlements and their residents could provide greater employment

opportunities for parents and thus education opportunities for children. Education scholarships offered to girls living in squatter settlements, could also potentially counteract some of the risk factors associated with living in squatter settlements, such as early marriage and child bearing, low educational attainment, and traditional health beliefs regarding pregnancy and childbirth. At the health-system-level, enhancing the capacity of government facilities to effectively accommodate the increased number of women seeking maternal health services, could also ensure that women utilise the most accessible source of healthcare. Particular attention must be paid to making providers aware of the special vulnerabilities of poor urban women, and enhancing provider's empathy towards poor women. These efforts will ensure that the most vulnerable women and their offspring are offered the same chance of a healthy and productive life as their better off counterparts. Children are a country's greatest resource and the children of Nepal are important to the world in a glocal economy.

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APPENDICES

APPENDIX A: POPULATION DISTRIBUTION OF KATHMANDU

Ward #	Sector	Population 2001		Population 2011					Land area (km2)	decadal change in number of household	decadal change in total population	Poverty rank	Dominant Ethnic Groups		Presence of squatter settlements
		Number of Households	Total Population (%)	Number of Households	Total Population (%)	Sex Ratio (males per 100 females)	Average household size	Population Density					Largest	Second largest group	
1	Central	1,689	8,464 (1.3)	1,917	8,008 (0.8)	110	4.18	5,786.1	1.38	13.5	-5.4	35	Newar	Bhramin	reported
2	North	3,195	13,655 (2.0)	3,599	13,448 (1.4)	102	3.74	14,155.8	0.95	12.6	-1.5	15	Newar	Bhramin	unreported
3	North	4,569	20,782 (3.1)	9,145	34,866 (3.6)	103	3.81	18,948.9	1.84	100.2	67.8	2	Newar	Chettri	reported
4	North	6,768	29,539 (4.4)	12,030	47,362 (4.9)	101	3.94	14,613.4	3.24	77.7	60.3	13	Bhramin	Chettri	reported
5	Central	3,573	15,340 (2.3)	4,774	18,320 (1.9)	104	3.84	23,189.9	0.79	33.6	19.4	12	Bhramin	Newar	unreported
6	East	8,768	39,316 (5.9)	15,434	60,344 (6.2)	102	3.91	16,451.5	3.67	76.0	53.5	9	Tamang	Sherpa	reported
7	East	9,332	39,530 (5.9)	13,559	51,581 (5.3)	106	3.80	33,603.3	1.54	45.3	30.5	14	Bhramin	Chettri	reported
8	East	2,165	9,434 (1.4)	2,773	10,738 (1.1)	106	3.87	4,230.9	2.54	28.1	13.8	8	Newar	Bhramin	reported
9	East	6,708	29,263 (4.4)	10,417	40,371 (4.1)	111	3.88	13,372.3	3.02	55.3	38.0	31	Bhramin	Chettri	reported
10	East	6,168	25,977 (3.9)	10,571	39,820 (4.1)	113	3.77	25,395.4	1.57	71.4	53.3	32	Bhramin	Chettri	reported
11	Central	3,488	15,244 (2.3)	4,416	17,765 (1.8)	117	4.02	9,660.1	1.84	26.6	16.5	3	Newar	Bhramin	reported
12	City core	2,149	10,313 (1.5)	3,173	13,262 (1.4)	106	4.10	26,003.9	0.51	47.7	28.6	6	Newar	Chettri	unreported
13	West	6,429	29,721 (4.4)	10,207	40,456 (4.2)	117	3.96	18,966.7	2.13	58.8	36.1	5	Newar	Bhramin	reported
14	West	7,846	34,488 (5.1)	15,472	58,495 (6.0)	112	3.78	19,311.7	3.03	97.2	69.6	34	Newar	Bhramin	reported
15	West	7,448	32,441 (4.8)	14,093	54,476 (5.6)	104	3.87	17,212.0	3.17	89.2	67.9	7	Newar	Chettri	reported
16	North	10,789	45,450 (6.8)	22,715	84,441 (8.7)	109	3.72	19,305.2	4.37	110.5	85.8	27	Newar	Bhramin	reported
17	City core	4,559	19,876 (3.0)	6,394	25,926 (2.7)	112	4.05	39,461.2	0.66	40.3	30.4	30	Newar	Chettri	unreported
18	City core	1,370	8,065 (1.2)	2,746	10,746 (1.1)	114	3.91	56,857.1	0.19	100.4	33.2	17	Newar	Bhramin	unreported
19	City core	1,477	7,400 (1.1)	2,632	10,711 (1.1)	119	4.07	69,103.2	0.16	78.2	44.7	1	Newar	Bhramin	reported
20	City core	1,701	8,240 (1.2)	2,844	10,968 (1.1)	117	3.86	69,859.9	0.16	67.2	33.1	11	Newar	Chettri	unreported
21	City core	2,507	12,369 (1.8)	3,389	13,727 (1.4)	115	4.05	89,136.4	0.15	35.2	11.0	22	Newar	Chettri	unreported
22	City core	1,009	5,840 (0.9)	1,250	5,699 (0.6)	121	4.56	30,313.8	0.19	23.9	-2.4	19	Newar	Chettri	unreported
23	City core	1,709	8,289 (1.2)	1,991	8,357 (0.9)	112	4.20	81,931.4	0.10	16.5	0.8	4	Newar	Bhramin	unreported
24	City core	925	5,272 (0.8)	742	3,488 (0.4)	134	4.70	39,191.0	0.09	-19.8	-33.8	10	Newar	Other	unreported
25	City core	744	4,310 (0.6)	788	3,486 (0.4)	108	4.42	33,844.7	0.10	5.9	-19.1	16	Newar	Other	unreported
26	City core	757	3,764 (0.6)	947	4,133 (0.4)	112	4.36	103,325.0	0.04	25.1	9.8	20	Newar	Chettri	unreported
27	City core	1,542	7,789 (1.2)	1,888	7,592 (0.8)	115	4.02	99,894.7	0.08	22.4	-2.5	26	Newar	Chettri	unreported
28	City core	1,088	5,462 (0.8)	1,370	5,611 (0.6)	109	4.10	82,514.7	0.07	25.9	2.7	29	Newar	Bhramin	unreported
29	North	5,582	24,543 (3.7)	12,252	45,052 (4.6)	113	3.68	20,609.3	2.19	119.5	83.6	33	Newar	Bhramin	reported
30	City core	2,041	9,896 (1.5)	1,914	8,563 (0.9)	107	4.47	33,712.6	0.25	-6.2	-13.5	21	Newar	Chettri	
31	Central	3,252	14,502 (2.2)	4,112	16,211 (1.7)	133	3.94	15,632.6	1.04	26.4	11.8	25	Newar	Bhramin	reported
32	Central	5,694	24,355 (3.6)	9,298	33,316 (3.4)	119	3.58	26,028.1	1.28	63.3	36.8	28	Bhramin	Newar	reported
33	Central	5,064	21,597 (3.2)	6,876	25,694 (2.6)	112	3.74	29,981.3	0.86	35.8	19.0	24	Bhramin	Newar	reported
34	East	11,039	46,136 (6.9)	17,772	66,121 (6.8)	114	3.72	28,488.2	2.32	61.0	43.3	18	Bhramin	Chettri	reported
35	East	8,716	35,184 (5.2)	20,792	76,299 (7.8)	113	3.67	19,316.2	3.95	138.5	116.9	23	Chettri	Bhramin	reported
	TOTAL	**151,860**	**671,846**	**254,764**	**975,453**	**113**	**3.94**	**20,289**	**49.45**	**67.8**	**45.2**				

APPENDIX B: PERMISSION TO ACCESS DATA OWNED BY PHD NEPAL

Regd. No.: 47323/064/065

Public Health Development Nepal Pvt. Ltd.

(PHD Nepal)

Koteshwor, Kathmandu

Estd : 2007

Ref

Date: .....

