THE DETERMINANTS OF THE UTILIZATION OF PRENATAL CARE SERVICES IN BHUTAN

DEKI

A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF ARTS
(POPULATION AND REPRODUCTIVE HELATH RESEARCH)
FACULTY OF GRADUATE STUDIES
MAHIDOL UNIVERSITY
2006

ISBN 974 -04 -7573 - 6

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entitled

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THE DETERMINANTS OF THE UTILIZATION OF PRENATAL CARE SERVICES IN BHUTAN

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for the degree of Master of Arts
(Population and Reproductive Health Research)

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ACKNOWLEDGEMENT

It is my great pleasure to express my sincere thanks and profound sense of gratitude to my major guide Lect. Aree Phromoo Ph.D., for her continuous guidance, constant inspiration, support and encouragement which has led to the completion of this paper successfully. I would like to express my deep sense of gratitude to my co-advisor Mr. John Bryant Ph.D., for his immense support and valuable suggestions at every stage of preparing this paper.

I wish to thank Director of IPSR, and our course director Assoc. Prof. Dr. Pimonpan Isarabhakdi, Ph.D and our course coordinator Khun Luxana Nil-Ubol, for giving me an opportunity to pursue my study in this renowned institute and for providing us with all the necessary help during our stay in this Institute.

My sincere gratitude is also for all Ajarns of IPSR, Mahidol University, for showering us with new knowledge and techniques of Demography, which would be very valuable for us in our field of work.

I also wish to express my gratitude to all library staff, computer center staff and other supporting staff of IPSR for their cooperation and assistance.

My sincere thanks also go to all my colleagues for providing helping hands and moral and academic support at each and every step of life in IPSR.

I would like to thank my parents and the family members, who have been constant source of support and inspiration and whose love and affection, have made it possible to complete this work.

Finally, I would like to express my gratitude to my Royal Government and UNFPA for giving me an opportunity and supporting me in this study.

Deki

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DEKI: 4838756 PRRH / M

M.A. (POPULATION AND REPRODUCTIVE HEALTH RESEARCH)

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ABSTRACT

The purpose of this study was to investigate whether women receive or do not receive prenatal care as well as the causes for underutilization of prenatal care services.

This study utilizes secondary data from the survey of 'Bhutan Living Standard Survey (BLSS), 2003, conducted by the National Statistical Bureau, Royal Government of Bhutan.

Univariate and bivariate analysis with chi-square test was used to identify the significant relationships between dependent and independent variables. Logistic regression was run to find the effect of each independent variable on the utilization of prenatal care service.

It is found that, controlling for other variables, respondent's knowledge of modern contraception and economic status exhibited significantly positive associated with the use of prenatal care services. About 94 % of women from high economic status have received prenatal care as against 62 % of the women from low economic status, which means rich women were three times more likely to receive prenatal care than their counterparts, 85 % of women with some knowledge of modern contraception utilized prenatal care services as against 68 % of women with no knowledge. Accessibility also related significantly to the use of prenatal care services; if the woman has to travel on foot and if she takes more than an hour to reach the health centre then she is less likely to receive prenatal care. While quality of care was not related to utilization of prenatal care, this could be because of free services and facilities provided by the government. Logistic regression result also showed that a high standard of living and knowledge of modern contraception were strong positive predictors of prenatal care.

Women of reproductive age need to recognize the importance of receiving antenatal care in the community. Uplifting the socio-economic status and literacy rate of women is required to provide community based education.

KEY WORDS: EXPOSURE MASS MEDIA/ PRENATAL/ANTENATAL CARE/ ECONOMIC STATUS/ KNOWLEDGE OF MODERN CONTRACEPTION/ QUALITY OF CARE/ / BHUTAN.

59 p. ISBN 974-04-7573-6

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ANC	Antenatal Care
AN	Auxiliary Nurse
BLSS	Bhutan Living Standard Survey
BHU	Basic Health Unit
BHW	Basic Health Worker
EmOC	Emergency Obstetric Care
FYP	Five Year Plan
HA	Health Assistant
IMR	Infant Mortality Rate
ICPD	International Conference on Population and Development
KAP	Knowledge, Attitudes and Practice
LSMS	Living Standard Measurement Survey
MMR	Maternal Mortality Rate
MCH	Mother and Child Health
ORC	Out Reach Clinic
OPD	Out Patient Department
PHC	Primary Health Care
PNC	Post Natal Clinic
RH	Reproductive Health
RGoB	Royal Government of Bhutan
SPSS	Social Statistical Package for Social Science
TV	Television
TFR	Total Fertility Rate
UNICEF	United Nation International Children Education Fund
VHW	Village Health Worker
WHO	World Health Organization

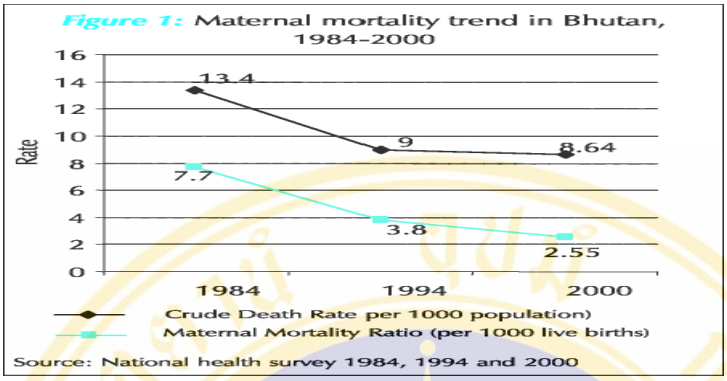
CHAPTER I

INTRODUCTION

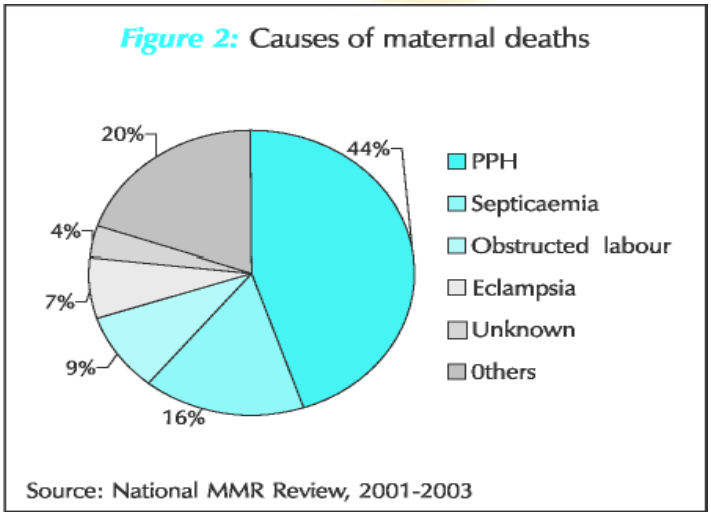
1.1 Background of the Study

"Maternal mortality is the leading cause of premature death and disability among women of reproductive age in developing countries" (WHO and UNICEF 1996). Among women who die of pregnancy –related causes, 25 % of women die during pregnancy, 16 % die during delivery, and 61 % die after delivery, with most of these deaths occurring within one week of delivery (Li et al., 1996). The World Health Organization (WHO, 2002) estimates that 600,000 women die every year due to pregnancy and child birth, and almost 99 percent of these deaths occur in the developing countries. The maternal mortality rate and infant mortality rate is the best index to know the quality of maternity care services in any given country (HMGN and UNICEF, 1996).

A global review of child deaths by the Bellagio Child Survival Group showed that 34 % of child deaths occur in South Asia and that the region has almost two thirds of the global burden of malnutrition. Of an estimated half a million maternal deaths worldwide, almost half occur in South and Southeast Asia (WHO, 2005). Maternal mortality ratios range from 23/100 000 live births in Sri Lanka to 539/100 000 in Nepal (MOH, 1997). Given the close relation between maternal and perinatal mortality, it is not surprising that perinatal mortality rates in the region also rank among the highest in the world.



Although there has been a very slow decline in morbidity and mortality in Bhutan since the 1980 (Figure 1), the maternal mortality ratio (MMR) remains high. The national rate stands at 255 per 100,000 live births in 2003. The health care system is making steady efforts to make pregnancy and birth safer, by increasing access to skilled care, but infectious diseases and malnutrition remain common among women. Iron deficiency anemia in women is estimated to be about 60%. These factors predispose the pregnant women to complications and when these complications arise, the absence of appropriate services for emergency obstetric care (EmOC) services aggravates the situation. The maternal death review of 2001-2003 shows more than 60% of the death occurred at home. The major causes of maternal death show the same typical pattern as in other countries, with postpartum hemorrhage (PPH) being by far the major complication leading to maternal mortality, as we can see from figure3.



Nationally, assuming 24,000 births per year and a maternal mortality ratio 255, this would imply that around 60 maternal deaths occur each year. The majority of deaths occurred in the age group with the highest birth rate, 18-25 years old. The infant mortality and under five mortality rate is 60.54 and 84.05 per 1000 live births. A high level of maternal mortality and infant and under mortality, in general indicates the weaknesses of the coverage of maternal health services.

Maternal mortality is affected by various factors, Shiffman (2002) have argued that several interventions may be critical in the reduction of maternal mortality, including antenatal care, family planning service, safe and legal abortion, trained medical attendants at delivery, and emergency obstetric care. UNICEF (1996) stated that, the provision of care for women during pregnancy and childbirth is essential to ensure healthy and successful outcome of pregnancy for the women and her newborn infant. Bhutan's national policies and programmes to reduce maternal mortality are through increasing institutional deliveries and increasing the proportion of births attended by skilled health personnel. Services like antenatal, intra-partum and post-natal care are being continuously provided.

1.2 Research Problem and Significance of the study

One of the dominant themes of the International Conference on Population and Development held in Cairo in September 1994 was reproductive health. Reproductive health is a state in which people have the ability to reproduce and regulate their fertility; women are able to go through pregnancy and child birth safely; the outcome of pregnancy is successful in terms of maternal and infant survival and well being; and couples are free to have sexual relations free of the fear of pregnancy and of contracting disease.

