

RESEARCH REPORT

ANTENATAL CARE (ANC) & BIRTH PREPAREDNESS PRACTICES (BPP) AMONG MOTHERS IN MAHOTTARI, DISTRICT, NEPAL

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SUMMARY

Antenatal care is the care of the women soon after conception and throughout pregnancy. The primary aim is to achieve at the end of the pregnancy a healthy mother and child. Prevention and promotion of maternal health detection and management of associated diseases, early recognition and management of complications are main ANC's components. It is suggested to have minimum four antenatal visits for each pregnant woman together with a regular and adequate tetanus toxoid immunization, diet, and rest and iron supplementation. The ANC quality services are assessed on basis of the type of provider, the number of ANC visit, and the timing of the ANC first visit, content of services received and the kind of information given during the visit.

Maternal mortality remains one of the biggest public health problems in Nepal. Lack of access to basic maternal healthcare, difficult geographical terrain, poorly developed transportation and communication systems, poverty, illiteracy, women's low status in the society, political conflict, and shortage of health care professional and under utilization of currently available services are major challenges to improving maternal health in Nepal. In order to effect real improvements in maternal health, attention needs to be focused both on biomedical and social interventions. Improving health facilities, mother's nutrition, women's position in the society such as freedom of movement, providing education to female children, integrating Traditional Birth Attendants (TBA) into local health services can play a vital role in the improvement of mothers' health. Maternal mortality is one of the key indicators of the status of reproductive health care service delivery and utilization, but it also can be an indicator of women's status in a society.

A cross-sectional descriptive study was carried out to assess knowledge and practices on Antenatal Care among mothers of Mahottari district. 400 mothers with a 3 year child and expecting mothers were interviewed for the required information with the structured interview. More than two third of mothers were illiterate. The source of income was agriculture followed by foreign labourer. More than three fourth of mothers had to take permission from family head .Decision maker in the family was father in law and husband. Less than fifty percent of the mothers had visited four times. Reason for not visiting four times were the lack of awareness in more than two third followed by permission not granted by family head, economical problem. Most of mothers had knowledge of danger signs during pregnancy. In case of danger signs, two third of the mothers took to hospital followed by taking rest and some had no idea what to do during danger signs. Most of the mothers had made preparation for child birth during pregnancy. Three-fourth of the mothers had preferred for health post and hospital and rest at home for baby delivery. The education in mothers, level of health awareness in the community, involvement in decision making, economical condition, health service compliance were some issue to improve ANC visit and BPP (Birth preparedness practices) and finally to reduce maternal and child mortality. Thus, the reports were submitted to NHRC with appropriate recommendations to the concerned authority on the basis of conclusions of the study.

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LIST OF ABBREVIATIONS

ANC	Antenatal Care
DoHS	Department of Health Service
FHD	Family Health Division
FCHV	Female Community Health Volunteer
GON	Government of Nepal
ICPD	International Conference on Population and Development
MoHP	Ministry of Health and Population
MCHW	Maternal and Child Health Worker
MDGs	Millennium Development Goals
MWRA	Married Women of Reproductive Age
MoHP	Ministry of Health and Population
NDHS	National Demographic and Health Survey
NHP	National Health Policy
RHP	Reproductive Health Program
RH	Reproductive Health
RTIs	Reproductive Tract Infection
SMP	Safe Motherhood Program
SBAAs	Skilled Birth Attendants
STDs	Sexually Transmitted Diseases
TTv	Tetanus Toxioid Vaccine
UNICEF	United Nation International Children's Fund
UNFPA	United Nation Fund for Population Activities
VDC	Village Development Committee
WHO	World Health Origination