Mohan Krishna Shrestha
Managing Director
Public Health Development Nepal Pvt. Ltd.
Koteshwor, Kathmandu
Nepal
P: +977 016916277
E: phdnepal@gmail.com

To Whom It May Concern

Re: Access to data from *Community Urban Health Clinic – Kathmandu, Ward 34*

This letter is concerning the utilisation of data collected and owned by Public Health Development Nepal, by Ms Tania Gavidia during the period of her Doctor of Philosophy candidacy (January 2011 – January 2014), through Curtin University of Technology, Perth, Western Australia (Thesis title: *Maternal and child health in Kathmandu Metropolitan City: A model of maternal and child health service provision for urban women).*

Public Health Development Nepal Pvt. Ltd. (PHD Nepal) is an independent organization working in the field of health care with special emphasis on maternal and child health, training and research. In June 2010, PHD Nepal established a Maternal and Child Health (MCH) clinic, named *Community Urban Health Clinic – Kathmandu, Ward 34* (hereafter referred to as The Clinic), focusing on provision of services mainly for the slum and urban poor population.

As the Managing Director of PHD Nepal, I am providing written authorisation for Ms Tania Gavidia to access MCH clinic databases containing patient medical information. In addition, PHD Nepal also grants Ms Gavidia access to data collected through a baseline Knowledge Attitudes and Practices (KAP) survey of a representative sample of the community living in Ward 34, carried out in July/August 2010.

The PhD project proposed by Ms Gavidia has been reviewed by myself and other research staff employed by PHD Nepal, who are in full support of the proposed project and recognise its importance in the improvement of monitoring and evaluation of the health of slum and urban poor populations.

The scope and nature of the support provided by PHD Nepal to Ms Gavidia is as follows:

1. To provide routinely collected patient medical data
2. To provide data collected through a 2010 KAP baseline survey of the target community
3. To provide technical advice and expertise
4. To provide cultural advice and expertise
5. To facilitate access to service users and service providers, women's groups and other stakeholders

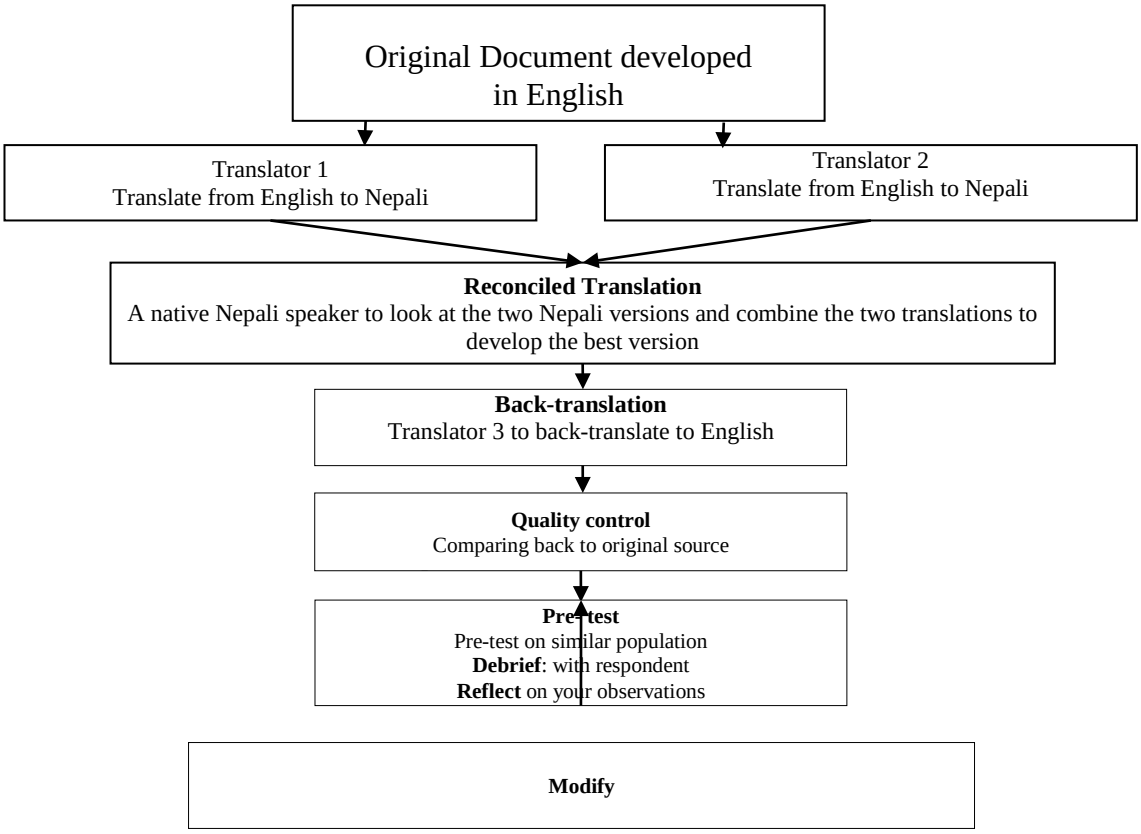
The disclosure of data owned by PHD Nepal should not be used for any other purpose other than that stated in this letter.

Sincerely,

16/2/2011

Mohan Krishna Shrestha, MPH
Managing Director
Date: February 16, 2011

APPENDIX C: METHOD OF BACK-TRANSLATION



(Adapted from Eremenco, Cella & Arnold (2005))

APPENDIX D: HOUSEHOLD SURVEY

ID: ☐☐☐☐☐☐☐☐

SURVEY FOR THE MATERNAL AND CHILD HEALTH STATUS OF KATHMANDU, NEPAL

Hello my name is _____ and I work with a non-governmental organisation called Public Health Development (PHD). We are conducting a survey about the health of women in this community. We would very much appreciate your participation in this survey. I would like to ask you about issues related to pregnancy and childbirth. This information will be used to improve health services in your community. We will be asking you some questions about the health facility women usually attend when they are pregnant. We will not share your identity or your responses with the staff at that facility or with anyone else.

There are no risks involved in participating in the study. Only survey organizers and research assistants will view the data. The responses you provide will be kept strictly confidential and will not be shown to other persons. Participation in this study or refusal to participate will not affect your ability to access antenatal health services or any other services. The interview usually takes between 30 and 40 minutes to complete.

Participation in this survey is voluntary and you can choose not to answer any individual question or all the questions. However, we hope that you will participate fully in this survey as your views and experiences are necessary in order to improve the health of women and newborns in this community.

At this time, is there anything you would like to ask me about the survey?

By consenting, you indicate that you understand the information I just read about the study and that you are willing to participate.

Name of interviewer:

Signature of respondent: Date:

May I begin the interview now?

Date Survey completed:	☐☐/☐☐/☐☐☐☐ Day Month Year
Respondent Name:	
Age:	
Sex of respondent	Male ☐$_0$ Female ☐$_1$
marital status	Married ☐$_1$ Unmarried ☐$_2$ Divorced ☐$_3$ Widow ☐$_4$ Other ☐$_5$
Full name of head of household:	
HH No and street name:	
Tole:	
District: Kathmandu	**Ward Number: 34**

Data checked by: ☐☐☐ Data entered by: ☐☐☐ Date entered: ☐☐/☐☐/☐☐

Section 1: Background Information

QN	Question	Responses	Code	Skip
1.1	What is your caste or caste?	Brahman Chhetri Newar Gurung Magar Rai/Limbu Tamang/ Lama Dalit: Occupational caste Other (Specify)…… I don't know	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐9 ☐998	
1.2	What is your religion?	Hindu Buddhist Christian Islam Other (specify)…… I don't know	☐1 ☐2 ☐3 ☐4 ☐5 ☐998	
1.3	What type of work do you usually do?	Agriculture Factory/Business labour Service Health student Unemployed Housewife (specify)…… I don't know	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐9 ☐998	
1.4	What is the highest level of school you attended?	No education Informal education Primary Lower Secondary Secondary Higher secondary University Education Other (specify)……	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8	
1.5	What is your family type?	Nuclear Joint Extended family	☐1 ☐2 ☐3	

1.6	How many members are there in your family?		total	<1years	1-5 years	5- 15 years	>15 years
		Male					
		Female					
		Total					
1.7	Currently, does a pregnant woman live in this house?				No Yes I don't know	☐0 ☐1 ☐998	→**2.1** →**2.1**
1.8	How many pregnant women live in your house right now?	Specify number				☐	
1.9	What is your relationship to each pregnant woman?			Woman 1	Woman 2	Woman 3	
		Myself		☐1	☐1	☐1	
		Daughter in law		☐2	☐2	☐2	
		Sister in law		☐3	☐3	☐3	
		Wife		☐4	☐4	☐4	
		Sister		☐5	☐5	☐5	
		Daughter		☐6	☐6	☐6	
		Cousin		☐7	☐7	☐7	
1.10	How old are they? Age (in years) I don't know				☐☐ ☐998	☐☐ ☐998	☐☐ ☐998