Development in modern medicine and expansion of modern health care facilities have played a very important role in reducing morbidity and mortality in the developing countries. Though there is a steady penetration of modern health care services, economic underdevelopment has led to a relatively weak health infrastructure in Bhutan, especially in the rural areas. Bhutan is a mountainous country with very little flat land and very poor transportation network. Road is the only means of transportation within the country, and many parts of the country are yet to be

connected by road. The mountainous terrain makes construction and maintenance of road, difficult and expensive. Around 78.01 % of people live within two hours walking distance, and 89.01 % within three hours walking distance from health care services. (Ministry of Health and Education, 2000). In terms of provision of maternal, newborn and child health services, the lack of access to health services for management of pregnancy-related complications is a major problem. Majority of the deaths takes place at home or while traveling to health facility. High maternal, infant and under-five deaths, high fertility rates and high natural growth rates, were among the key concerns that led the government to urgently develop integrated maternal and childcare, family planning and safe motherhood initiatives throughout the nation.

Reducing maternal mortality is an attainable goal for countries around the world. “It is not for lack of knowledge or tools appropriate to developing country settings that poor women in poor countries still die of pregnancy related causes” (Gelband et al., 2001 :48). Studies on maternal mortality have shown that maternal mortality is largely preventable if women have access to health care and nutrition, information and education, and modern technology to prevent or manage pregnancy and delivery complications. Of the estimated number of maternal deaths worldwide, 42 % occurred in Asia. Of the estimated global maternal mortality ratio (400 per 100,000), the ratio was highest in Africa (1,000 per 100,000) followed by Asia (280 per 100,000) and the Pacific (260 per 100,000). WHO (2002) estimates that every year over 3.5 million babies die within the first month of life, especially during the first week, and 3.9 million infants are stillborn, mostly as a consequence of the poor health and nutritional status of the mother, and inadequate care before, during and after delivery.Many aspects of life are reflected in this statistic, including the capability of parents, the prevalence of malnutrition and disease, and the availability of clean water, the efficacy of health services, and above all, the health and status of women.

The Current maternal death rate is a matter of high concern. The review of maternal deaths (2004-April 2005) found that the main causes of maternal deaths in Bhutan is as a result of the following:

1) Lack of family planning
2) No ANC or inadequate ANC (late booking, inadequate number of visits)
3) Lack of knowledge on danger signs/ problems

4) No birth planning
5) Long distance from health facility
6) Home delivery with out trained attendance
7) Wrong attitude/ beliefs
8) Delayed decision -making

Therefore to prevent maternal deaths it is crucial for women to receive prenatal/antenatal care, with prenatal care visits all the causes mentioned above could be overcome, since we know that these causes of maternal deaths are mostly preventable. Current statistics show almost 80 % of the deliveries are taking place at home.

Knowledge of danger signs during pregnancy, delivery and purperium is low in communities, families and among women. Difficult terrain, scattered population, low literacy, lack of awareness, non-accessibility of emergency obstetric care facilities in the communities and lack of transportation facilities, come in the way of mothers in need of emergency obstetric care and antenatal care visits in Bhutan (Ministry of Health and Education, 2000).

The best starting point would be to improve prenatal care and encourage mothers to go to a facility for their delivery. In 2003, around 57 % women attended an antenatal clinic at least once, of these, about 58 % went three times. The average number of visits is also still around 2.4 visits. The frequency and the time of attending clinic were not uniform. Majority of the attending women attended clinic once or twice only. Usually first attendance is towards the latter part of the pregnancy. The place of Antenatal care is either at facility clinic or at ORC (Out Reach Clinic).

The value of antenatal care is to improve the health of the mother and the unborn child, through measures such as iron supplementation and tetanus inoculation (UNICEF, 1996). The anemia among women of child bearing age was 55 %. Given that anaemia is related to the Postpartum Hemorrhage (PPH), a major cause of Maternal deaths, prevention of anaemia should be a major focus of maternal health programmme. Studies have shown that the distance from Mother and Child Health clinics directly affects attendance, besides the lack of privacy, the cold, uncomfortable settings in clinics, and unfamiliarity with the surroundings were other deterrents (Ministry of Health and Education, 2003).. Thus, this paper aims to examine some of

the major determinants of the utilization of prenatal care services in Bhutan. It is expected that findings from this study would contribute new strategies for Government and Policy makers in the framework of decreasing infant and maternal mortality and increasing mother and child health in the future to achieve the Goal of Healthy Bhutan by the year 2010.

1.3 Research Questions

1) Is there any effect of mass media exposure and Family planning knowledge on the utilization of prenatal care services?
2) Does perceived quality of care have any influence on the utilization of prenatal care services?
3) Whether economic status of the women matter in the utilization of prenatal care services?

1.4 Research Objectives

1. To determine the association between mass media exposure and family planning knowledge, and prenatal care services.
2. To examine the association between economic status and utilization of prenatal care services.
3. To examine the influence of perceived quality of care on the utilization of prenatal care services.

CHAPTER II

LITERATURE REVIEWS

2.1 Significance of antenatal care services

Poor maternal care during pregnancy and delivery is responsible for high Maternal Mortality. Regular antenatal check up during pregnancy, institutional and skilled attendance at delivery, immunization of pregnant women against tetanus and early referral of complication can be helpful to reduce Maternal Mortality. In the study on Determinants of maternal care in a region of South India, Bhatia and Cleland, (1995), have demonstrated that the lack of antenatal care is a risk factor for maternal mortality. They also found that women registered for antenatal care are less likely to experience perinatal and neonatal mortality than those not registered. It is seen that the countries with low socio economic status have lower level of utilization of these services. Further the discrepancy in the utilization of maternal health services exist between rich and poor, urban and rural, and educated and uneducated peoples. About 65% of women in developing countries and 51% in South Asia received at least one antenatal check up with trained persons as compared to 98% in developed countries and 70% in the world (UNICEF, 2001).

By proper and early antenatal care services, mortality rates among the neonates, infants and mothers as well as stillbirth can be reduced. Every woman needs access to quality maternity care; every woman needs to be cared for by a skilled attendant. Early identification of danger signs and their treatment during antenatal visits can save women from deaths and morbidity. Bhutan’s national policies and programmes to reduce maternal mortality are through increasing institutional deliveries and increasing the proportion of births attended by skilled health personnel. Services like antenatal, intra-partum and post-natal care. The problem of antenatal care in developing countries may be considered from two aspects:

(a) areas where antenatal facilities are absent or are inadequate, and (b) areas where antenatal facilities are adequate but for some reasons are not adequately utilized.

Antenatal care service is one of the maternal health programs focusing on management of pregnancy, detecting and treating problems of pregnancy, treatment of complication and promoting good health. There is a strong reason that the content, frequency, and timing of visit currently are recommended to be more effective ((Carroli, Rooney & Villar, 2001).

Antenatal care should address both psychosocial and medical needs of the woman within the context of the health care delivery system and the culture in which she lives. Periodically check-up during the antenatal period is necessary to establish confidence between the woman and her health care provider in building of individual health promotional message and also to identify and manage any maternal complications or risk factors (Carroli, Rooney & Villar, 2001).

Prenatal care is the most important factor determining the outcome of pregnancy. However, such services are either not available or inadequate in most developing countries. WHO estimated that only 29-36 % of African, 20-61 % of Asian and 69-89 % of South American births have maternity care. Existing services are underutilized because of illiteracy, the most important factor, cultural practices, religious practices, and the subordinate status of women.

World health organization (WHO, coded in Sondakh N. L., 2003) recommended a minimum of four antenatal visits for a woman with a normal pregnancy. This does not intend to imply that countries where pregnant women received more than minimum number of visit should reduce the number. Rather the objective was to focus on the content of care and to set a basis essential standard for quality for all countries. It should be emphasized that this is only minimum requirement and that more visits may be necessary depending on the women’s condition and needs.

Early initiation of antenatal care is important to prevent and treat anemia, to detect and treat syphilis and to identify and manage women with medical complications. Early care also allows developing of interpersonal relationship between health care provider and the pregnant woman, so that her particular needs and wants

are known and expressed in a plan for delivery. The content of the antenatal visits for a normal pregnancy is described below:

a. Assessment such as history, physical examination and laboratory test.
b. Health promotion include nutritional advice, rest, discomforts of pregnancy, hygiene, safer sex, planning for place of birth, counseling on referral hospital, transportation and blood transfusion, counseling on new born care including breast feeding.

Care provision; the plan should take account of: the women preference for place of birth and skill level of birth attendant, family and social support, assessment of a woman's risk of complications during labour and delivery, arrangement for transportation in case of emergency referral, economic status, tetanus toxoid immunization, iron and folic acid supplementation, psychosocial support, timing of next antenatal visit. (Okafor & Rizzuto, 1994; Saifuddin, et al., 2001; MOH, 2001; Mattews et.al, 2001).

2.2 Background on Bhutan and health care system

Bhutan, a small country of about 38,394 square kilometers (NSB, Bhutan 2005), is located between its two huge neighbors, India in the south, east and west, and China in the north. It is almost entirely mountainous with hardly any flat land. It is administratively divided into twenty districts, which are further divided into 202 blocks. The population estimate for 2005 was 6, 72,425 of which nearly half were under 15 years of age. The current growth rate stands at 2.5 % (Population and Housing Census of Bhutan, 2005). The Infant mortality rate (per 1000 live births is 40.1 and crude birth rate is 20 and crude death rate is 7 sex ratio per 100 female sis 111 female literacy rate is 48.7 and male literacy rate is 69.1 (Population and Housing Census of Bhutan 2005). The life expectancy of the Bhutanese people is around 66.1 and Total Fertility Rate (TFR) is 4.7 (NSB, Bhutan, 2005)

About 90 % of the population lives in rural areas; in the 5,000 or so scattered villages and hamlets, each with only a few hundred inhabitants or less. Most villages are several hours and even days walking distance from the nearest road. The dispersed population and the difficult mountainous terrain make service delivery and access to education and health facilities very difficult and expensive, even though health care is

provided by the government free of charge. Low literacy and health awareness and the poor living conditions of the majority of the rural population are the major challenge Bhutan's health-care development accelerated in the early 1960s with the establishment of the Department of Public Health and the opening of new hospitals and dispensaries throughout the country. Reproductive health is an important component of the primary health care delivery system in the country. By the early 1990s, health care was provided through some twenty-nine general hospitals (including five leprosy hospitals, three army hospitals, and one mobile hospital), forty-six dispensaries, sixty-seven basic health units, four indigenous-medicine dispensaries, and fifteen malaria eradication centers.