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1. INTRODUCTION

Maternal mortality remains one of the biggest public health problems in Nepal. Lack of access to basic maternal healthcare, difficult geographical terrain, poorly developed transportation and communication systems, poverty, illiteracy, women's low status in the society, political conflict, and shortage of health care professional and under utilization of currently available services are major challenges to improving maternal health in Nepal. In order to effect real improvements in maternal health, attention needs to be focused both on biomedical and social interventions. Improving health facilities, mother's nutrition, women's position in the society such as freedom of movement, providing education to female children, integrating Traditional Birth Attendants into local health services can play a vital role in the improvement of mothers' health. Maternal mortality is one of the key indicators of the status of reproductive health care service delivery and utilization, but it also can be an indicator of women's status in a society. Maternal mortality, currently an issue of concern on the international health agenda, remains one of the most important public health problems in developing countries. In September 2000 the members of the United Nations adopted the Millennium Declaration and set eight millennium development goals, one of which is reducing maternal mortality. More than 529,000 women die every year from pregnancy-related causes, and more than 99% of these deaths take place in the developing countries. Globally, approximately 80% of maternal deaths are due to direct obstetric complications: primarily haemorrhage, sepsis, complications of abortion, preeclampsia and eclampsia, and prolonged/obstructed labour. The remaining 20% of maternal deaths are indirect, i.e. they are due to existing medical conditions, aggravated by pregnancy or delivery. Nepal is a developing country where about 80 % people live in the rural area and are engaged in agriculture farming. Poverty is the one of the major cause of the poor health. The major health problems are maternal and child morbidity and mortality. Maternal mortality is still the leading cause of death among women of reproductive age in Nepal. Four times antenatal visits is consider now as basic human right which can contribute to improve the health status of the pregnant women. Worldwide 70,000 women aged 15-19 years die each year of pregnancy and childbirth related causes. More than 18 million young women give birth to an each year and 9 in 10 in developing countries.

In 2007 Nepal's interim constitution enshrined the concept of 'health for all' as a fundamental human right, established the right of citizens to essential health care services free of charge and the right of every woman to a good standard of reproductive health. Aama programme has three components: (a) free institutional delivery care (this component was launched in mid January 2009) and (b) the Safe Delivery Incentive Programme (SDIP), a cash incentive to women and care providers, which was initiated in July 2005 and (c) incentive to women who completed 4 ANC visits and delivered their babies at health institutions was initiated in mid January 2009. Despite these commitments, a woman in childbirth and 11 newborn babies die unnecessarily every four hours. Since 2005 GoN has been providing direct cash handouts to women who delivered in state and listed non-state facilities. Since 2009 the GoN has also been providing the free institutional delivery care (normal, complicated and Caesarian section) for every woman at all facilities capable of providing these services.

According to national demographic health survey 2009/2010, the national average of ANC first visits as percent of expected pregnancy has shown 20 percent increase in the FY 2066/67 (87.4 percent) compared to FY 2065/66 (67.5 percent). Four times ANC visit is considered standard for complete antenatal care. At the national level, the reported coverage of at least four time antenatal visits was observed at 56.8 percent from among the ANC first visits during the FY 2066/67. According to MDG, delivery by SBA has to be achieved by 60 percent by the year 2015 (HMIS started collecting information on SBA and other than SBA only after FY2007/2008). The SBA includes doctors, staff nurses and ANMs while other than SBA include HA, AHW, MCHW and VHW. It is important to note that delivery by health workers (both SBA and other than SBA) has been increased substantially to 41.3% in FY2066/67 from 31.6% in FY2065/66. There is also a sharp increase in the percentage of SBA delivery at the health facility in FY2066/67(26.2%) compared to the previous FY2065/66 (15.9%). Percentage of delivery by other than SBA in health facility has also been slightly increased over the last one year period (from 1.4% in Y2065/66 to 2.3% in FY2066/67). Similarly, there is about 10 percent increase in the percentage of delivery by SBA at home in FY2066/67 compared to that in FY2065/66. During the FY 2066/67, 87.4 percent of the expected pregnant women received ANC services at least for one time. Similarly 41.3 percent of deliveries were conducted by health workers during the FY2066/67, which has increased by almost 10 percent compared to the FY2065/66.

Institutional delivery has also been increased by more than 10 percent in FY2066/67 compared to the last fiscal year. Postnatal service coverage as a percentage of expected pregnancies were 49.7 percent during FY2066/67, showing sharp increase (almost 10% increases) compared to last fiscal year in F.Y 2065/66.