Section 2: Housing Information

QN0	Question	Responses	Code	Skip
2.1	Approximately how long have you lived in this house (current place of residence)?	Number of Days Number of Months Number of Years	☐☐ ☐☐ ☐☐	
2.2	Main materials have been used on the floor, walls and roof of the house?			
	Walls	Brick/cement Brick/mud Wood planks Bamboo Tin sheet Other (specify)……	☐1 ☐2 ☐3 ☐4 ☐5 ☐6	
	Roof	Aluminium/Tin sheets Wood planks tiles Concrete/cement Other (specify)……	☐1 ☐2 ☐3 ☐4 ☐5	
	Floor	Earth/mud Cement Other (specify)……	☐1 ☐2 ☐3	
2.3	What kind of toilet facility do you have in this house?	Flush toilet (Flush or pour flush) Pit latrine with septic tank Pit latrine without septic tank No facility/bush Other (specify)…… I don't know	☐1 ☐2 ☐3 ☐4 ☐5 ☐998	
2.4	Do you share this facility with other households?	No Yes	☐0 ☐1	**→2.5**
2.5	With how many households do you share this facility?	Number of households I don't know	☐☐ ☐998	
2.6	What is the main source of drinking water for members of your household?	Piped water into residence Public tap Hand pump Well Surface water (river, stream) Tanker truck Mineral water Other (specify)…… I don't know	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐998	
2.7	How long does it take to get there, get the water and come back?	Minutes Hours Water on premises I don't know	☐☐ ☐☐ ☐ ☐995 ☐998	
2.8	Who usually goes to this source to fetch the water for your household?	woman man children	☐1 ☐2 ☐3	
2.9	What is the main source of lighting in your household?	Electricity Kerosene Gas Oil Other (specify)…… I don't know	☐1 ☐2 ☐3 ☐4 ☐5 ☐998	
2.10	Do you have a separate room which is used for cooking/as a kitchen?	No Yes	☐0 ☐1	

QN0	Question	Responses	Code	Skip
2.11	What type of fuel does your household mainly used for cooking/heating??			
	Cooking	Electricity Wood Gas Coal Kerosene Cow dung cakes Other (specify)…… I don't know	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998	
	Heating	Electricity Wood Gas Coal Kerosene Other (specify)…… I don't know	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐998	
2.12	Does your household have the following?	Radio Television Refrigerator Mobile land line Computer Bicycle Car	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8	

Section 3: Knowledge about Health during Pregnancy, Delivery, and Postpartum

Now I would like to ask you some questions about what you know and what you think about the health of women and new born babies during pregnancy, delivery and after birth.

Q. No.	Question	Responses	Code	Skip
3.1	Are you aware of any changes that occur in a woman's body when she becomes **pregnant**? TICK ALL MENTIONED	Cessation of normal menstruation Change in abdomen size Change in size of the breast Changes in the skin Nausea(Morning sickness) Weight gain Others (specify)…….. I do not know	☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐998	
3.2	What kinds of preparation should be done to ensure the safety of mother and child during **delivery**? TICK ALL MENTIONED	Decide on facility Arrange a trained person for delivery Arrange transport to place of delivery Arrange blood donor Finances Medication Other (specify)…… I do not know	☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐998	
3.3	Can you name any complications that occur during **pregnancy** that may endanger a woman's life? TICK ALL MENTIONED	Swelling of hands and feet Visual disturbance Severe abdominal pain Severe weakness Severe vaginal bleeding Abnormal presentation High fever Convulsions/fits/eclampsia Smelly vaginal discharge Anaemia Other (specify)……..…… I do not know	☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐998	
3.4	Can you name any complications that occur during **labour** that may endanger a woman's life? TICK ALL MENTIONED	Severe vaginal bleeding Prolonged labour pain/placenta retain Loss of consciousness Abnormal presentation High fever Severe headache Other (specify)……..…… I do not know	☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐998	
3.5	Can you name any complications that may appear in **mother** during **first six weeks after delivery** that may endanger a woman's life? TICK ALL MENTIONED	Severe vaginal bleeding Frequent attacks of unconsciousness Swelling of hands and feet Severe headache Severe vomiting High fever Depression Other (specify)……..…….. I do not know	☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐998	
3.6	Can you name any danger signs that may appear in **newborn baby** (within 4 weeks period) that indicate the baby has a serious health problem? TICK ALL MENTIONED	Breathing difficulty yellow complexion Difficulty in sucking High fever Bleeding or smelly discharge from the cord Others (specify)……. I do not know	☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐998	
3.7	Have you heard about safe motherhood?	No Yes	☐0 ☐1	

Q. No.	Question	Responses	Code	Skip
3.8	From where did you get information about safe motherhood? TICK ALL MENTIONED	Hospital Health post/Health Center Private clinics Traditional healers FCHV TBA neighbours/family media(TV,Radio, news paper) Internet Other (specify)…… I don't know	☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐998	
3.9	What action should be taken if complications occur during **pregnancy, delivery, postpartum** and **postpartum** for mother and child? TICK ALL MENTIONED	Hospital Go to Health post/ Health centre Go to private clinic FCHV TBA Go to/call traditional healer Don't do anything Other (specify) …… I don't know	☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐998	
3.10	Who will decide to seek care, if any complications occurs during **pregnancy, delivery** and **postpartum** for mother and child?	Pregnant woman herself Pregnant woman's husband husband's mother wife's mother Other family members Friends/Neighbour Other (specify) …… I don't know	☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐998	**→3.10**

Section 4: Health Seeking during Pregnancy, Delivery, and Postpartum

For this section I will I would like to ask you about when and where to seek care for pregnant women and new born babies during pregnancy, delivery and after the birth of the baby.

For the next few questions I want to ask you about what kind of care a woman needs during the 9 months of **pregnancy**

QN0	Question	Responses	Code	Skip
4.1	In your opinion, what is the ideal age for first pregnancy for a woman?	18-20 21-25 After 25 Other (specify)…… I do not know	☐1 ☐2 ☐3 ☐4 ☐998	
4.2	In your opinion, what are the special requirements of a pregnant woman? TICK ALL METIONED	Regular medical check-ups Adequate rest Nutritious food Safe environment Support from the family Psychological support Other (specify) ……..…. I do not know	☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐1 ☐998	
4.3	Do you think that a pregnant woman needs to see anyone for **antenatal** care?	No Yes I do not know	☐0 ☐1 ☐998	**→4.8** **→4.8**
4.4	Whom should she see for **antenatal** care?	Doctor Nurse Auxiliary nurse midwife MCHW TBA FCHV Other (specify) ……..… I do not Know	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998	
4.5	Where should a pregnant woman go for **antenatal** check-up/care?	hospital Health post/ Healthcare Centre Private clinic Medical/Drug seller Other (specify)……..…… I do not Know	☐1 ☐2 ☐3 ☐4 ☐998	
4.6	In your opinion, when is the best time to begin **antenatal** check-up/care?	As soon as she knows she is pregnant Between 3-4 months of pregnancy After 4 months of pregnancy Just before the baby is due Anytime when a woman has problem with her pregnancy I don't think it is necessary Other (specify)……..…… I do not know	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998	
4.7	How many times during gestation should a pregnant woman go for **antenatal** check-up/care?	Only one time is enough if everything is fine at initial visit Two times Three times Four times More than four times As suggested by health professional Other (specify)……..…… I do not know	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998	 **→4.9** **→4.9**

4.8	Doctors recommend a minimum of four visits **antenatal** check-ups during pregnancy. What would prevent you from going four times?	Costs too much Too far/no transportation Time away from work Don't trust /poor quality service No female healthcare provider Other (specify)…….…… I do not know	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐998	
Now I would like to ask you about the what a woman should do during **child birth** or **delivery**				
4.9	Where should a pregnant woman go for **delivery** of her baby?	Stay at home hospital Health post/ Healthcare Centre Private clinic Medical/Drug seller Other (specify)…….…… I do not Know	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐998	
4.10	Who should assist during **home delivery**?	Doctor Nurse Auxiliary nurse midwife MCHW FCHV TBA Mother in law No any one Other (specify) ……..……..….. I do not Know	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐9 ☐998	