Table 1 Health Facilities in three different years

Health resources *(in numbers)*	**Year**		
	1995	**2000**	**2004**
Hospitals	26	29	29
Basic Health Units	84	160	176
Indigenous hospitals	1	1	1
Doctors	112	109	144
Nurses	..	443	501
Health coverage (%)	90	90	90

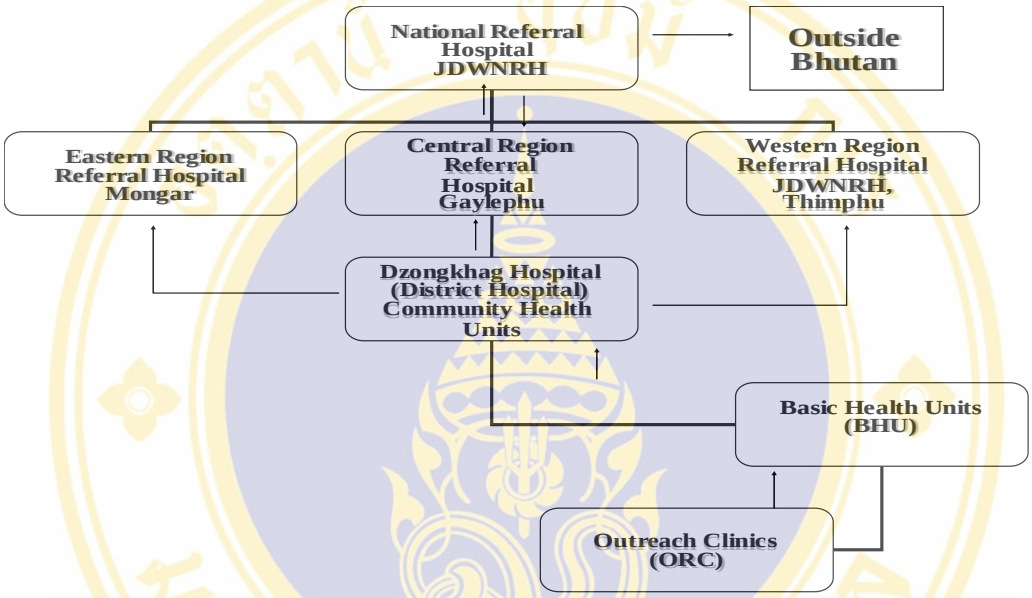
Source: Annual Health Bulletin, 2006

Basic health care is free, and a large resource has been invested into ensuring universal primary health care. The effort has been to provide preventive health care rather than focus on tertiary care. Health care is provided through a four-tiered network of outreach clinics, BHUs, district hospitals and regional hospitals with the national referral hospital at the apex. Primary health care services are delivered through 149 Basic Health Units (BHU) spread over 207 geogs (blocks) in the country.

Planning and monitoring of health programmes take place at the district level through medical officers who also supervise the BHUs. Health awareness at the day-to-day level also is imparted by the BHUs, which form the health support line of the country. The BHUs were set up in the 1970s to cater to the health needs of Bhutan’s scattered population. Before this, formal health care was only available in the urban centre. Now there are 2000 village-level heath workers, who provide basic medical help and share their health knowledge, skills and understanding. The village health

worker refers cases to the BHU. In addition, mobile outreach clinics reach those who live far from BHUs. By 1998 there were 454 outreach clinics that provided preventive health care, including immunization of children and pregnant women. They provide antenatal care, promote nutrition, provide iron and deforming tablets, and monitor the growth of children.

Figure 3: Health Care and Referral System



BHUs, is the functional unit at the community level and it has three health workers, one Health assistant (HA), one Auxiliary Nurse (AN) and one Basic Health Worker (BHW). The HA caters to general Out Patient Department (OPD) and AN looks after the Reproductive Health (RH) unit which includes immunization, ANC, and PNC services. The BHW operates in between the OPD and ANC. His main task is to provide community based services like outreach clinic, monthly house visits, advocating health care practices namely, hygiene, sanitation, substance abuse like tobacco and smoking etc.

In 1997, 90 % of the Bhutanese had access to health centre, be it static facility or an outreach clinic. The year 2000 health survey ascertained that 78.2 % of the villages have access to health services within two hour walking distance and 89 % within three hours walking distance. Antenatal care is provided by hospitals, BHUs, dispensaries and outreach clinics. Women who go for checkups are immunized against tetanus twice, supplied with iron tablets to prevent or treat anaemia, screened for high blood pressure and their urine tested wherever laboratory facilities are available.

Under the 9th Five Year Plan (EYP) (2002-2007), the intensification of reproductive health services remains a core area of focus. The national maternal health targets set for the plan period include reducing the maternal mortality rate to below 163 per 100,000 live births, the achievement of which would indicate a progress rate sufficient to achieve the MDG target by 2015. Some of the other national maternal health targets for the 9th FYP include increasing the proportion of births attended by skilled health personnel to at least 50 %; halving anemia in pregnant women to below 30 %; ensuring full attendance of ante-natal and post-natal visits; and reducing the total fertility rate to below 3.

Antenatal care service attendance rate is only 51 % in 2000 (i.e. percent of women attended at least one visit in 40 weeks gestation) and for attendant at birth was only 24 %. But in 2005, 70 % of the pregnant women had visited antenatal clinics four or more times.

2.3 Review of factors affecting use of antenatal/prenatal care services

2.3.1 Household Economic Status

Although the decision to use health services is an individual choice and individual characteristics various household characteristics may also act as determining factors in influencing the individual decision.

a. Economic Status

Examination of the economic status of the household as a determinant of use of prenatal services is also important since it reflects the ability of the household to pay for the costs that are associated with using health services. Several studies have shown the relationship between the use of modern health care and financial stability of the household (Celik and Hotchkiss, 2000; Pebley et al., 1996).

In the districts of Jharkhand the main impediments of not receiving proper antenatal care are socio-economic and demographic background characteristics of the women. According to the study titled “Factors associated with low birth weight” in the United States, it was found that prevalence of low birth weight had been related to the source of antenatal care, the economic status and education of mother. The proportion of low birth weight babies were lower when antenatal care was initiated early by white mothers of all ages.

Basu (1990) mentioned that the traditional beliefs and customs and the fears much stronger in conditions when women have a lower status, not in term of the respect they command, but in term of their level of autonomy in decision making both within and outside the home. Greater female autonomy means that the woman will be more likely to decide the need of health care services and will be better able to interact with outside world and obtain such treatment.

2.3.2 Exposure to health information

a. Knowledge on some modern family planning methods

Health seeking behaviour is not just a one off isolated event. It is part and parcel of a person's, a family's or a community's identity, which is the result of an evolving mix of social, personal, cultural and experiential factors. The process of responding to 'illness' or seeking care involves multiple steps (Uzma et al, 1999), and can rarely be translated into a simple one off choice or act, or be explained by a single model of health seeking behaviour

In a study in Karnataka, family planning knowledge differentials were found among ANC acceptors and non-acceptors. Mishra et al (1998) illustrated that women who had utilized ANC were almost three times as knowledgeable with respect to family planning as those who had not. In this study authors found the strict association between the acceptance of antenatal care and a wider knowledge of contraceptive methods.

b. Exposure to Mass Media

Women's knowledge about the health care facilities is an important factor in the utilization of health care services. One of the major contributing factors in the low utilization of health services is due to lack of awareness among people of the availability and importance of maternal health care services, as argued by Matsumura and Ghubhaju (2001).

Women, who are visited by health worker in the last 12 months, heard at least one radio program on maternal health, heard maternal information on mass media, and who earn in cash, or on kind are more likely to use prenatal care. Similarly, women who live in urban area, who have completed primary education, having two or less living children, belonging to higher economic status and younger women are significantly more likely to use prenatal care as expected.

Obermeyer (1993) found from the comparative study in Morocco and Tunisia that exposure to the media has a positive correlation with use of antenatal care services. Mondal (1997); Bhatia and Cleland (1995) also revealed that women who are exposed to mass media tends to utilize antenatal care services. Similarly, in the study, by Becker et al (1993), in the Philippines, indicated that possession of radio or TV was associated with adequate prenatal care, and suggested that listening to the radio and watching TV might be the proxy measure of access to information on health.

2.3.3 Accessibility to health Services

Access to health service is an important factor in influencing the health status. Access to health service is a function, both of the resources at the overall disposal of a society or community, as well as its distribution across social groups and individuals. Access to health services is important, even some health services offered free of charge but difficulty to access due to lack of transportation can influence the use rate of health service.

Access to the health services is still a key issue in Bhutan where travel time has to be measured in hours or even days rather than minutes because of the difficult topography. According to Gyambo Sithey, (2004), in his study on Accessibility and Compliance to Iron Folic Supplementation among the Pregnant Women in two sub districts of Bhutan, found that mothers have great difficulty coming to the clinic as the villages are widely scattered making the distance to the clinic very long and difficult. He codes one of the saying by a woman, “Yes we have lots of problem, like we can’t go to the clinic during rainy season, because of fear that we may get slipped off the cliff that we have to cross before reaching the BHU”. Physical discomfort as the gestation nears delivery and the difficulty posed by distance, lack of motor roads and difficult condition of the foot path makes the health services practically inaccessible to the pregnant women. Therefore in Bhutan, the topography has direct bearing on the women to attend the prenatal clinics.

Acharya and Cleland, (2000) also similarly states that utilization of maternal services is higher in the community where health posts are located in the community compared to the communities that are far from the post.

Women’s health status can be improved only when she has timely access to the health care facilities. For example, Magadi et al (2000) revealed that the frequency of

antenatal care is influenced by the accessibility of antenatal care service. This study showed that an increase in distance or time to the nearest health facility is associated with fewer antenatal care visits.Similar findings was also conducted in Kampung District, Kampot Province in Cambodia that the major factors influencing use of services to be distance, lack of transport, and lack of awareness of the benefits of antenatal care by the mothers, thus resulting in a general notion that antenatal care is only important when problems occur during pregnancy.

2.3.4 Perceived quality of care

Saumya RamaRoa, Marlina Lacuesta, Marilou Costello, Blesilda Pangolibay and Heidi Jone (2003) found that residing in an area with good-quality services tends to encourage contraceptive use; similar could be the case with using prenatal care. They also found that information may also determine contraceptive use. Evidence from West Africa, China and India suggests that rates of discontinuation are lower among women who receive more counseling or information.