Four antenatal visits can reduce maternal morbidity and mortality, and decrease risks related to child birth. The visits can help to decrease the number of deaths of women who are in risk and high risk situation. ANC should be made available and accessible to every pregnant woman and further in health institution to promote and manage safe delivery for healthy mother and child. People should aware about the needs of antenatal care and birth preparedness practices.

The quality of ANC can be assessed by the type of providers, the number of ANC visits, and the timing of the ANC first visit. ANC is also monitored through the content of services received and the kind of information mothers are given during their visit. The four main components of ANC are maintenance of maternal health, health examination of pregnancy and safe delivery, detection and management of associated diseases and early recognition and management of complications if present.

World health organization (WHO) recognized that women without complication have at least four visits provide sufficient antenatal care. It is possible during these visits to detect health problems associated with a pregnancy. In the event of any complications more frequent visits are advised and admission to a health facility may be necessary. Antenatal health care visits can be a critical opportunity for women to get access to other health care service.

In developing countries like Nepal most of the people are not familiar with needs of antenatal visit. Even those who know go to service centre at a late stage. Pregnant women do not follow the recommended number of four antenatal visits. Maternity services are also not made available and accessible to most of rural communities of Nepal .The negligence and lack of knowledge and maternity services cause a number of major health consequences for women.

2. LITERATURE REVIEW

Maternal mortality, currently an issue of concern on the international health agenda, remains one of the most important public health problems in developing countries. In September 2000 the members of the United Nations adopted the Millennium Declaration and set eight millennium development goals, one of which is reducing maternal mortality¹. More than 529,000 women die every year from pregnancy-related causes, and more than 99% of these deaths take place in the developing countries². Globally, approximately 80% of maternal deaths are due to direct obstetric complications: primarily haemorrhage, sepsis, complications of abortion, preeclampsia and eclampsia, and prolonged/obstructed labour. The remaining 20% of maternal deaths are indirect, i.e. they are due to existing medical conditions, aggravated by pregnancy or delivery².³The Ministry of Health in Nepal has developed the second long-term Health Plan 1997-2017 aiming to reduce the maternal mortality rate to 250 per 100,000 live births by 2017. Nepal is also committed to the Millennium Development Goal of reducing maternal mortality ratio by three quarters between 1990 and 2015⁴. Maternal health is a national health priority and improving maternal health is a major focus of the current national development plan in Nepal⁵. However, there are several challenges to achieving this goal. High Maternal Morbidity and Mortality The maternal mortality rate in Nepal is 539 per 100,000 live births, which is one of the highest in the World⁶. The Ministry of Health in Nepal has estimated that nearly 4,500 women die every year from pregnancy-related complications, mostly due to lack of skilled birth attendants and the absence of emergency services and equipment in rural health centres in Nepal⁷. The majority (67%) of maternal deaths occur at home, 11% on the way to a health facility and 11% in health facilities, 90% of which occur in a rural setting. Postpartum haemorrhage is the leading cause of maternal death accounting for 46%, obstructed labour for 16% and eclampsia for 14% of all maternal death. Peripheral sepsis is another important cause of maternal death accounting for 12%. Most deliveries in Nepal occur at home and only 9% at health facilities^{8,9}. The Demographic Health Survey revealed .48% of pregnant women received any antenatal care and only 14.3% of them had four or more antenatal check ups, which are recommended by National Maternity Care Guideline produced by the Ministry of Health, Nepal⁹.

Under utilization of the maternal health services In addition to the above challenges, under utilisation of health services is the big challenge for Nepal. There are number of factors which

contribute to under utilisation of health services. Evidence from different studies shows that poor physical access to health facilities due to geographical accessibility, limited health infrastructure, political instability, lack of resources, women's low status in the society, poor communication system in rural Nepal and shortage of trained health professional are important barriers to health service utilisation^{10,11,12}. Political instability Political instability and the deteriorating situation arising from political conflict remain a threat to health care delivery in Nepal. Attacks have damaged many health facilities, and staff is often reluctant or unable to travel in rural areas. Many women are reported to have died during childbirth because they could not reach emergency obstetric care due to strike, due to restricted movement of vehicles¹¹. Because of lack of security and political conflict, health care professionals do not want to work in rural areas and this is one of the factors, which encourages medical doctors and qualified nurses to migrate abroad¹². There are limited health facilities and extreme pressure in Out-Patient Departments (OPD) in Nepal. Overcrowding in hospitals OPD makes it impossible to have privacy; lack of adequate training of health care providers to maintain confidentiality and privacy are issues that deter women from seeking care¹³.