Now I would like to ask you about the what a woman should do AFTER **child birth** or **delivery**			
4.11	Do you think that a woman and her baby need to see anyone **after** the birth of her baby? No Yes I do not know	**Woman** ☐0→**section 5 /6** ☐1 ☐998→**section 5/6**	**Baby** ☐0→**section 5/6** ☐1 ☐998→ **section 5/6**
4.12	Whom should she see for **postpartum** care?	Doctor Nurse Auxiliary Nurse midwife MCHW FCHV Other (specify)……. I do not Know	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐998
4.13	Where should a woman go for **postpartum** care?	Home hospital Health post/ Healthcare Centre Private clinic Medical/Drug seller Other (specify)…… I do not Know	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐998
4.14	In your opinion, after the birth of a child, how long should a woman wait before falling pregnant again?	1-2years 2-3 years 3-4 years >5 years Other (specify)…… I don't know	☐1 ☐2 ☐3 ☐4 ☐5 ☐998

Section 5: FEMALE Respondents ONLY
Maternal and Child Health Service - Accessibility and Utilisation

Q. No	Question	response	Code	Skip
5.1	Are you currently pregnant?	No Yes	☐0 ☐1	→**5.4**
5.2	What number pregnancy is this?	Please write number	☐☐	
5.3	How many months pregnant are you?	Please write month I don't know	☐ ☐998	
5.4	Do you have children?	No Yes	☐0 ☐1	→**7.1**
5.5	How old were you at your first pregnancy?	Age in years ☐☐		
5.6	Did he/she die during **birth**?	number	☐daughter ☐son	
5.7	Did he/she die **within one months** after **birth?**	number	☐daughter ☐son	

S.N.	Question	Response	First child	Last child	Current pregnancy
5.8	What was the **name** given to you your first and last child	Name	(1)	(2)	
5.8	Are they still alive?	No Yes	☐0 ☐1	☐0 ☐1	
5.10	How old is he/she now?	age in years	☐☐	☐☐	
5.11	Did you see anyone for **antenatal care** during pregnancies?	No Yes I do not know/cant remember	☐0 ☐1→5.13 ☐998	☐0 ☐1→5.13 ☐998	☐0 ☐1→5.13 ☐998
5.12	Why did you not receive **antenatal care**?	Costs too much Too far/no transportation Facility was closed Time away from work Don't trust /poor quality service No female healthcare provider Other (specify)……..... I do not know	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998

CHECK: Attended antenatal care ☐ → 5.13 NO antenatal care ☐→ 5..20					
S.N.	**Question**	**Response**	**First child**	**Last child**	**Current pregnancy**
5.13	Where did you receive **antenatal care**?	Home Hospital Health post/PHC Private clinic FCHV TBA Medical/Drug seller Traditional healer Other (specify) …….. I do not Know/can't remember	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐9 ☐998	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐9 ☐998	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐9 ☐998
5.14	Whom did you see for **antenatal care**?	Doctor Nurse Auxiliary nurse midwife MCHW FCHV Traditional healer Other (specify)…… I do not Know/can't remember	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998
5.15	With each pregnancy how many times did you receive **antenata**l **check-ups?**	Once Twice Three times Four times More than 4 I don't know	☐1 ☐2 ☐3 ☐4 ☐5 ☐998	☐1 ☐2 ☐3 ☐4 ☐5 ☐998	☐1 ☐2 ☐3 ☐4 ☐5 ☐998
5.16	Did you have to pay for **antenatal** care?	No Yes I don't know/can't remember	☐0 →5.19 ☐1 ☐998→5.19	☐0 →5.19 ☐1 ☐998→5.19	☐0 →5.19 ☐1 ☐998→5.19
5.17	In terms of cost for **antenatal care** you received care was…	Very expensive Expensive affordable I do not Know/can't remember	☐1 ☐2 ☐3 ☐998	☐1 ☐2 ☐3 ☐998	☐1 ☐2 ☐3 ☐998
5.18	What mode of transport did you use to get to the maternal health facility?	By taxi By public bus By ambulance By foot By motorbike By car Other (specify)……	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7
Now I would like to ask you about the type of **delivery care** you received during the birth of your children					
5.19	Who assisted with the **delivery**?	Doctor Nurse MCHW FCHV TBA No one Other (specify)…… I do not Know/can't remember	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998

S.N.	Question	Response	First child	Last child	Current pregnancy
5.20	Where did you give **birth**?	Home Hospital Health post/ PHC Private clinic Traditional birth attendant's home Other (specify) …… I do not Know/can't remember	☐1→5.25 ☐2 ☐3 ☐4 ☐5 ☐6 ☐998	☐1→5.25 ☐2 ☐3 ☐4 ☐5 ☐6 ☐998	☐1→5.25 ☐2 ☐3 ☐4 ☐5 ☐6 ☐998
5.21	What mode of transport did you use to get to the where you delivered your baby?	By taxi By public bus By ambulance By foot By motorbike By car	☐1 ☐2 ☐3 ☐4 ☐5 ☐6	☐1 ☐2 ☐3 ☐4 ☐5 ☐6	☐1 ☐2 ☐3 ☐4 ☐5 ☐6
5.22	How long did it take you to get there?	 I don't know/can't remember	☐☐min ☐☐hrs ☐998	☐☐min ☐☐hrs ☐998	☐☐min ☐☐hrs ☐998
5.23	Did you have to pay for **delivery services**?	No Yes I don't know/can't remember	☐0→5.25 ☐1 ☐998→5.25	☐0→5.25 ☐1 ☐998→5.25	☐0→5.25 ☐1 ☐998→5.25
5.24	In terms of costs for **delivery service** you have use for previous pregnancies, the service was…	Very expensive Expensive affordable	☐1 ☐2 ☐3	☐1 ☐2 ☐3	☐1 ☐2 ☐3
Now I would like to ask you about the type of **care** you received after the birth of your children					
5.25	After the birth of each child will/did any one check on **your** health?	No Yes I do not know/can't remember	☐0→5.28 ☐1 ☐998→5.28	☐0→5.28 ☐1 ☐998→5.28	☐0→5.28 ☐1 ☐998→5.28
5.26	Who checked on **your** health?	Doctor Nurse Auxiliary Nurse midwife MCHW FCHV TBA No one Other (specify)…… I do not Know/can't remember	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐998	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐998	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐998
5.27	Where did this check take place?	Home Hospital Health post/ PHC Private clinic Traditional birth attendant's home Medical/Drug seller Other (specify) …… I do not Know/can't remember	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998

S.N.	Question	Response	First child	Last child	Current pregnancy
5.28	After the birth of each child who checked the health of the **new born baby**?	No one Doctor Nurse Auxiliary Nurse midwife MCHW FCHV Traditional healers Other (specify)…… I do not Know/can't remember	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐998	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐998	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐998
5.29	Where did this check take place?	Home Hospital Health post/PHC Private clinic Medical/Drug seller Traditional healer's home Other (specify) …… I do not Know/can't remember	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998

CHECK: IF woman CURRENTLY PREGNANT → 5.30 If woman NOT pregnant → Section 7

5.30	With this pregnancy have you **pregnancy** suffered any of the following?	Bleeding Fits or convulsions Swelling of the hands and face (oedema) No problem Other (specify)…….	☐1 ☐2 ☐3 ☐4 ☐5
5.31	Did you take help from anyone when you have problem?	No Yes	☐0 ☐1
5.32	Why did you not seek assistance?	Costs too much Too far/no transportation Facility was closed Time away from work Don't trust /poor quality service No female healthcare provider Other (specify)……. I do not know/ can't remember	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐998
5.33	Who made the decision about whether or not to seek assistance for this problem?	Respondent husband husband's mother Respondent's mother Respondent's father Friends/neighbour Health professional Traditional healer Other (specify)……. I don't know/can't remember	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐9 ☐998
5.34	Where will this check take place?	Home Hospital Health post/ PHC Private clinic Medical/Drug seller Traditional healer's home Other (specify) ……	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7
5.35	Who checked on your health?	Doctor Nurse Auxiliary Nurse midwife MCHW FCHV TBA Traditional healers Other (specify)…… I do not Know/can't remember	☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐998

APPENDIX E: NEPAL ETHICS APPROVAL

Nepal Health Research Council

Estd. 1991

NHRC

Ref. No. 434

28 November 2011

Ms. Tania Guadalupe Gavidia
Principal Investigator
Curtin University of Technology, Perth, Australia

Ref: Approval of Research Proposal entitled **Maternal and Child Health Service Provision for Urban Slum Women in Kathmandu Metropolitan City**

Dear Ms. Gavidia,

It is my pleasure to inform you that the above-mentioned proposal submitted on 5 September 2011 (**Reg. no. 81/2011** please use this Reg. No. during further correspondence) has been approved by NHRC Ethical Review Board on 23 November 2011 (2068-08-07).