Felipe, Graham & Campbell, (1990) found that there exist a strong association between the availability and the use of antenatal services. Although the availability, content and quality of antenatal care vary among developing countries, they are generally much lower in countries with high mortality. Causes of maternal mortality frequently identify lack of antenatal care as risk factors. However, the role of health providers in increasing the quality of antenatal care service must be considered as an important factor. Study by Obermeyer and Potter (1991) found that women prefer to go to the female health providers rather than visit to male health providers, but they also found that sometimes health providers fail to communicate with their clients. In addition, Okafor and Rizzuto (1994) also support the important role of health provider in the maternal and health care use, they found that cost, convenience, and kindness of health provider were the principal factors to the choice of a health-care provider.

McCarthy and Maine, 1992, said that within a given social setting and a given availability of health services, an individual’s access to services may be determined by factors such as distance, availability, affordability, and the appropriateness and adequacy of services as perceived by users. In many setting, the physical distance between services and women is associated with service utilization.

Studies on health seeking behavior have identified the importance of the characteristics of health services such as the availability and accessibility of services to the general population in determining increased utilization (Develay et al., 1996; Becker et al., 1993; Magadi et al., 2000).

2.3.5 Women and her parent's characteristics and place of residence

a. Age

Elo (1992) and Bhatia (1995) argued that older women who have more children are more likely to utilize prenatal care services than the younger women, the probable reason might be related to the health problem during the last pregnancy. On the other hand younger age mother usually faced the socio-economic problem in seeking health care service (Siddiqua & Kabir, 2002).

Bhatia and Cleland (1995) too found that young mothers are significantly less likely than older mothers to receive routine care during pregnancy. Similarly, McCaw-Binns et al (1995) also concluded that younger were most likely not to attend or attend late and were unlikely to present early.

b. Education

Caldwell & Caldwell (1988); Cleland. 1(990), in their studies conclude that educated women are better able to break away from tradition to utilize modern means of safeguarding their own health and that of their children and educated women are better able to utilize what is available in the community to their advantage, and educated women may be able to make independent decisions regarding their own and their children's health leading to greater utilization of modern health facilities

It was also mentioned by Celik and Hotchkiss (2000) that education is the most important individual level characteristics which influence on the maternal service utilization. It influences on demand and utilization of MCH services because it raises female autonomy to build up their confidence and capabilities to make decisions regarding their health.

G.Pavalavalli and B.M. Ramesh, (1997), too found that maternal education emerges as the single most significant predictor of the utilization of MCH services.

c. Occupation

An analysis of secondary data (Census-1991, Family planning year book-1990-91 and Human development profile of Indian states) shows that, the percentage of female in non-agricultural occupation was highly associated with the antenatal tetanus immunization of expectant mother as well as the percentage of couple effectively protected by family planning. The percentage of females in non-agricultural occupations was also moderately affected by the BCG immunization of infants as indicated by Audinarayana, 1995.

d. Parent's characteristics:

It was found from the different studies that there is direct relationship between socio-economic status and the utilization of preventive health services. In some literature, it indicates that social class, education, family income and occupational level were the main factors of underutilization of preventive health care services. From the study of Sermsri and Riley (1974) in Thailand found that, there was a significant relationship between economic factor and health services utilization.

e. Place of Residence

Place of residence of a mother is another factor which influence the use of maternal care service. Stekelenburg, .et al (2004) revealed that rural women are less likely than urban women to use maternal care services. The main reason could be availability of services. But there could be other factors like beliefs and close interaction with traditional practices. Women are also influenced by other factors at household level e.g., joint family system and presence of other strong personalities in household e.g., mother-in-law. These factors reduce the odds of utilizing modern maternal care services.

Maternal deaths are more likely among the rural and the poor women. Most rural women receive almost no prenatal care. According to the Indonesian National Household Survey it was found that only 22.45 % of expectant mothers in rural areas went to clinics or private practitioners for antenatal checkup, 36.1 % was examined by traditional birth attendants and other sources of traditional care, while 41.5 % not been examined at all (Dept. of Health, 1981).

In the study by Overbosch et al (2002), cost of consultation and in particular travel distance to the health care facility are significantly associated with the demand for antenatal care. Use of sufficient antenatal care can thus be promoted effectively by

extending the supply of antenatal care services in the rural area. In addition, education of the mother is positively associated to choice for sufficient antenatal care, while women having more pregnancy experience tend to underutilize antenatal care.

2.4 Conceptual Framework

This study assessed the utilization of prenatal care services in Bhutan and its association with household economic status, Exposure to health information, accessibility, perceived quality of care, and women and her parent's characteristics. The literature review has shown that the use of prenatal/antenatal care services has a correlation with Exposure, economic status, accessibility and perceived quality of care. According to literature review that exposure and knowledge on modern family planning methods, accessibility to health centre and perceived quality of care has great effect on the use of prenatal services. Based on literature review as mentioned earlier, this study expects that use of antenatal/prenatal care service is influenced by economic status, exposure to health information, knowledge on modern contraception etc. as shown in figure 4 below.

Figure 4: Conceptual framework showing the relationship between dependent and independent variables

2.6 Hypotheses

Based on the literature review and conceptual framework, following hypotheses has been proposed, which will be tested for assessing the factors associated with utilization of antenatal care services.

1. Women from high economic status are more likely to utilize prenatal care services.
2. Women with some knowledge of modern contraception were more likely to utilize prenatal care services than the women without any knowledge on modern family planning methods.
3. Women who are exposed to mass media were more likely to utilize prenatal care services than their counter parts.
4. Women who perceive that the quality of care is good were more likely to utilize prenatal care.

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CHAPTER III
RESEARCH METHODOLOGY

3.1 Source of Data

This study will utilize the data from the survey of 'Bhutan Living Standard Survey (BLSS), 2003. It was conducted by the National Statistical Bureau, Royal Government of Bhutan. The BLSS followed LSMS methodology developed by researchers at the World Bank. It is a nationally representative survey.

Four main sets of questionnaires/schedules were used, two for the listing of household for the sample selection and the other two for the collection of data on household consumption expenditure and prices at the community level. This survey was designed to collect only consumption expenditure from the household to assess people's well-being and to construct comprehensive poverty profile for the country. Apart from collecting basic information about each household, the BLSS collected information on housing, employment, health status, fertility, education, access to public facilities, assets ownership, accompanied by a community questionnaire aimed at collecting information on service provision and prices of commodities. The study population is women who gave birth during 12 months prior to the survey period. The availability of a health facility was measured by using quality of care regarding the opinion of women of aspects of Basic Health Units/ hospital with regard to competence of the medicals staff, availability, accessibility and affordability of medicines, quality of facilities (modernity/cleanliness) and the waiting time. The background variables which will be examined will be the woman's age, education, usual place of residence, standard of living, and distance from the health facility (mode of travel and time taken will be used as a proxy variable to measure the distance from the health facility, since there is no question asked on distance). In addition to these variables, her working status, exposure to mass media, knowledge on some modern family planning methods and parent's characteristics (this variable was used instead of husband's factor since there was no separate question asked on husband's characteristics) will also be considered for studying antenatal service utilization.

3.2 Sample Size and Coverage

Data is collected for the reproductive women (15-49 years) covering pregnancy outcome and intentions on the use of health facilities during the prenatal period. The survey also collected information about the knowledge and use of modern contraceptives, which has a direct bearing on the pregnancies and sexually transmitted diseases.

For this study only the women who gave birth during the last one year prior to the survey are included. So, our sample size is 531 women.

The geographical coverage extended over the entire area of Bhutan excepting a few satellite towns. Also due to security reason the rural area in Sarpang and Samdrup Jongkhar Dzongkhags were not covered in the survey. The BLSS covered 86 gewogs from eighteen Dzongkhag and 27 urban settlements. The Population coverage included all households in the country.

3.3 Operational Definition of Variables

Based on the conceptual framework, the operationalizations of definitions are as follows:

3.3.1 Dependent Variable

3.3.1.1 Antenatal care

Prenatal care is care women received during her pregnancy from a doctor or qualified nurse. It is a dichotomous variable.

3.3.2 Independent Variables

3.3.2.1 Household Characteristics

Economic status

An index of household amenities and possession was used as calculation scheme. The asset choesham has been excluded from the computation since all people must have this item at home and it is also not so expensive to have this item. There are around 26 items like TV, radio, washing machine rice cooker car etc. These items were first recorded into have and don't have, and then coded as 1 if have and 0 if don't have. Then Living index was computed by combining all this items. By using mean, cut off point was set. Since mean was found to be 10, 10 was taken as a cut-of point. It

was categorized into three low, medium and high economic status. If the woman does not possess any of these items then she is categorized into low economic status. If the women possess 1 to 10 items then she was categorized into medium economic status and if the women possess all 26 items then she was categorized into high economic status.

3.3.2.2 Exposure Characteristics

Knowledge on Family Planning

This refers to awareness about some modern contraception (know or do not know), coded as 1 know and 0 as don't know.

Exposure to Mass Media

Radio and Television: If the respondents possess Radio and TV, it is assumed that they will listen to radio and watch TV programme. This variable is used as proxy to measure access to health information. So those who possess either of TV or radio are coded 1 and those who do not possess either one of them will be coded 0.

Accessibility:

It means whether people are able to reach out to the service centre or not. Mode of transportation and the time taken to reach health centre was used as a proxy variable to measure distance to health centre.

Perceived Quality of Care:

It is a consumer satisfaction variable. Women were asked to rank the services and the quality of facilities as good, bad or satisfactory. The questions asked were on the competence of medical staff; availability of medicines, affordability of medicines, quality of facilities (modernity/ cleanliness) and waiting time.

3.3.2.3. Individual/ Parent's Characteristics and place of residence

Age of the women

This refers to the current age of the respondents at the time of survey. The respondents are grouped into five categories: 15-19, 20-24, 25-29, 30-34, 35 and above.

Education of the women

It refers to the highest level of education that the respondents have completed. The levels are categorized into three groups: no education, primary level, secondary and above.

Occupation of the women

This variable refers to sector of the respondent's main occupation. But for the convenience of this study it is categorized into working in agricultural sector and working in non- agricultural sectors.

Education of the respondent's parents

It refers to whether the father and mother of the respondent are educated or not and is categorized into two groups: no education and some education and it is coded as education- 1 and no education -0. Mother's educational level has been excluded since it has some data problem.

Occupation of the respondent's parents

This variable refers to sector of the father /mother's main occupation. But for the convenience of this study it is categorized into working in agricultural sector and working in non- agricultural sectors.