Poorly equipped government health facilities are discouraging women from using services which are easily accessible in urban areas of Nepal. Lack of resources and shortage of trained health professional and serious shortages of skilled attendants are common throughout developing countries. Nepal continues to experience imbalance in the health workforces due to shortage of personnel and geographical maldistribution¹⁴. Shortages are especially severe in rural areas, since health professionals are often concentrated in cities¹⁵. Women's position in the society and women's vulnerability, Nepalese women have low status in society. Women's lower status in the family, where decisions regarding mobility and expenditures for health care are in the hands of men or older females, may prevent them from seeking care for their own health problems¹⁶. According to Shakya and McMurray, Nepalese husbands may not be willing to send their wives for medical checks when only male doctors are available¹⁷.

Likewise, other family members such as mothers-in-law may not want to send their daughters-in-law to the health facilities. Limited mobility and education opportunity for women have a major impact on their exposure to new ideas, development of inter-personal skills, initiative and confidence in interacting with larger world¹⁸. The majority of women in Nepal have to ask the

head of house (husband or father in law) to spend money, even for health care services. Women's lack of decision-making power within the family and community, their lack of education and economic power, restrict their ability to seek and receive care during pregnancy and childbirth¹⁹. According to traditional Nepalese cultural norms, "women have to cook and serve food to all other household members before eating themselves, and then eat only whatever is left even during pregnancy." Nepalese women also have poor knowledge about diet and nutrition. Therefore, nutritional anemia is one of the major contributors to the high maternal mortality rate in Nepal. Frequent pregnancies and inadequate nourishment of women during pregnancy place them at high risk during delivery¹². Affordability About 37.7% of the population lives below the national poverty line in Nepal²⁰.

In the spirit of Alma Ata Declaration and Primary Health Care concept the Ministry of Health Nepal endorsed the National Health Policy-1991 is to improve the health status of Nepalese people. The International Conference on Population Development (ICPD), held in Cairo in 1994, defined reproductive health as not only a state of absence of disease or infirmities but also as a condition of complete physical, mental and social well being. Considering the facts of high maternal and child morbidity and mortality of Nepal, the Nepal- government has formulated a twenty-year second long- term Health plan (1997-2017) focused on mother and child health where Reproductive Health (RH) also is taken an approach rather than as a new program in a cost effective manner.

To minimize effects of woman health problems, the government with development partners has implemented a comprehensive safe motherhood program (SMP) including maternity incentive scheme. Safe motherhood creates the circumstances within which women are able to choose whether she becomes pregnant or not. If she does, ensuring that she receives care for prevention and treatment of pregnancy complications, that she has access to trained birth assistance and if she need it to emergency obstetric care and care after birth, to prevent death or disability from complications of pregnancy and childbirth. The main objectives of SMP are to reduce both maternal and neonatal mortality morbidity during pregnancy and child birth.

The main strategies of the SMP focus on improving the quality and coverage of maternity health care services to all women. NDHS (2006) pointed out that, maternal health is an important part of the health care system aimed at reducing morbidity and mortality particularly related to pregnancy. Nepal has adopted Millennium Development Goal (MDGs) attaining a three fourths

reduction in maternal mortality by the year 2015. The international and national Government Organizations and the Ministry of Health and Population is working together for the better access and high quality services to improve maternal health. The maternity incentive scheme has been adopted since 2005 to increase the demand for maternity services. The support for safe Motherhood program (SSMP) is designed to improve infrastructural development and human resource development and upgrade the skills of skilled birth attendants (SBAs).

According to NDHS 2006/2007 data, antenatal first visits as % of expected pregnancies 72%, ANC four visits among 1st visit 49.8%, deliveries conducted by health workers as % of expected pregnancies 29.7%, deliveries conducted at health facilities as % of expected pregnancies 15.3%, deliveries conducted by health workers at home as % of expected pregnancies 14.4%.