As per NHRC rules and regulations, the investigator has to strictly follow the protocol stipulated in the proposal. Any change in objective(s), problem statement, research question or hypothesis, methodology, implementation procedure, data management and budget that may be necessary in course of the implementation of the research proposal can only be made so and implemented after prior approval from this council. Thus, it is compulsory to submit the detail of such changes intended or desired with justification prior to actual change in the protocol.

If the researcher requires transfer of the bio samples to other countries, the investigator should apply to the NHRC for the permission.

Further, the researchers are directed to strictly abide by the National Ethical Guidelines published by NHRC during the implementation of their research proposal and submit progress report and full or summary report upon completion.

As per your research proposal, total research amount is US$ 6,630.00 and NHRC processing fee is US$ 100.00.

If you have any questions, please contact the research section of NHRC.

Thanking you.

Sincerely Yours,

Dr. Shanker Pratap Singh
Member Secretary

Tel: 977-1-4254220, 4227460, Fax: +977-1-4262469, RamShah Path, P.O. Box 7626, Kathmandu, Nepal.

Nepal Health Research Council
Estd. 1991

NHRC

Ref. No. 59

25 July 2012

Ms. Tania Guadalupe Gavidia
Principal Investigator
Curtin University of Technology
Perth, Australia

Subject: Amendment of the research proposal entitled Maternal and Child Health Service Provision for Urban Slum Women in Kathmandu Metropolitan City

Dear Ms. Gavidia ,
In reference to your letter, dated 8 July 2012 the meeting of the Ethical Review Board of Nepal Health Research Council held on 16 July 2012 has decided to approve your requested amendment for provision of incentives and addition of health facility census and use de – identified clinical (secondary) data from MCH clinics in Ward 34.

If you have any questions, please contact the research section of NHRC.

Thanking You

Yours Sincerely,

Dr. Shanker Pratap Singh
Member –Secretary

Tel. +977-1-4254220, 4227460, Fax: +977-1-4262469, RamShah Path, P.O. Box 7626, Kathmandu, Nepal.
Website: http: www.nhrc.org.np, Email : nhrc@nhrc.org.np

APPENDIX F: CURTIN ETHICS APPROVAL

MINUTE

Curtin
UNIVERSITY OF TECHNOLOGY

To	Tania Gavidia
From	Dr Mohammed Ali
Subject	Protocol Approval **CIH-02-2011**
Date	07 April 2011
cc	Dr BK Tan

Office of Research and Development

Human Research Ethics Committee

TELEPHONE 9266 2784
FACSIMILE 9266 3793
EMAIL: l.teasdale@curtin.edu.au

Dear Tania,

Thank you for your Form C Application for Approval of Research with Minimal Risk (Ethical Requirements) for the project titled**: Maternal and child health in Kathmandu Metropolitan City: A model of maternal and child health service provision for urban women**. On behalf of the Human Research Ethics Committee, I am pleased to inform you that the project is approved.

Approval of this project is for a period of one year, from 07 April 2011 to 07 April 2014.

If at any time during the period changes/amendments occur, or if a serious or unexpected adverse event occurs, please advise me immediately. The approval number for your project is **HR CIH-02-2011.** Please quote this number in any future correspondence.

Kind regards

Mohammed Ali
Human Research Ethics Committee
Centre for International Health
Curtin University of Technology
Western Australia
Telephone: 9266 3974
Fax: 9266 2608
email: m.ali@curtin.edu.au

Please Note: The following standard statement must be included in the information sheet to participants: *This study has been approved by the Curtin University Human Research Ethics Committee. If needed, verification of approval can be obtained either by writing to the Curtin University Human Research Ethics Committee, c/- Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth, 6845 or by telephoning 9266 2784*

Curtin University

Memorandum

To	Tania Gavidia
From	Dr Mohammed Ali
Subject	Protocol Amendment/Extension Approval- CIH-02-2011
Date	28 June 2012

Office of Research and Development

Human Research Ethics Committee

TELEPHONE 9266 2784
FACSIMILE 9266 3793
EMAIL hrec@curtin.edu.au

Dear Tania,

Thank you for keeping us informed of the progress of your research. The Human Research Ethics Committee acknowledges receipt of your Form B report, indicating modifications / changes, for the project **":** MATERNAL AND CHILD HEALTH IN KATHMANDU METROPOLITAN CITY: A MODEL OF MATERNAL AND CHILD HEALTH SERVICE PROVISION FOR URBAN WOMEN". Your application has been ***approved***.

The Committee notes the following amendments have been approved:

1. To extend the Health Facility Census to include all health centres in the study area (Ward 34) which provide maternal and child health services, instead of of only the centre located in the the slum area in Ward 34. This is to enable a better examination of issues related to physical access to health care. As with the original proposal, de-identified clinical data will be analysed to determine if, in fact women living in slum areas disproportionately suffer more adverse obstetric complications than non-slum counterparts.
2. The amendment also includes for the provision of first aid medical kits to study participants, as an incentive/gift for participating in the study.

Approval for this project remains until 07 April, 2014.

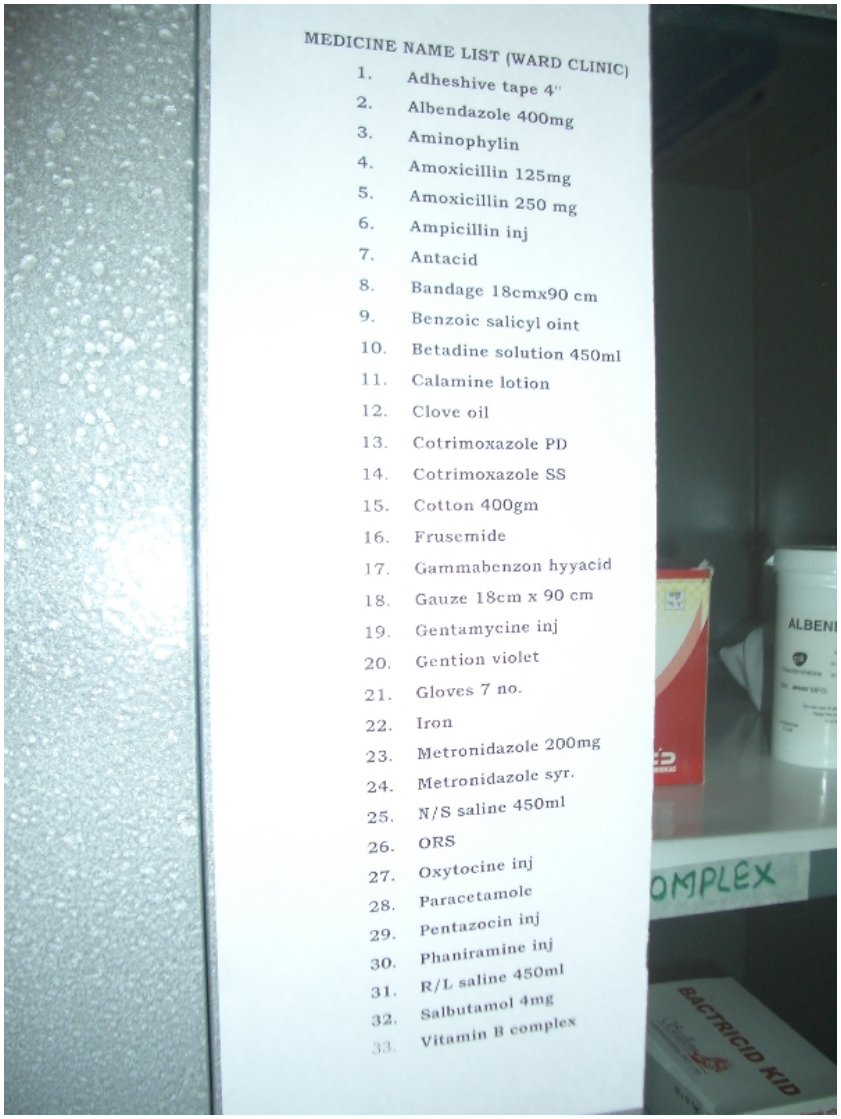
Your approval number remains CIH-02-2011, please quote this number in any further correspondence regarding this project.