Place of Residence

It refers to place of residence at the time of interview. It is categorized as: urban and rural. This variable is dichotomous and is coded as urban – 1 and rural as 0.

Table 3.1 Variable name, description and their measurement scale

Variable Name	**Description**	**Measurement Scale**
Dependent Variable		
Use of Prenatal care	It is a care received by women during her pregnancy from a doctor or qualified nurse.	Nominal 0 = Yes 1 = No
Independent Variable		
Household Economic status	The family in possession of the some items like TV, Radio, Car, rice cooker, etc	Ordinal 1 = Low, 2 = Medium 3 = High
Exposure Characteristics		
Knowledge on contraception	Awareness on modern contraceptive methods	Nominal 0 = do not know,1 = know
Exposure to Mass Media	It is a proxy variable, and it is assumed that if the respondent possess TV & Radio, she will listen to the programme.	Nominal 0 = If do not posses, No 1 = If possess, Yes
Accessibility to health centre	Whether respondent can easily access	Nominal

Perceived Quality of care	to health centre Whether the respondents is satisfied with the health services and facilities	0=No, 1= Yes Nominal 1= good, 2=satisfactory 3= bad

Table 3.1 Variable name, description and their measurement scale (contd.)

Individual/ Parent's characteristics:		
Age	Age of the respondent in completed years by the five years cohort	Ordinal 1 = 15-19, 2 = 20-24 3 = 25-29, 4 =30-34 5 =35 & above
Education	Respondent's highest level of education completed	Ordinal 1 = No education 2 = Primary 3 =Secondary & above
Occupation	Respondents' s working status, whether working in agriculture or non-agriculture sectors	Nominal 0 = Agriculture 1 =Non- agriculture
Education	Parents level of education	Ordinal 0 = No education 1 = Some education
Occupation	Parents working status, whether working in agriculture or non-agricultural sectors	Nominal 0 = Agriculture 1 =Non- agriculture
Place of residence	Place where the respondents is residing	Nominal 0 =Rural, 1 = Urban

3.4 Method of Data Analysis

Univariate and bivariate analysis will be done using Statistical Package for Social Science (SPSS) program. Relevant statistical test, such as chi-square test was also being worked out for the identification of significant relationship between dependent and independent variables.

Similarly multivariate analysis will be carried out to examine the effect of independent variables (such as individual, household and community characteristics) on dependent variable (utilization of antenatal care services), when controlling for any other control variables such as women's characteristics and place of residence. The

logistics regression model will also be used to find the effect of each independent variable on use of antenatal care, by using SPSS. The main reason is that logistic regression is appropriate for this analysis since the outcome variable is measured in binary.

3.5 Limitations of the Study

This study has some limitations; firstly, secondary data will be used for the analysis. Since it is confined within the boundaries of the questionnaire, it is difficult to find variables that are appropriate to the study.

Since there is no question on the number of visits and contents of pre-natal care such as providing tetanus toxoid immunizations and iron folate supplements, and prenatal examination/preventive services related to weighing, height, blood pressure, fundal height ("abdomen measured"), foetal heart auscultation, and Leopold's manoeuvres ("checked baby's position"), this study will examine only whether the women receive antenatal care in the last 12 months. This study only attempts to look at whether women receive or not receive prenatal care services, but contents of ANC, timing of first visits are not examined, and that too for only the women who gave birth in the last one year but pregnant women are not included in this study due unavailability of data.

Some proxy variables were used to measure some factors like economic status, accessibilities and exposure to mass media. The household facilities and possession are used to measure the economic status.

CHAPTER IV
RESEARCH FINDINGS

4.1 Antenatal (Prenatal) care services (in Bhutan)

Antenatal services includes, physical examination for clinical signs and symptoms of micronutrients deficiencies, abdominal palpation, weight measurement, blood pressure and the laboratory test for sugar, albumin and hemoglobin. At the BHU levels, the ANC services are conducted by BHW or ANM. Also in many parts, ANC is conducted on a pre-designated day of every month. For ANC in Bhutan, mothers are recommended to visit monthly till seven month, twice in the eighth month and weekly in the last month.

Out of 531 women 18% (97) have not attended prenatal care even once and remaining 82% (434) has attended prenatal clinic, as we see from the figure 5 below. Although the majority (82%) of the women reported that they attended prenatal care services, the more important question is how regularly do they access the care and at what period of gestation do they avail the prenatal services.

Table 4.1 Percentage distribution of prenatal care services

Dependent Variable	Percentage	Numbers
Prenatal care		
Ever received	81.7	434
Never received	18.3	97
Total	**100.0**	**531**

4.2 Control Variables

4.2.1 Women's characteristics

The information on control variables of the study population was analyzed and it is illustrated in Figure and table below.

From figure 6 we can find out that the majority of the women were in the young age groups (20-24 and 25-29). The mean age of the study population was 27.5 years. More than half of the mothers (72%) were aged between 15- 30 years. This

result was from the women who gave birth in the last one year prior to the survey and the women who received prenatal care services.

From the literature review we know that education affects women's status substantially. Education affects access to knowledge and ultimately affects access to benefits and available resources or services. In this study, majority of women (69%) are illiterate, reflecting the low female literacy in Bhutan and only 18 % are literate secondary level and above.

Bhutan Living Standard Survey Report, states that 79.6 % of the people are engaged in agriculture as their main economic activity and 2.7 % in Industry, 4.5 % in services and 13.2 % in others. Among this 91 % are from rural areas and only 5.85 % are from urban areas. Proportion of people engaged in non-agricultural sectors is higher in urban than rural, for example industry, services and others is 10.77, 21.01, and 62.36 as against, 1.42, 1.85 and 5.47 in rural areas. And from this study we found that more than half (62 %) are working in non-agricultural sectors and only 38 % are working in agricultural sector, this finding is similar to the BLSS report.

From this study, we found that 57 % of women were living in the urban area, and 43 % were living in rural area, as we know that rural women are usually illiterate poor compared to women living in urban settings.

Table 4.2 Percentage distribution of women's characteristics

Women's Characteristics	Percentage	Numbers
Age of Women		
15-19	9.8	52
20-24	28.8	153
25-29	33.5	178
30-34	13.2	70
35 & above	14.7	78
Education		
No education	68.7	365
Primary education	13.6	72
Secondary education+	17.7	94
Main Occupation		
Agricultural sector	62.0	329
Non-agricultural sectors	38.0	202
Residence		
Rural	42.7	227
Urban	57.3	304

4.2.2 Parent's characteristics

From Table 4.1, it becomes clear that majority of women's father and mother are illiterate (mother-97 % and father-87 %). 88 % of women's mother and 84 % of women's father work in agriculture. From here, it becomes clear that women's status is expected to be low as her parent's are uneducated and work in agricultural sectors.

Table 4.3: Percentage distribution of parent's characteristics

Parent's Characteristics	Percentage	Numbers
Father's education		
No education	86.8	461
Some education	13.2	70
Mother's Occupation		
Agricultural sector	87.6	465
Non- agricultural sectors	12.4	66
Father's Occupation		
Agricultural Sector	84.0	446
Non- agricultural sectors	16.0	85
Total	**100.0**	**531**

4.3 Household economic status

On the basis of household facilities and possessions, 28 % of the women belong to low economic status, 32 % of women were from medium economic status, and around 40 % were from rich households, it becomes clear that there is not much variation, Bhutanese people enjoy equal status in the society, and there is not much discrimination.

Table 4.4 Percentage distribution of household economic status

Household economic status	Percentage	Numbers
Low	28.2	150
Medium	31.5	167
High	40.3	214
Total	**100.0**	**531**

4.4 Exposure to health information

Radio and television is the most useful and informative sources of media for the dissemination of important messages, to the general public. In this study, since we assume that if people have radio and television, it is most likely that they will listen to the programme broadcasted through this media. Therefore, we have decided to take whether women possess radio and television as the proxy variables to mass media exposure. However, only 70 % and 32 % of women possess radio and television, (Table 4.2) from here we can conclude that only 70 % of women listen to the radio preogramme and only 32 % of women views programme in television. Where as 68 % of women believe not to watch television, since they do not possess television but only 31 % do not listen to radio, radio being cheap, so, most people could afford to have this item.

According to the report of National Health Survey, 2000, 95 % of the women in the reproductive age group (15-49 years) have heard of modern contraception, but only 30.7 % used family planning methods. Where as in this study 78 % of women have knowledge on modern contraception but only 33 % of women were found to be using modern contraception (Figure 11). Bhutan being a mountainous country, the villages are scattered and most of them are inaccessible only by motorable roads. This shows that health facilities were either not available or accessible to majority of women or women are not using the services even though it is available because of some other factors like socio- cultural constraints etc.

Table 4.5 Percentage distribution of exposure to health information

Exposure to health information	Percentage	Numbers
Have Radio	69.5	369
Don't Have Radio	30.5	162
Have TV	32.2	171
Don't Have TV	67.8	360
Don't have knowledge on contraception	22.2	118
Have knowledge on contraception	77.8	413
Total	**100.0**	**531**

4.5 Access to Health services

From the report of National Health Survey 2000, 78 % of the villages have access to health care services within a two hours walking distance, and 80 % , within a three hours and only 4 % of the villages are beyond six hours walking distance from a health services point.

From this study we found that three out of five women travel on foot to go to health centre, this reveals that most of the women live in a remote area where the place is not connected by road

Similarly, 85 % of women perceived that the travel time to health centre is less than one hour, and 15 % of the women said that it takes more than an hour to reach health centre (Table 4.3).

It means on an average 76 % of the women from rural districts were reported service was not accessible, this we conclude by using mode of travel as a proxy variable, if the women travel by foot, it is assumed that the health services is located quite far from her place of resident she takes almost an hour to reach the services.

Table 4.6 Percentage distribution of access to health centre

Accessibility	**Percentage**	**Numbers**
Travel on foot	76.1	404
Travel by others mode	23.9	127
Time taken to reach Services(in hours)		
<= 1 hour	85.1	452
>=1 hours	14.9	79
Total	**100.0**	**531**

4.6 Perceived quality of care

I also tried to study the quality of care, *Quality of Care like access to information, convenient, safe and affordable services, with continuous supply, insuring privacy and confidentiality in all health related matters* (ICPD-1994)**.** Studies shown that in developing countries like in Bhutan, the infant and maternal mortality is largely being affected by the poor quality of services in addition to this illiteracy, poor awareness towards special groups, (poor, illiterate, women and children), strong traditional beliefs and practices making them more vulnerable to avail and utilize health services in larger rural geographic area.