3. RATIONAL OF STUDY

The study might be beneficial for the community people to know the general demographic features of mothers, to find out socio-economic features about the current status of ante natal care, tetanus toxoid vaccination, existing complication, iron consumption, diet and rest schedule during pregnancy and danger signs arising during pregnancy, knowledge related to birth preparedness practices, nutrition, vaccination status so that they can take preventive measures to overcome the problems.

This will give base line data to investigate regarding the same in future. The information will be useful in planning, monitoring and evaluation of quality Safe motherhood program for community people. This will provide insight related to maternal health and child health for public health action at local level and district level.

4. RESEARCH OBJECTIVES

4.1 General objective:

To assess Antenatal Care (ANC) & Birth Preparedness Practices (BPP) among Mothers in Mahottari district of Nepal.

4.2 Specific objectives:

To find out general demographic features of mothers of Mahottari district of Nepal

To find out socio-economic features of mothers of Mahottari district of Nepal

To find out practices on ANC visits, iron consumption, diet and rest at pregnancy and TT vaccination.

To find out knowledge regarding danger signs during pregnancy

To find out knowledge related to birth preparedness practices, nutrition, and vaccination status

5. MATERIALS AND METHODS

5.1 Research Method:

This study was quantitative and based on Primary data

5.2 Study Variables:

Study variables were categorized into two groups: dependent and independent.

Independent Variables

- Education
- Occupation
- Religion
- Cultural Belief
- Family Type
- Ethnicity
- Economic Status
- Accessibility
- Availability
- Family Consent

Dependent Variables

- Knowledge and practice of ANC
- Knowledge of danger signs
- Institution delivery
- ANC visits.

5.3 Type of Study:

This was descriptive cross-sectional study

5.4 Study Site and its Justification

This study was conducted in Mahottari district of Nepal. It constitutes 5, 81,976 population. The awareness regarding maternal health care and birth preparedness practices are not proper in spite of available ANC services. Population growth rate is 2.8, which exceeds national average and average housed size is 6.2. Urban population is only 5.6%.Ethnic composition of the district shows that Brahman/Chhetri Groups occuppies 14.66, highly marginalized,

disadvantaged and dalit groups cumulatively accounts for more than 32% of total population of the district. There is only one hospital and two Primary health care centers, six health posts and one sub health posts in each VDC in the districts. In Mahottari district, the health indicators are seen below the national average and having low human development index as compared to other districts of the region.

5.5 Target Population:

The target population of the study was the mothers with a 3 year child and expecting mothers. In this study, the mothers with a 3 year child and expecting mothers of the Mahottari district was involved as study population.

5.6 Sampling Methods

This study was based on probability sampling method. There are 77 VDCs and 6 electoral constituencies in the Mahottari district. Each constituency was divided into 3 clusters. From each constituency out of three clusters, 3 VDCs was selected by using simple random method from respective clusters. From selected cluster one VDC from was selected by using simple random sampling method and selected VDC also divided in three clusters having 3 wards in each cluster. Thus, one electoral constituency in an average consists of 15 VDCs, each cluster consist of five VDCs. From each ward, 9 expecting mothers were selected randomly. All clusters were designed on the basis of population and sample was fixed proportionally from each cluster. Thus in total there was included 15 sample VDCs, 45 wards, and 410 expecting mothers in the study.

5.7 Sample Size

According to DHS -2006, the mother attending four ANC visit are 49.8% (approximately 50%) in Nepal. The sample size is calculated based on the available data which suggests that in 50 percent of the mothers had attended for ANC visit

Mathematically,

$$n = \frac{z^2 pq N}{e^2 (N-1) + z^2 pq}$$

Where, n= sample size,

z= confidence level
p= prevalence of stunting
q=1-p
e= permissible error.
N= Study Population

Here,

z = 1.96, p= .50, q=1-p=.50 e=.05 N=65072

Therefore the sample size was fixed by adding 10% of the calculated sample size.