Thank you.

Mohammed Ali

Dr Mohammed Ali
Form C Ethics Coordinator
Centre for International Health
Human Research Ethics Committee
Email: m.ali@curtin.edu.au
Phone: (61-8) 9266 3974

APPENDIX G: MEDICINES SUPPLIED FREE TO PATIENTS



APPENDIX H: ANTENATAL AND POSTNATAL RECORD (STUDY-CLINIC)

पि .एच .डि. नेपाल

मॉतृशिश स्वास्थ्य क्लिनिक, का.म.नपा. ३४

मातृ स्वस्थ्य सेवा कार्ड

मुल दर्ता नं. :-

सेवा दर्ता नं. :-

सेवा दर्ता मिति

गते	महिना	साल

पतिको नाम, थर :- .....

गर्भवति महिलाको व्यक्तिगत विवरण :-

नाम, थर : ..... उमेर .....

ठेगाना :- जिल्ला : KTM वडा नं.

उचाई : फिट ईन्च

गर्भको पटक (हालको समेत)

स्वस्थ्य सम्बन्धि मुख्य मुख्य समस्याहरु (छोटकरीमा लेख्नुहोस)

टि.टि. खोप लगाएको विवरण	पहिले लगाएको खोपको संख्या	प्रथम (गते/ महिना /साल)	दोश्रो (गते / महिना/ साल)

अघिल्लो गर्भको विवरण

गर्भको संख्या	उमेर	गर्भको परिणाम					तौल केजी	जिवित बच्चाको हालको		गर्भको जटिलता	प्रसुतिको किसिम	प्रसुति गराईएको ठाउ	प्रसुति गराउने व्यक्ति	प्रसबको जटिलता
		जिवित	मृत जन्म	अबधि नपुगको	जुम्याह	गर्भपतन		लिङ्ग	उमेर					
१														
२														
३														
४														
५														

सुत्केरी सेवा

सुत्केरी जाँच विवरण

जाँच	मिति	समस्याहरु	उपचार सल्लाह	सही
PNC 1				
PNC 2				
PNC 3				

स्वास्थ्य कर्मीको नाम

अन्तिम महिनावारी

गते	महिना	वर्ष

प्रसवको अनुमानित मिति

गते	महिना	वर्ष

गर्भवति परिक्षण विवरण

गर्भवति जाँच	मिति	जाँच विवरण								प्रयोगशाला		अन्य समस्याहरु भएमा उल्लेख गर्ने	उपचार सल्लाह	आईरन चक्कि दिएको संख्या	झुकाको औषधि	फर्केर आउने मिति
		तौल	रक्तचाप	रक्तअल्पता	सुन्निएको	गर्भको अवधि	पाठेघरको उचाई	प्रिजेन्टेसन पोजिसन	शिशुको हृदय गति	हेमो ग्लाविन	एल्बोमिन सुगर					

प्रशुति सेवा

प्रशुति गराईएको मिति

समय	गते	महिना	साल

प्रशुति गराईएको ठाउं

घर	स्वस्थ्य संस्था

प्रशुतिको किसिम

प्रसवको जटिलता

रक्तश्राव भएको	लामो समय बेथा लागेको	साल नभारेको	अन्य

परिणाम

जिवित जन्म		मृत जन्म	अवधि नपुगेको	खुंडे	शिशुको तौल
महिला	पुरुष				

जिवित शिशु

स्वस्थ्य	तुरुन्त रोएको	सास फेर्न गाह्रो भएको	अन्य

प्रशुती गराउने स्वस्थ्य कर्मीको

सहि

नाम

APPENDIX I: DATA COLLECTION SHEET FOR RAPID-HEALTH FACILITY ASSESSMENT

Facility Census Data Collection Sheet

Namaste! My name is _____ and I work for an NGO called Public Health Development Nepal. We are doing some research today regarding maternal and child health (MCH) facilities in Ward 34. This research is part of a PhD project for Tania Gavida, a student from Curtin University in Australia. Approval to conduct this research has been obtained from relevant authorities in (REF: 81/2011) and Australia (REF: CIH-02-2011).

The purpose of this survey is to identify the number of health facilities located within Ward 34 that provide MCH services. In particular, we are interested in the use of MCH services by poor women living in Shantinagar/squatter settlement in Ward 34. The survey consists of questions regarding the type of services provided at this facility and the use of this clinic by poor women. We will then ask you to list the position held by your care-providers at this clinic, and then some questions about this clinic's practice around patient registers and patient records/cards. Overall, this survey is expected to take about 10 minutes.

Participation in this study is voluntary and you can choose to stop the survey at any time or you may choose to NOT answer any questions that you think are inappropriate. However, all the information you provide will be kept strictly confidential and will not be shown to other persons/organisations. Only survey organisers and research assistants will view the data. However, we hope that your clinic can participate fully in this survey as the results will help to identify how many facilities are providing maternal and child care in Ward 34, in particular how many clinics provide MCH services for poor women. This information has the potential to help the local council in planning future MCH activities within this Ward.

Does this sound like something your clinic would be interested in? ☐ No ☐ Yes

If NO, why not: _____

_____

_____

May I begin now? ☐ No ☐ Yes

If NO, when is a good day to come back? _____ Time: _____

Clinic ID Number	☐☐ - ☐☐ - ☐☐☐ (ward#) (section#) (#Clinic visited in section#)		
Name Clinic: **Address:**		**Ph# (1):** **Ph# (2):** **Time clinic has been in this location:**	(months/years)
Type of Health Facility (1):	☐ Government ☐ Private ☐ NGO ☐ INGO ☐ Other:_____		
Type of Health Facility (2):	☐ Clinic ☐ Hospital ☐ Primary Health Care Centre ☐ Other:_____		
Name person interviewed: **Name of person in charge:**		**How many health-staff work in this facility:**	☐☐☐ full time ☐☐☐ part-time