Affordability of medicine is also an important element of quality of care, especially where poverty make more vulnerable to the rural masses in such situation how can they afford to spend their limited resources on travel costs. Therefore if it is important to make health centre available in their vicinity to attract people to use and continue services in future.

About the availability of medicine, 75 % of women reported that the service is good and 22 % of women said it is satisfactory, it means the medicine is available, still in spite of medicine being free we can still find some women saying it is bad, around 4 % of women reported that it is bad, it means the medicine were either not available or they might have reported, it is out of stock.

4 % of women reported that medical staffs are not competent; where as 78 % of the women said it is good. In case of quality of facility (here it means modernity and cleanliness of the hospital and the instruments) 77 % reported it is good but 3 % said it's still bad. While more women (12 %) reported the waiting time to be bad, it means that the women had to wait long time to get the services, which would ultimately affect the service utilization, if the women are not happy with the services, provided. Therefore, to increase the utilization of prenatal care services the quality of services is to be improved.

Table 4.7 Percentage distribution of perceived quality of care

Perceived quality of care	Percentage	Numbers
Quality of care		
Competence of medical staff		
Good	78.3	416
Satisfactory	18.1.	96
Bad	3.6	19
Availability of medicine		
Good	75.1	399
Satisfactory	22.0	117
Bad	2.8	15
Affordability of medicine		
Good	64.0	340
Satisfactory	25.8	137
Bad	10.2	54
Quality of facilities (modernity/cleanliness)		
Good	77.2	410
Satisfactory	19.4	103

Bad	3.4	18
Waiting time		
Good	56.9	302
Satisfactory	31.6	168
Bad	11.5	61
Total	**100.0**	**531**

4.7 Association between household economic status and prenatal care service utilization

As discussed above in section 2.2.6, many studies argued that economic status of women, have an inference on the utilization of prenatal cares services (Cleland, 1990; Audinarayana, 1999; Stekelenburg, J.et al, 2004). It will be discussed in detail in this section.

a) Women's economic status

From table 4.5, the percentages of women who received antenatal care services increases with increasing economic status of women. The proportions of women who received prenatal care are 94.4 % for women from high economic status which is three times more as compared to women from low economic status (62.0%). A strong association exists between economic status and use of antenatal care (χ^2 = 62.343, p< 0.001).

Table 4.8: Percentage distribution of household economic status by prenatal care utilization

Household economic status	Received prenatal Care		
	Yes	No	Total
Economic status* **			
Low	61.9	38.1	100
Medium	83.0	17.0	100
High	94.4	5.6	100

***p<0.001

4.8 Relationship between exposure to health information and prenatal care services utilization

As explained in section 2.2.7, that exposure to mass media, and Knowledge on some modern family planning methods, have influence on the utilization of antenatal care services (Mondal, 1997; Becker et al, 1993). We can see in this study as well.

a) Association between women's knowledge on some modern contraception and prenatal care services

In this study, as we can see from the table 4.6 below, three out of every four women received antenatal care services, if they have knowledge on modern family planning methods, whereas 32 % of women did not receive any antenatal care services when they lack knowledge on modern family planning methods. The relationship between antenatal care and knowledge on family planning method is statistically significant ((χ^2 =19.735 $p<0.001$), it means that utilization of antenatal care services increases with increase in knowledge on modern family planning methods.

b) Exposure to mass media

- Listening to radio

The woman who receives antenatal care services is 73 % for women who listen to radio as against 70 % for women who do not listen to radio. In this study women who posses' radio is taken as a proxy variable that she will listen to radio. The relationship is statistically significant at $p <0.001$ level, stating that there is an effect of listening to radio on antenatal care use.

- Watching television

From this study we can find that, there is a vast difference in the utilization of antenatal care services between the women who watches television and women who does not watch television. The women who watch television are almost three times (95 %) more likely to utilize antenatal care services than the women who never watch television (67 %). The relationship between watching television and use of antenatal care services is found to be significant ($p <0.001$).

Table 4.9: Percentage distribution of exposure to health information by prenatal care utilization

Exposure to health information	Received prenatal care		
	Yes	No	Total
Have knowledge on modern contraception***	85.6	14.4	100
Don't have knowledge on modern contraception	67.6	32.4	100
Exposure to health information			
Have radio*	83.6	16.4	100
Don't have radio	77.1	22.9	100
Have television***	94.6	5.4	100
Don't have television	75.5	24.5	100

*P <0.05, ***p<0.001

4.9 Relationship between accessibilities to health centre and prenatal care service utilization

d) Association between accessibilities to health centre and prenatal care utilization.

- Mode of transportation to go to health centre

From Table 4.7, it becomes very clear that accessibility is also one of the main reasons for women not to utilize prenatal care service as we can see that only 80% of women receive prenatal service if they travel on foot whereas 87 % of women receive prenatal care services if the mode of transportation is by bus/car/motorcycle etc. The probable reasons could be that most of women live in a village where a transportation network is lacking.

- Time taken to reach health services

Time is negatively associated with utilization of prenatal care. Utilization of prenatal care services decreases with increase in time taken to reach health centre. The relationship is significant at (χ^2 =16.130 p<0.001).

Table 4.10: Percentage distribution of accessibilities to health centre by prenatal care utilization

Accessibility to health centre	Received prenatal care		
	Yes	No	Total
Mode of travel*			
On foot	79.8	20.2	100
Others	87.3	12.7	100
Travel time***			
<=1 Hr.	84.4	15.6	100
>=1 Hr	65.7	34.3	100

*P <0.05, ***p<0.001

4.10 Association between perceived quality of care and prenatal care service utilization

From the table 4.8 we could find that if the quality of facility, affordability, availability, and waiting is perceived to be bad then the women is less likely to utilize prenatal care. So, in order to increase the utilization of prenatal care the quality of care should be improved.

4.11 Association between perceived quality of care and prenatal care service utilization

Perceived quality of care	Received prenatal care		
	Yes	No	Total
Availability of medicine			
Good	81.6	18.4	100
Satisfactory	82.8	17.2	100
Bad	73.3	26.7	100
Affordability of medicine/ treatment			
Good	81.5	18.5	100
Satisfactory	83.2	16.8	100
Bad	79.6	20.4	100
Waiting time			
Good	82.8	17.2	100
Satisfactory	80.6	19.4	100
Bad	78.6	21.4	100
Quality of facility (modernity/cleanliness)			
Good	81.9	18.1	100
Satisfactory	83.2	16.8	100
Bad	66.7	33.3	100
Competence of medical staff			
Good	82.6	17.4	100
Satisfactory	80.0	20.0	100
Bad	68.3	31.7	100

4.11 Association between women/parent's characteristics, place of residence and utilization of prenatal care services

This section explains the association between background characteristics of women and utilization of antenatal care services relating to individual characteristics, like age, education, occupation and marital status. Antenatal Care services will be categorized into received and not received, for this present study.

The relationship between mother's characteristics and antenatal care services is examined using Chi-square test and the relationship is established at the 0.001, 0.01 and 0.05 significance level.

a) Age of the women

Table 4.9 reveals that the proportion of women who utilize prenatal care services is higher among women in the middle age group i.e. 20 -30 and it's lower for younger women and older women. The most probable reason could be, the younger women are shy to visit the prenatal clinic and the aged women don't feel it is necessary, and also they developed confidence from the previous birth. This results concludes that women in age group 20-34 are significantly more likely to utilize prenatal care services than women in other age group, $p < 0.001$.

b) Women's education

The child-health-promoting inputs, such as personal hygiene, prenatal and postnatal care, and feeding practices, improves with the level of education of the mother. Utilization of antenatal care services varies according to the level of education of women. There is considerable empirical evidence, from the less developed countries in all part of the world, that the propensity to use preventive and curative health services for self and children is high among educated mothers. Maternal literacy also plays a crucial role in facilitating the spread of health information. The percentage of utilization is increasing from 77 % for no education to 94 % for primary education and 90 % for secondary and above education level. There exist a strong association between women's education and use of prenatal care services at Chi square 0.001 level.

c) Women's occupational status

Mother's work force participation enhances the family income, which in turn have a positive impact on her health seeking behavior. Women who works for income

or in other words, works in non-agricultural sectors are (91%) are more likely to utilize prenatal care services than women who work in non- income generating sectors like for e.g. agricultural sectors (67%). We know from this study that majority of the women's (80%) work in agriculture and only 20 % is working in non-agricultural sectors. There is a significant relationship between occupation and utilization of antenatal care services at χ^2 =45.316, p< 0.001 level. A woman working in non-agricultural sectors is more than two times likely to utilize prenatal care services than women working in agricultural sector.

Table 4.12: Percentage distribution of women's characteristics by prenatal care services utilization

Women's characteristics	Received prenatal care		
	Yes	No	Total
Age of the women*			
15- 19	71.1	28.9	100
20- 24	86.9	13.1	100
25- 29	81.6	18.4	100
30- 34	86.0	14.0	100
35 and above	74.4	25.6	100
Education* **			
No education	76.9	23.1	100
Primary education	94.5	5.5	100
Secondary education +	90.2	9.8	100
Occupation* **			
Agricultural sector	67.2	32.8	100
Non- agricultural sectors	90.5	9.5	100
Residence* **			
Rural	68.5	31.5	100
Urban	91.4	8.6	100

*P <0.05, ***p<0.001

c) Relationship between parent's characteristics and prenatal care service utilization

Actually we were interested to look into the inference of husband's education and occupation on women's receive or not receive prenatal care, but due to lack of information on this topic we could not carry out on this issue. Never the less, we looked into influence of Parent's education and occupation on the utilization of

antenatal care services. As illustrated in Table 4.10, we could find that there is an influence of parent's education and occupation on the women in receiving prenatal care. The likelihood of receiving prenatal care is higher for women if her parents is educated and the women is also more likely to receive prenatal care if her parents are working in non-agricultural sectors. The relationship is statistically significant (p <0.001).

a) Women's Place of Residence

Considerable variation is observed on receiving antenatal care services by place of residence in this study. Women who reside in urban area are three times (91.4 %) more likely to utilize prenatal care services than the women who live in rural region (68.7 %). The association is statistically significant (χ^2 =44.951, p<0.001).