From the calculation the sample size was 400 mothers from the fifteen VDCs. From each VDC 27 mothers was selected for the proposed study.

Sampling Frame and Sampling Process including Criteria for Sample Selection

All the mothers having three years of child and expecting mothers were included in the sampling frame from each cluster of the selected VDCs.

5.8 Tools and Techniques for Data Collection

There were two sets of tools to gather the information. Part I is the structured interview schedule to generate data pertinent to factors associated general information and Part II is a Performa consisting of specific information was recorded in it. Performa was developed to record the required information and structured pre-tested interview schedule was used to collect information from the respondents. Data was collected by house to house survey method. For reliability and validity of the information, all the enumerators were trained before field visit.

5.9 Pre-testing the Data Collection Tools

Pre- testing of the developed Performa and interview schedule was done to identify the consistency of tools. Pre-testing was done in 10 % of the sample size in any one VDC of the Mahottari District which will not be selected for study but however the population composition of the pre-tested population somehow resembles the study population.

5.10 Validity and Reliability of the Research

Validity and reliability of the study was ensured by pre-testing of the tools, using standardized instruments and trained enumerators. Instruments was set at 0 reading before taking measurements with standardized reference one. Extensive literature survey was done. Pair enumerators were sent for data collection and on the basis of the pre-test sufficient time was provided for data collection. Close supervision was done in the field. Some selection biases may be introduced and others may be information variation due to use of many enumerators.

5.11 Limitation of the Study

- For assessing the maternal health related factors of expecting mothers in such a populated district, the selected sample size may not be representative of whole district.
- This study was focus on quantitative data rather than qualitative.

5.12 Supervision and Monitoring

For the safety of all the collected data enumerators was kept in sequential order. At the completion of data collection all the data was arranged in different record files on the basis of the clusters. These collected data was entered in SPSS sequentially. For the reliability and validity of the data double entry of the data was done. Some trained supervisors was appointed for the monitoring and supervision of the data collection activities in the field. Likewise principal investigator and co-principal investigators were involved for supervision and monitoring activities. There was conduction of short term workshop for investigators and supervisors to develop their competency in supervision and monitoring activities.

5.13 Data Management

Collected data was managed carefully and safety of raw information will have a paramount importance. All collected data was kept cluster-wise. Thus collected data by individual enumerators was kept in separate record file and then files were coded. All coded files will again be given numbers starting from 001 and end at 410 then these was stored in safe cupboard. One to 5 numbers was given cluster identification, 1-3 codes for selected VDCs and a,b,c notations are given for selected wards. Thus for example: 22a001 was the code

representation of the respondent of second cluster, second VDC, first ward and first number. Thus stored data was utilized for the purpose of analyses. All these functions were carried out by data manager. After analyzed, these again were kept in the same place for future utility.

5.14 Data Analysis

All the data was entered computer software SPSS and EPI Info and analyzed regarding the objectives of the study. The results of the study were presented by tables, charts, figures and statistical tools to assure the result of the study.

5.15 Expected Outcome of the Research

It is expecting that this study will assess the factors associated with maternal health status of expecting mothers of the Mahottari district. Similarly, this study will find out the existing maternal health situation of the district and recommend appropriate intervention for prevail over the maternal health problems of the Mahottari district.

5.16 Dissemination of Research Results

The result of the study was presented in the concerned community as well as district level. The entire result of the study was presented and study report was submitted to the NHRC. Research articles was produced and submitted to the national a well as international level journals for publication. Sensitive finding of the research was disseminated from local as well as regional and national level printed and electronic mass media.

5.17 Utilization of the Research Findings (optional)

Findings of the research may be utilized for the strengthening of health systems as well as to overcome the community level nutritional problems. Likewise results of the study were communicated to different stakeholders for the implementation of research findings in Mahottari district.

6. RESEARCH FINDINGS

The study included 400 mothers randomly selected from 77 VDCs and 6 electoral constituencies in the Mahottari district. Each electoral constituency divided into 3 clusters. From each constituency out of three clusters, 3 VDCs was selected by using simple random method from respective clusters. From selected cluster one VDC was selected by using simple random sampling method and selected VDC also divided in three clusters having 3 wards in each cluster. Thus, one electoral constituency in an average consists of 15 VDCs, each cluster consist of five VDCs. From each ward, 9 mothers were selected randomly. All clusters were designed on the basis of population and sample was fixed proportionally from each cluster. Thus in total there were 15 sample VDCs, 45 wards, and a round figure of 400 mothers included in the study.