CHECK: Have you marked the Clinic on your Map? ☐ No ☐ Yes

	ANC	PNC	Delivery/Abortion services	Child Health (u1)
Does this facility provide	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
How many days per week does this facility provide:	☐☐	☐☐	☐☐	☐☐
Approximately how many clients are seen/month?	☐☐☐☐	☐☐☐☐	☐☐☐☐	☐☐☐☐
Does the facility have user-fees or charges for services related to:	☐ Yes ☐ No, clients have no out of pocket charges/user fees	☐ Yes ☐ No, clients have no out of pocket charges/user fees	☐ Yes ☐ No, clients have no out of pocket charges/user fees	☐ Yes ☐ No, clients have no out of pocket charges/user fees
IF yes, indicate charging practices:	☐ registration ☐ consultation ☐ medication ☐ lab test	☐ registration ☐ consultation ☐ medication ☐ lab test	☐ registration ☐ consultation ☐ medication ☐ lab test	☐ registration ☐ consultation ☐ medication ☐ lab test
What components of _____ do you provide?	☐ BP ☐ Weight ☐ Iron ☐ deworming ☐ Hb test ☐ Counseling ☐ Urine test ☐ Other: _____ ☐ Other: _____	☐ Iron ☐ Vit A ☐ BP ☐ PV check ☐ Counseling ☐ Other: _____ ☐ Other: _____ ☐ Other: _____ ☐ Other: _____	☐ Normal delivery only ☐ Basic Emergency Obstetric care ☐ Comprehensive emergency obs. care ☐ Other:_____ ☐ Other:_____ ☐ Other: _____	☐ Growth Monitoring ☐ Immunisation ☐ BCG ☐ DPT/HepB ☐ Polio ☐ Measles ☐ Other:_____ ☐ Other:_____ ☐ Other:_____
Does this clinic ever see women that live in Shantinagar/squatter area?	☐ No ☐ Yes ☐ Don't know	☐ No ☐ Yes ☐ Don't know	☐ No ☐ Yes ☐ Don't know	☐ No ☐ Yes ☐ Don't know
Are discounts/exemptions allowed for poor clients?	☐ No ☐ Yes ☐ Don't know	☐ No ☐ Yes ☐ Don't know	☐ No ☐ Yes ☐ Don't know	☐ No ☐ Yes ☐ Don't know
What are the qualifications of the person that normally provides these services?	1. _____ 2. _____ 3. _____ 4. _____	1. _____ 2. _____ 3. _____ 4. _____	1. _____ 2. _____ 3. _____ 4. _____	1. _____ 2. _____ 3. _____ 4. _____
Is there a register where information on each ANC/PNC visit is recorded for each client?	☐ No ☐ Yes ☐ Don't know	☐ No ☐ Yes ☐ Don't know	☐ No ☐ Yes ☐ Don't know	☐ No ☐ Yes ☐ Don't know
Does your clinic keep patient file/charts/records at the end of the visit?	☐ No, no patient file/record is kept at the clinic ☐ Yes, a copy of patient file/record is kept at the clinic ☐ Don't know	☐ No, no patient file/record is kept at the clinic ☐ Yes, a copy of patient file/record is kept at the clinic ☐ Don't know	☐ No, no patient file/record is kept at the clinic ☐ Yes, a copy of patient file/record is kept at the clinic ☐ Don't know	☐ No, no patient file/record is kept at the clinic ☐ Yes, a copy of patient file/record is kept at the clinic ☐ Don't know
What language are patient records collected in?	☐ English ☐ Nepali			
Finally, I would like to ask for your permission to view some of your patients files /registers files to see how you record patient information and what type of patient information you record on your charts.				
Can we view some files? To see the type of information your clinic collects for your MCH patients?	☐ No ☐ Yes (continue to next page) IF NO, Why Not? _____ _____ _____			

CHECK LIST

Computerised Database?	☐ No ☐ Yes		
DATA COLLECTED			
ANC	**PNC**	**Immunisation**	**Growth Monitoring**
☐ Age or ☐ DOB ☐ Last date of menstruation ☐ Date of ANC visits ☐ Residence/Address ☐ Number of ANC visits ☐ Weight ☐ Gravida/Para ☐ Gestational Age ☐ Pregnancy History ☐ Pregnancy complications ☐ Components included (Iron, Vit A, TT) ☐ Determine wealth?	**Post-Partum** ☐ Age or ☐ DOB ☐ Date of service ☐ Number of PNC visits ☐ PP Complications ☐ Birth Outcome (live birth/still birth) ☐ Components included (Iron, Vit A, PV check) **Delivery information** ☐ Date of delivery/DOB ☐ Place of delivery ☐ Assistance ☐ Type of delivery (Normal/caesarean) ☐ Birth Outcome (live birth/still birth) ☐ Delivery complications	☐ Age or ☐ DOB ☐ Date of service ☐ Type of vaccine ☐ Residence/Address ☐ Determine wealth?	☐ Age or ☐ DOB ☐ Date of service ☐ Weight ☐ Residence/Address ☐ Determine wealth?
Description of Patient files:			
Physical infrastructure of facility: **Walls fresh painted:** **Floor clean:** **Toilets:** **Onsite lab for hb/urine test:** **USG:**			
General Comments: **Crowd:**			

APPENDIX J: SEMI-STRUCTURED INSTERVIEWS QUESTION SCHEDULE

Hello! My name is _____ and today I would like to hear about your experiences at Clinic while receiving MCH care. First, I will collect some personal information, then I would like to hear about your experiences while receiving MCH care in Kathmandu. May I begin?

1. Date ☐☐/☐☐/☐☐☐☐
2. Name of Respondent: _____
3. Sex of Respondent: ☐Male$_1$ ☐ Female$_0$
4. Date of birth: ☐☐/☐☐/☐☐☐☐
5. Gravida: ☐☐ Para: ☐☐
6. Caste: _____
7. Address: _____
   (Please tick Slum ☐$_0$ Non-slum ☐ $_1$)
8. Can you read and write? Yes ☐$_1$ No ☐ $_0$
9. Highest level completed:
   Primary ☐$_1$ (grade) ___ Secondary ☐$_2$ (grade) ____ University ☐$_3$ ____
10. Family type: Nuclear ☐$_1$ Joint ☐$_2$ Extended ☐$_3$
11. Number of people living in household: _____
12. Occupation: _____
13. Have you sought ANC services in the past 2 years?
14. Who made the decision to seek/not seek care during pregnancy?
15. What about for immunisation for the baby? PNC?
16. Who made the decision to seek/not seek care for your baby? PNC?
17. Can you remember what components of MCH you received at the Clinic/Hospital?

ANC

How many visits: ☐

Iron	☐0	☐1	☐998	
Hb testing	☐0	☐1	☐998	
Vitamin A	☐0	☐1	☐998	
Deworming	☐0	☐1	☐998	
TT vaccination		☐0	☐1	☐998
Advice of danger signs		☐0	☐1	☐998
Advice on birth preparedness	☐0	☐1	☐998	
Advice on breastfeeding	☐0	☐1	☐998	
Other _____	☐0	☐1	☐998	

PNC

How many visits: ☐

Iron	☐0	☐1	☐998	
Vitamin A	☐0	☐1	☐998	
Family planning		☐0	☐1	☐998
Advice on breastfeeding	☐0	☐1	☐998	
Other _____	☐0	☐1	☐998	

Child

Immunisation for baby		☐0	☐1	☐998
Weight monitoring for baby	☐0	☐1	☐998	
Other _____	☐0	☐1	☐998	

18. Did anyone accompany you to the clinic/hospital?

19. How do/did you get to the Clinic?

20. Why did you decided to go to that Clinic/Hospital?

21. Are you satisfied with the overall services you received at Clinic/Hospital? Why? Why not?

22. Have you heard of the CUHC-34 (Prayagmar?)

APPENDIX K: FOCUS-GROUP DISCUSSION QUESTION SCHEDULE

Hello! My name is _____ and today I would like to hear about your experiences accessing and using the services provided by the Clinic. I have already collected some personal information from you and now I would like to hear about your experiences using the MCH services offered by the Clinic (including your opinion on the quality of service provided). Then I will ask you some questions about any problems you experienced with the services provided by the Clinic. Lastly I would like to hear about any areas of MCH that we are not addressing that are important to your community.

Date ☐☐/☐☐/☐☐☐☐

Number of participants: ☐

1. Are the services provided by the MCH clinic important to this community? Why? why not?

    a. What aspects of MCH services provided by the Clinic are most important to your community?

2. Is the ANC service provided by this Clinic better or worse than you expected? In what ways?

    a. Were staffs helpful/good at their job? Provide good care? Were they knowledgeable/ Did you feel welcome?

    b. Did anyone experience any problems with the service they received? What were they?

3. In your community, who normally makes the decision to:
   Attend ANC?

   Delivery in Hospital?

   Seek medical help if baby is sick?

4. What are some of the issues that prevent women in your community from attending ANC? [PROBE: ask about friends/community members/relatives living in slum area – Issues raised must be specific to slum areas]

5. What suggestions do you have for how the Clinic can help women in your community more?

6. In your opinion, how do the services provided at this Clinic compare to those provided by the Government?

APPENDIX L: SEMI-STRUCTURED INTERVIEW QUESTION SCHEDULE (SERVICE PROVIDERS)

Hello! My name is _____Today I would like to hear about your experiences working at the Clinic. First, I will collect some personal information, then I would like to hear your personal experiences working at the Clinic. Then I will ask you some questions about how the facility operates. Lastly I would like to hear about the community's use of the facility.