Table 4.13: Percentage distribution of parent's characteristics by prenatal care services utilization

Individual characteristics	Received prenatal care		
	Yes	No	Total
Father's education**			
No education	80.0	20.0	100
Some education	92.9	7.1	100
Father's occupation			
Agricultural sector	80.5	19.5	100
Non- agricultural sectors	88.2	11.8	100
Mother's occupation*			
Agricultural sector	81.1	18.9	100
Non- agricultural sectors	86.4	13.6	100

*P <0.05, **<0.01

4.12 Multivariate Analysis

Since many of the household and community characteristics are interrelated to Prenatal Utilization, the study examined the specific effects of exposure to mass media, economic status, knowledge about modern contraception, accessibilities and quality of care, while controlling for mother's and parent's characteristics and place of residence. The influence of each independent variable was examined by using binary logistic regression. Three models were used to examine the influence of each

independent variable on the dependent variable (i.e. receiving prenatal care services). The result is presented in Table below 4.14

At the household level, economic status was found to be highly significant to the utilization of prenatal care services, when controlling for all other factors. Women from high economic status were significantly more likely to utilize prenatal care as compared with women from the low economic status, the estimated odds of using prenatal care are 3.04 and 10.32 for the medium and rich households, i.e. women from rich family were 10 times higher to utilize prenatal care services than the women from poor family

When adding the exposure to mass media, knowledge on some modern family planning methods, accessibilities to health centre and the quality of care variables, some knowledge on modern family planning methods was found to be highly related to the utilization of prenatal care services, economic status of the women still remains highly significant. As discussed earlier in chapter two, knowledge on some modern contraceptive methods was found to be positive and strongly significant effect on antennal visits. The result also confirms that women with some knowledge on modern family planning methods were 3 times more likely to utilize prenatal care services than their counter parts. The expected odds of prenatal care use decreases by 81 % if the woman takes more than an hour to reach the health centre, and decreases by 60 % if the quality of facilities like modernity and cleanliness is bad. Like wise, if the medical staffs are not competent enough then the expected odds of prenatal care utilization decreases by 96 %.

While quality of care and accessibilities to health centre were found not significant in this study. Women who live far away from the health centre were less likely to use prenatal services. Similarly, if the quality of care is poor or bad then the women were less likely to utilize the prenatal care services.

The exposure to Mass media can also play important role in dissemination of health messages in a country like Bhutan where a large number of women are illiterate or have little formal education. Informal channels such as the radio and TV can play an important role in bringing modernization. The role of mass media is important because it can change the behavior, attitude of women, thereby improving their status. Mass media exposure helps in shaping social reality. Though it did not show

significance, women who possess radio and television were more likely to utilize prenatal care services than the women without this assets (odds of utilizing prenatal care services were increased by a factor of 1.2 and 2.0, respectively).

Table 4.14 Binary Logistic Regression Results: Determinants of utilization of prenatal care services. Model I and II

Variables	Use of prenatal care		
	Model I Exp(B)	Model II Exp(B)	Mode III Exp(B)
Economic status Low®			
Medium	3.043***	2.825***	1.810
High	10.317***	5.781***	3.890*
Knowledge on modern contraception (Yes/No®)		2.550***	2.517***
Exposure to mass media			
Listening to radio(Yes/No®)		1.172	1.265
Watching TV (Yes/No®)		2.012	1.946
Accessibility			
Mode of travel foot®			
Other		1.462	1.585
Time taken to reach services (in hours) <=1Hour®			
>=1 Hours		.816	.847
Competence of medical staff Good®			
Satisfactory		.868	.675
Bad		.959	1.014
Quality of facilities Good®			
Satisfactory		.705	.658
Bad		.596	.611
Availability of medicine Good®			
Satisfactory		1.520	1.443
Bad		.898	.786
Affordability of medicine Good®			
Satisfactory		1.334	1.297
Bad		.971	.941
Waiting time Good®			
Satisfactory		533	.532
Bad		.403	.384

* = P < .05 *** = P < .001 ® = Reference category Nagelkerke R^2 = .180 (Model I) Nagelkerke R^2 =.231(Model II)

In the third model, when adding women and her parent's characteristics and the place of residence, knowledge on some modern family planning methods still remains the strongly positively significantly to the utilization of prenatal care services (odds of utilizing prenatal care services were increased by a factor of 2.52). Women with at least primary level of education, occupation, father's education and mother's

occupation were also found to be related with the prenatal care (odds of utilizing prenatal cares services were increased by a factor of 3.5, 2.1, 3.4 and 3.0, respectively)

Further Table 4.15 We could find that older women were less likely to utilize prenatal care services than the younger women. It could be older that older women are more confident about the pregnancy from the previous birth.

The place of residence does not show significant effect for the utilization of prenatal care services in this study, it could be that the other factors are playing more important role than the place of residence. While if only place of residence is included in the model and control for all other variables it was found highly significant.

Table 4.15 Binary Logistic Regression Results: Determinants of utilization of prenatal care services. Model III

Variables	Use of prenatal care		
	Model I Exp(B)	**Model II Exp(B)**	**Mode III Exp(B)**
Education no education®			
Primary education			3.484
Secondary +			1.137
Occupation agricultural®			
Non-agricultural			2.105
Age of women 15-24®			
25-34			.785
35+			.791
Father's education(Yes/No®)			3.398*
Father's occupation(Yes/No®)			1.511
Mother's occupation(Yes/No®)			3.008*
Residence Rural®			
Urban			1.172

* = P < .05 ® = Reference category

Nagelkerke R^2 = .285

CHAPTER V

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1. Discussion

Various factors contribute to maternal and infant mortality; however use of prenatal care services is widely recognized as an important factor for the safety outcomes, since early detection of any complication during and after pregnancy play a crucial role. That is why an attempt has been made in this study to examine the factors influencing prenatal care service utilization behavior among women who gave birth in the last one year prior to survey in Bhutan. The analysis of determinants or predictors of use of prenatal care services not only confirmed some expected patterns but also yielded some surprising results. When controlling for all other factors, standard of living index were found to be the strongest predictor of utilization of prenatal care services. Better off women are more likely to use prenatal care than their poor counterparts. This findings, is in consistent with the theories and hypothesis stated in chapter II above. Increasing women's status is imperative to promote increased use of prenatal care. The analysis shows that women from medium status and rich household were more likely to have enough financial resources with them to access for health care. A large part of Bhutan's rural economy remains non-monetized, with barter systems still prevalent, this often leaves out a significant proportion of work done within the family, especially by women, and voluntarily within the community. Traditional beliefs and cultural practice that are common to a community may contribute to the variability in the use of health services. In Bhutan to my knowledge, women is not supposed to expose her pregnancy and also during delivery they are to delivery as secretly as possible, believing that if others see, it will prolong her labour. When it comes to food intake during pregnancy, it is very funny, women is suppose to take ordinary food like other members but all nutritious food is preserved for the women to take only after delivery. Actually it should be taken during pregnancy to

increase hemoglobin and also to have better health of the mother and the new born, but it's just the opposite. Then the other reasons could be the shyness of early pregnancy, late pregnancy or too many pregnancies. These are the women from poor status and rural part of Bhutan

Usually this are the women with high education level and are the one who possess knowledge of modern health care and realize the benefits of using maternal health services, in addition, this are the women who work outside the house, which enhances their autonomy. Although, all health services are provided free of cost by the government, the clients often requires to spend some money for the transportation and in many cases, for buying medicines, the women from the rural areas have to come all the way to receive prenatal care, leaving behind, their work, small children and aged parents. This could be one of the reason why women from low economic status does not make use of the prenatal services in spite of it being freely available. Thus low economic status may be a barrier to attend prenatal care even when services are accessible and publicly provided.

In the second model, when adding the accessibility to health centre, quality of care and exposure to mass media variables, knowledge on some modern methods of family planning was the most significant and positive predictor of utilization of prenatal care services. With increase in knowledge, there is increase in the utilization of the prenatal care facilities. From the result it is very clear that women having knowledge about modern family planning methods are more likely to utilize prenatal care services. The family planning is an integral part of the maternal health. It is understandable from here that the integration of maternal services with family planning program may lead to better prenatal care use in the country. The result also confirms that women with some knowledge on modern family planning methods were 3 times more likely to utilize prenatal care services than their counter parts.

The importance of access to health service is demonstrated by the mode of transportation and the time taken to reach health centre, this variable was used as a proxy variable to measure distance to health centers. This is well known that access to the health centre increase the attendance or use of prenatal care services (Becker et. al., 1993; Maine and McCarthy, 1992; Magadi et al, 2000) and this study confirms this too. It is true that inaccessibility to health services adds implicit price in the form of

opportunity cost of time spent and transportation cost which may be the barriers to use prenatal care services.

Quality of care did not show significance to the utilization of prenatal care services in Bhutan. The main reason could be because of the free services and treatment provided by the government. But in general, we can notice that if the qualities, availability and affordability are bad women are less likely to utilize prenatal care services. Though the services and medicines are free in Bhutan, we do not have private hospitals, but in urban region we have pharmacies, most of the medicine we have to buy. Though the people rural areas do not have to buy services and medicines, they still need some money for the transportation and other things such as for living arrangements, food etc, and they also have to leave their small children and old parents behind. In this regard, if the government is to increase the utilization of prenatal services than this matters should be considered.

The exposure to Mass media can also play important role in dissemination of health messages in a country like Bhutan, but this study did not reveal the significance of listening to radio and watching television to the use of prenatal care services. It could be due to the influence of other variables in the model. The bivariate analysis showed an association between listening to radio and watching television and prenatal care use but this association disappeared when controlled for the other variables.

Among the individual and parent's characteristics, women's occupation and education level till primary, father education and mother's occupation was found to be related to the utilization of prenatal care services. This findings, is in consistent with the theories and hypothesis stated in chapter II above. Providing women with education is imperative to promote increased use of prenatal care as well as to raise the status of women. Knowledge is another important element of human development, because it forms the basis for expanding opportunities and making informed choices. Being educated is not only a valuable achievement in itself, but it also enables people to achieve other functions that they value. Education, for instance, expands people's opportunities for obtaining jobs. Education also increases people's awareness about life around them; empowers them, especially women, to make better choices and resist oppression; and encourages meaningful participation in development.

The analysis shows that even education till primary level can significantly increase the chance of woman using prenatal care services from modern health facility. Educated women are more likely to have increased knowledge of modern health care and realize the benefits of using maternal health services, in addition, education and occupation outside the house, enhances female autonomy, thereby increasing the women's ability to make decision regarding the household as well as their own and children's health.