6.1 General Information

Among the mothers who were in the study, 60% belonged to nuclear type and 40% belonged to joint family type. 18% of the respondents were Muslim and 82% were Hindu. Occupation of husband was leaded by farmer (51%), followed by Foreign labourer (36%), businessman (9%), job holder (3%) and labourer (1%). Occupation of mother was leaded by housewife (75%), followed by farmer (23%) and business (2%). Education of mother was illiterate (70%), followed by primary (27%), secondary (2%) and higher education (1%)

6.2 Socio-economic status

The source of income was agriculture (54%), followed by labourer (32%), others (11%), service (3%). Sufficiency of food year round was more than 12 month (22%), six-twelve months (51%), three-six month (25%) and less than three month (2%). Mothers had to take permission from family head (82%) and permission not required in 18%. Decision maker in the family was father in law (43%), followed by husband (20%), mother in law (12%), self (22%). Mothers preferred to go with mother in law (73%). followed by husband (16%), friend (4%).

6.3 Knowledge about ANC

Mothers had heard about ANC (96%) and 4% of the mother had not heard about ANC. Mothers had heard about ANC from Female community health volunteers (47%), followed by health workers (33%) and radio/television (12%). Most of the respondent mothers had visited ANC

during their pregnancy (97%) and 3% of the mother had not visited ANC clinic. 41% of the mothers had visited four times (41%), followed by only once (34%), 2-3 times (22%), and more than four times (3%). Reason for not visiting four times was that they thought four visits were not required (73%), followed by permission was not granted by family head (21%), economical problem (5%). Half of the mothers had complete information during ANC clinic visit and rest had got incomplete health information related to pregnancy. All of the mothers responded that extra food is required during pregnancy. Regarding benefits of extra food during pregnancy, 42% responded that they are needed for baby and mother health and reduced complication, followed by needed for baby health (43%), for mother health (20%). Most of the mothers (97%) told that TT vaccine was required during pregnancy. 50% of the mothers had taken TT vaccine once, followed by twice (47%) and not taken (3%). Most of the mothers (97%) had responded the need of iron during pregnancy. 52% of mothers replied that iron tablets in pregnancy was taken to prevent anemia, followed by growth of the baby (28%) and no idea of benefits of iron (20%). 47% of mothers replied duration of iron intake from 4 months to 45 days after delivery, followed by no idea of duration of iron intake (40%), and 4-9 months (13%). Two thirds of mothers had taken anti-helminthic medicine during pregnancy.

6.4 Complication of pregnancy

Most of mothers (94%) had knowledge of danger signs during pregnancy. 41% knew about swelling of hand and face, followed by swelling of hand, face and bleeding, and other combination (26%), bleeding (22%) and headache (11%). In case of danger signs, they took to hospital (61%), followed by taking rest (26%) and no idea what to do during danger signs (13%). Most of the mothers (89%) responded that no rest was required during day time. Most of mothers (88%) responded that they required rest two hour day and 6-8 hours in night.

6.5 Birth preparedness

46% of the mothers knew that health workers were the skilled birth attendants, followed by doctors and nurses (45%), mother in law (5%). Most of the mothers (95%) had made preparation for child birth during pregnancy. 28% of mothers had done all types of preparation, followed by preparation for place of delivery (25%), collection of money (18%), kit box (10%) and no any preparation by 5% of mothers. 74% of the mothers had preferred for health post and hospital and

26% at home for baby delivery. Most of the birthing centers (72%) were within the reach of 30-60 minutes and 28% were more than one hour.

Table1. Type of family of the mothers

Family type	Number	Percent
Joint	158	40
Nuclear	242	60
Total	400	100

Among the mothers who were in the study, 60% belonged to nuclear type and 40% belonged to joint family type.