1. Sex of health provider Male☐$_0$ Female ☐$_1$
2. Name of Respondent: _____
3. Date of birth of health provider: ☐☐/☐☐/☐☐☐☐
4. Caste: _____
5. How long have you worked at the Clinic? _____
    a. What is your position at the Clinic? _____
    b. What level of training/education have you completed? _____
6. What has your experience working at the Clinic so far been like?
    a. what are some of the positive [PROBE: challenging, the patients, working hours, having to learn a little English]
    b. What are some of the negatives? [PROBE: the patients, working hours, having to learn a little English]
    c. What are the primary factors that motivate you in your work here?
7. Describe the Clinic's MCH programme? And any problems encountered i.e. interrupted medical supplies etc?
    a. ANC
    b. PNC

c. Child Health

d. Counselling

e. Referral System

f. Any Financial Assistance?

8. In your opinion, what has worked well about the MCH *programme* at the Clinic?
(PROBE: what activities – referral processes, linkages to other services, counselling for pregnant women/new mother? Out-reach clinics?)

a. What has not worked so well? Types of activities: education, referral processes?

b. Are the services provided by the clinic able to address the health needs of mothers and children of the target community?

9. In your opinion, do you think the Clinic is being utilised/accessed effectively by the Community Why? Why not?

a. What factors have been enhancing/preventing women from benefiting fully from the services provided by the Clinic?

b. Why do you think patients choose this clinic over other clinics (private or public)?

10. What are some of the barriers that keep you from giving the kind of care you wish to provide? [PROBE: lack of medical equipment? Low medicine stocks? Facilities? not enough autonomy]

c. Have you brought these issues up with Management? Any recent improvements?

11. Do the current resources available (financial and physical), support the expected level of service?

a. Do you think the Clinic has sufficient staff to support your caseload? Explain.

12. Why do you think patients attend this clinic over other clinics (private or public)?

13. How is the community informed of services offered at the Clinic?

a. What do you think is the most effective way to convey information to the community about the Clinic? About your services?

APPENDIX M: CORRELATIONS

		Age	Caste	Education	Number of offspring	Employment status	Asset-wealth	Age at first pregnancy	Residence location	Year of birth (Aama)	Frequency of ANC	Place of delivery	Attendance to PNC
Age	Correlation Coefficient	1											
	Sig. (2-tailed)	.											
	N	222											
Caste	Correlation Coefficient	-0.123	1										
	Sig. (2-tailed)	0.067	.										
	N	222	222										
Education	Correlation Coefficient	-.140*	-.372**	1									
	Sig. (2-tailed)	0.037	0	.									
	N	222	222	222									
Number of offspring	Correlation Coefficient	.512**	0.042	-.301**	1								
	Sig. (2-tailed)	0	0.536	0	.								
	N	222	222	222	222								
Employment status	Correlation Coefficient	0.062	-0.083	-0.01	.163*	1							
	Sig. (2-tailed)	0.355	0.22	0.878	0.015	.							
	N	222	222	222	222	222							
Asset-wealth	Correlation Coefficient	0.029	-.206**	.346**	-0.078	.206**	1						
	Sig. (2-tailed)	0.669	0.002	0	0.248	0.002	.						
	N	222	222	222	222	222	222						
Age at first pregnancy	Correlation Coefficient	.360**	-.248**	.176**	-0.093	0.073	0.104	1					
	Sig. (2-tailed)	0	0	0.009	0.166	0.276	0.123	.					
	N	222	222	222	222	222	222	222					
Residence location	Correlation Coefficient	-0.03	.427**	-.476**	.137*	-.334**	-.456**	-.230**	1				
	Sig. (2-tailed)	0.653	0	0	0.041	0	0	0.001	.				
	N	222	222	222	222	222	222	222	222				

Year of birth (Aama)	Correlation Coefficient	.360**	0.027	-.158*	.194**	.291**	0.029	-0.072	-0.102	1			
	Sig. (2-tailed)	0	0.689	0.019	0.004	0	0.672	0.283	0.128	.			
	N	222	222	222	222	222	222	222	222	222			
Frequency of ANC	Correlation Coefficient	-0.045	-.281**	.317**	-0.117	0.105	.357**	0.12	-.413**	-0.111	1		
	Sig. (2-tailed)	0.503	0	0	0.082	0.121	0	0.076	0	0.099	.		
	N	220	220	220	220	220	220	220	220	220	220		
Place of delivery	Correlation Coefficient	-0.053	-.163*	.383**	-.233**	.152*	.235**	.218**	-.419**	-.161*	.421**	1	
	Sig. (2-tailed)	0.435	0.015	0	0	0.024	0	0.001	0	0.017	0	.	
	N	222	222	222	222	222	222	222	222	222	220	222	
Attendance to PNC	Correlation Coefficient	-0.043	-.147*	.291**	-.177**	.167*	.231**	0.127	-.365**	-0.047	.450**	.607**	1
	Sig. (2-tailed)	0.528	0.028	0	0.008	0.013	0.001	0.058	0	0.49	0	0	.
	N	222	222	222	222	222	222	222	222	222	220	222	222

APPENDIX N: SCORES FOR ACCESS TO MATERNAL HEALTHCARE

FACILITY NUMBER	FACILITY TYPE	MANAGING AUTHORITY	PHYSICAL AVAILIBILITY				PHYSICAL STRUCTURE & MAINTENANCE							TECHNICAL CAPACITY												AFFORDABILITY	GRAND TOTAL
														EQUIPMENT			DIAGNOSTIC APPROACH				PROPHYLACTIC TREATMENT							
			opening time	opening days	proximity	**TOTAL**	seating in waiting area	toilets with water to flush	clean toilets	maintenance of floor	clean floors	maintenance of walls	**TOTAL**	lab testing	ultrasound	delivery	weight	BP	Hb	urine albumin	albendazole	iron	TT	vitamin A	newborn care	**TOTAL**		
LOCATED WITHIN WARD 34																												
Study-clinic	clinic	autonomous	0	0	3	**3**	3	1	1	2	3	2	**12**	2	0	0	2	2	2	0	2	2	2	2	2	**18**	**2**	**35**
Facility 2	hospital	government	2	2	3	**7**	3	2	2	3	3	3	**16**	2	2	2	2	2	2	2	2	2	2	2	2	**24**	**1**	**48**
Facility 3	clinic	private	0	0	3	**3**	3	3	3	3	2	3	**18**	2	2	0	2	2	2	2	2	2	2	2	2	**22**	**0**	**43**
Facility 4	clinic	private	2	2	3	**7**	3	2	2	2	2	1	**12**	2	0	0	2	2	2	2	2	2	2	2	2	**20**	**0**	**39**
LOCATED OUTSIDE WARD 34																												
Facility 5	hospital	private	2	2	2	**6**	3	2	2	2	2	2	**13**	2	2	2	2	2	2	2	2	2	2	2	2	**24**	**0**	**43**
Facility 6	hospital	private	2	2	3	**7**	3	2	2	2	2	2	**13**	2	2	0	2	2	2	2	2	2	2	2	2	**22**	**0**	**42**
Facility 7	teaching hospital	private	2	2	3	**7**	3	2	3	3	2	3	**16**	2	2	2	2	2	2	2	2	2	2	2	2	**24**	**2**	**49**
Facility 8	teaching hospital	private	2	2	1	**5**	3	2	2	2	3	2	**14**	2	2	2	2	2	2	2	2	2	2	2	2	**24**	**2**	**45**
Facility 9	teaching hospital	private	2	2	1	**5**	3	1	0	2	2	2	**10**	2	2	2	2	2	2	2	2	2	2	2	2	**24**	**2**	**41**
Facility 10	hospital	government	2	2	2	**6**	1	1	1	2	2	2	**9**	2	2	2	2	2	2	2	2	2	2	2	2	**24**	**2**	**41**
Facility 11	hospital	autonomous	2	2	1	**5**	3	2	2	2	2	2	**13**	2	2	2	2	2	2	2	2	2	2	2	2	**24**	**1**	**43**
Facility 12	health-post	government	0	0	2	**2**	2	1	1	2	2	2	**10**	2	0	0	2	2	2	2	2	2	2	2	2	**20**	**2**	**34**
Facility 13	maternity nursing home	private	2	2	2	**6**	2	3	2	2	2	2	**13**	2	2	2	2	2	2	2	2	2	2	2	2	**24**	**0**	**43**

Physical accessibility: Maximum of 7 points; Physical structure and maintenance: Maximum of 18 points; Technical capacity: Maximum of 24 points; Affordability: Maximum 2 points; Maximum overall total: 51 points