We could see from this finding that if the women have a parent who has never been to school and who works in agricultural fields are less likely to utilize prenatal care services. Women of illiterate parents and parent working in agricultural sectors will lack knowledge on health care and also will have low income, which unable women to seek prenatal care. This is relevant in the Bhutanese context, where mostly children are found living with their parents. There fore, parent's factors too can have influence on women in receiving health care.

The place of residence does not show any significant effect for the utilization of prenatal care in this study. The place of residence should have influence on prenatal care use in a mountainous country, but it does not show significance in logistic result, could be due to other variables in the model. But we found it was highly significant in the bivariate analysis.

The other reasons for women not utilizing prenatal care services could be due to the shortage of trained health personnel; enormous difficulties of rural access to local health units due to terrain conditions and the dispersed nature of settlements; deeply rooted cultural barriers; and the lack of adequate information and awareness on important reproductive health issues.

Despite of posting female workers to all health centers and health centers and delivery rooms being better equipped with more women friendly and comfortable environment, the response has not been very satisfactory. Overcoming cultural preferences to deliver at home is a challenge that can and must be adequately addressed through popular advocacy, awareness and education campaigns.

Other than the above mentioned factors, cultural factors and lack of awareness limits the utilization of ante-natal, post-natal and other maternal health services. Increasing the wider acceptability and awareness of modern maternal health services

among women were crucial. The low levels of female adult literacy and educational attainment are related challenges that must be simultaneously tackled as they have an indirect but powerful effect on improving maternal health and attaining significant declines in maternal mortality.

5.2 Conclusion

From the above observations it could be visualized that utilization of prenatal care increases with increase in economic status, knowledge on some modern methods of family planning and educational level. It has also been observed that the use of prenatal care is comparatively higher for women who are employed in non-agricultural sectors and women who have educated parents. Logistic regression result also confirms, a high economic status and knowledge of modern family planning methods are the strong positive predictors of prenatal care service utilization.

5.3 Policy Implication and Recommendation

According to the findings from the study, some valuable recommendation could be suggested, in order to improve the utilization of prenatal care services by women in Bhutan.

1. From the results of the study we found that some knowledge on modern family planning was the most significant determinants of the utilization of prenatal care services in Bhutan, so, prenatal care services should be integrated with the family planning programme. Health providers should be advised not only to provide knowledge on family planning methods but also to make women aware of other health aspects. There is a need to educate women and make them aware about the importance of prenatal care. Promoting and advocating in-creased utilization of ante natal and post natal care can do wonders to reduce maternal mortality. Prenatal services need to enhance the knowledge among pregnant women about the need to start attending ANC as soon as they know that they are pregnant, i.e advocacy (IEC) on early and adequate ANC. Though we have not looked in this area but it was found from the previous studies.

2. Further, since the women from poor family do not utilize prenatal care services and this are usually the women with low or no education, lives in remote areas, and works in agriculture to support their family and themselves. Health workers to be trained in different languages since communication gap between service provider and the client

could be one of the reasons for poor illiterate rural women not accessing prenatal care. Sometimes health workers underestimates that poor women will not understand anything so no use providing information and knowledge on health care. So poor women does not know the importance of prenatal care so they usually don't use. The study recommends that poverty reduction and economic empowerment of rural women are prerequisites for any tangible improvement in the utilization of antenatal care services.

3. Health care service provider need to be retrained and re-oriented to improve both their skills and attitude towards their clients.

4. Just as important is the need to make sure community head and the communities themselves understand the need for prenatal care services and other health care.

5. In the light of above findings, it may be suggested that education in general, female education in particular, has to be encouraged in rural areas which will have a spectrum of benefits in the field of health and family welfare. Supporting literacy and non-formal education programmes

Also through adult education and social education the awareness and importance of utilization of prenatal care services in particular and MCH care in general may be imparted to the adults as well as to the women in the reproductive ages. There is a potential need to increase nutrition education, highlighting the importance of iron supplementation, appropriate food during pregnancy and recognition of signs and symptoms and danger signs in pregnancy.

The results of the analysis should inform policy-makers as to the effectiveness of various health interventions, as well as contribute to an understanding of the determinants of the utilization of prenatal care services.

6. Since, this study has looked into the factors determining the use of prenatal care services only and it has not covered the number of visits and the timing of first visits and contents of antenatal care, therefore it is recommended for further research, especially with regard to the contents and timing of the first visits, considering also the regional disparities. It is recommended that a combined qualitative and quantitative study be conducted for better understandings of the women not receiving prenatal care.

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APPENDIX

APPENDIX

Map of Bhutan

Table. 1 Demographic Indicators for four different years

Indicator of National Health Survey	Number/ Rate			
	1984	**1994**	**2000**	**2005***
Total population		582000	677934	752700
By age				
0-14		228260	285076	316510
15-64		328015	364014	404160
65+		25725	28844	32030
People per household		..	5.5	..
Population density		12.5	14.6	19.6
Crude birth rate	39	39.9	34.1	20
Crude death rate	13	9.0	8.9	7.0
Pop. Growth Rate	3	3.1	2.5	1.3
Total Fertility Rate	NA	5.6	4.7	NA
Life expectancy at birth	47.5	66.1	66.1	NA
Sex ratio (males per 100 females	103	105.1	106.6	111
Dependency ratio	80	91.7	74.4	60.6

Source: Annual Health Bulletin 2006
**Population and Housing Census 2005*

Table 2: Showing Value of Beta

Variables	Use of ANC		
	Model I Exp(B)	Model II Exp(B)	Mode III Exp(B)
Economic status Low Status®			
Medium	1.113	1.038	.594
High Status	2.334	1.755	1.358
Knowledge on Modern family planning methods (Yes/No®)		.936	.923
Exposure to Mass Media			
Listening to radio(Yes/No®)		.158	.235
Watching TV (Yes/No®)		.699	.666
Accessibility			
Mode of travel Foot®			
Other		.380	.461
Time taken to reach Services (in hours) <=1Hour®			
>=1 Hours		-.204	-.166
Competence of medical Staff Good®			
Satisfactory		-.376	-.392
Bad		-.042	.014
Quality of facilities Good®			
Satisfactory		-.349	-.418
Bad		-.518	-.493
Availability of medicine Good®			
Satisfactory		.419	.367
Bad		-.107	-.241
Affordability of medicine Good®			
Satisfactory		.288	.260
Bad		-.030	-.061
Waiting time Good®			
Satisfactory		-.630	-.630
Bad		-.905	-.957
Education No Education®			
Primary Education			1.248
Secondary +			.128
Occupation Agricultural®			
Non-agricultural			.744
Age of Women 15-24®			
25-34			-.242
35+			-.235
Father's education(Yes/No®)			1.223
Father's occupation(Yes/No®)			.413
Mother's occupation(Yes/No®)			1.101
Residence Rural®			
Urban			.159

Questionnaire Used in the Survey to Collect Information from the women who gave birth in the last one year prior to the survey:

A. Demographic:

1. Name
2. Sex
3. Date of birth and age in years

B. Education

1. Has (NAME) ever attended school (pre-primary, or grade 01to 15)?
   1Yes, 2. No
2. Is (NAME) attending school this year (including pre-primary)?
3. What is the level currently attended by (NAME)? (Write grade 01 to 15, 00 for pre-school).
4. What is the highest grade completed by (NAME)? Indicate last class successfully completed (01 to 15, write 00 if none)

C. Question on reproduction

1. Has (NAME) given birth in the last 12 months?
2. During her pregnancy, did (NAME) receive pre-natal care from a doctor or qualified nurse?
   i. Yes, ii. No
3. Where did (NAME) give birth?
   a. Hospital / Polyclinic
   b. Maternity
   c. At home, with medical assistance
   d. At home, with mid-wife
   e. At home, without specialized assistance
   f. Other (specify)……..
4. Has (NAME) knowledge of some modern contraceptive methods?
   a. Yes, b. No, c. Don’t know.
5. Does (NAME) use modern contraception? (if not indicate the main reason)
   a. Yes, b. Not concerned, c. No, not available
   d. No, religious / moral objection, e. No, husband /family objection.

f. No, because of side effects, g. No, too expensive

h. Doesn't want to respond i. Doesn't know.

D. Employment.

1. In what sector does (NAME) work for his main occupation.

E. Information on Parents

1. What is the highest level of education completed by

a. Father, b. Mother

2. In what sector did the father and mother work for most of their life?

F. Assets Ownership

1. Does your household own the following items?

a. Yes, acquired less than a year ago

b. Yes, acquired a year or more ago

c. No.

1. Sofa set	2. Bukharies	3. Motorbike, scooter
4. Heater	5. Rice cooker	6. Electric iron
7. Fan	8. Curry cooker	9. Passenger car
10. Computer	11. Refrigerator	12. Washing machine
13. Bicyle	14. Modern stove	15. Sewing machine
16. Choesham	17. Water boiler	18. Television
19. Camera	20. Microwave oven	21. VCR/VCD
22. Tractor	23. Foreign bow	24. Rice grinding machine/ thri-tha
25. Radio	26. Mobile phone	27. Wrist watch.

G. Access and distance to services

1. How do you usually go to the (SERVICE)?

a. Foot b. Bicyle c. Motorcycle d. Bus

e. Car f. Foot +vehicle g. Other h. Not applicable

2. How long does it take to get to the nearest (SERVICE)? (hours/ minutes)

H. Quality of Care/ Priorities and Opinions

1. Based on your experience, how would you qualify the following aspects of BHU / hospitals?

a. Good, b. Satisfactory, c. Bad d. Doesn't know

1.1 Competence of medical staff

1.2 Availability of medicines

1.3 Affordability of medicines

1.4 Quality of facilities (modernity / cleanliness)

1.5 Waiting Time

BIOGRAPHY

NAME: Deki

DATE OF BIRTH: 3rd March 1974

PLACE OF BIRTH: Zhemgang, Bhutan.

EDUCATION: Geography Honors, Tsherubtse College, Kanglung, Bhutan.

Diploma in Population Studies, International Institute of Population Sciences, Mumbai, India, 2004- 2005.

M.A. in Reproductive Health Research, Institute of Population and Social Research, 2005-2006, Thailand.

PRESENT POSITION: Teacher, Higher Secondary School, Zhemgang, Bhutan.

FUTURE POSITION: Lecturer and future researcher in Population Studies, Sherubtse College, The Only University in Bhutan for higher learning.