Table2.Type of religion of the family

Type of religion	Number	Percent
Hindu	328	82
Muslim	72	18
Total	400	100

18% of the respondents were Muslim and 82% were Hindu.

Table3.Occupation of Husband

Occupation of husband	Number	Percent
Farmer	203	51
Foreign Labourer	146	36
Business	35	9
Job holder	11	3
Labourer	5	1
Total	400	100

Occupation of husband was led by farmer (51%), followed by Foreign labourer (36%), businessman (9%), job holder (3%) and labourer (1%).

Table4.Occupation of mother

Occupation of mother	Number	Percent
House wife	300	75
Farmer	91	23
Business	9	2
Total	400	100

Occupation of mother was leaded by housewife (75%), followed by farmer (23%) and business (2%).

Table5.Education of mother

Education of mother	Number	Percent
Illiterate	278	70
Primary	114	27
Secondary	8	2
Higher education	3	1
Total	400	100

Education of mother was illiterate (70%), followed by primary (27%) , secondary (2%) and higher education (1%)

Table6.Source of income of the family

Sources of income	Number	Percent
Agriculture	216	54
Foreign labourer	130	32
Service	12	3
Other	42	11
Total	400	100

The source of income was agriculture (54%), followed by labour (32%), others (11%), service (3%).

Table7.Sufficiency of food for the year round by the income of family

Sufficiency of food	Number	Percent
6-12 months	205	51
3-6 months	98	25
More than 12 month	90	22
Less than 3 month	7	2
Total	400	100

Sufficiency of food year round was more than 12 month (22%), six-twelve months (51%), three-six month (25%) and less than three month (2%).

Table8.Permission from family head needed for ANC visit

Permission from head of the family	Number	Percent
Needed	329	82
Not required	71	18
Total	400	100

Mothers had to take permission from family head (82%) and permission not required in 18%

Table9.Decision maker in the family

Decision maker	Number	Percent
Father in law	170	43
Husband	81	20
Mother in law	47	12
Self	90	22
Others	12	3
Total	400	100

Decision maker in the family was father in law (43%), followed by husband (20%), mother in law (12%), self (22%).

Table10. Preference of mother to go with for ANC visit

People	Number	Percent
Alone	27	7
Friends	16	4
Husband	64	16
Mother in law	293	73
Total	400	100

Mothers preferred to go with mother in law (73%). Followed by husband (16%), friend (4%)

Table11. Mothers who had heard about ANC

Heard about ANC	Number	Percent
No	15	4
Yes	385	96
Total	400	100

Mothers had heard about ANC (96%) and 4% of the mother had not heard about ANC.

Table12. Source of information about ANC

Source of information	Number	Percent
FCHV	187	47
Health worker	134	33
Radio/TV	47	12
mother in law	13	3
Friend	11	3
Husband	8	2
Total	400	100

Mothers had heard about ANC from (FCHV) female community health volunteers (47%), followed by health workers (33%) and radio/television (12%).

Table13. ANC visited by mothers during their pregnancy

ANC visit	Number	Percent
No	12	3
Yes	388	97
Total	400	100

Most of the respondent mothers had visited ANC during their pregnancy (97%) and 3% of the mother had not visited ANC clinic.

Table14. Times of ANC visit during their pregnancy

Times of ANC visit	Number	Percent
Four	159	41
Once	132	34
Two-three	85	22
more than four	12	3
Total	388	100

41% of the mothers had visited four times (41%), followed by only once (34%), 2-3 times (22%), and more than four times (3%).

Table15. Reason for not visiting four times

Reason for not visiting four times	Number	Percent
Hospital too far	4	1
Economical problem	18	5
Not permitted	83	21
Not required	283	73
Total	388	100

Reason for not visiting four times was that they thought four visits were not required (73%), followed by permission was not granted by family head (21%), economical problem (5%).

Table16.Information during ANC visit about pregnancy related health information

Information at ANC clinic	Number	Percent
Complete information	204	51
Incomplete information	184	49
Total	388	100

Half of the mothers had complete information during ANC clinic visit and rest had got incomplete health information related to pregnancy.

Table17.Benefit of extra food during pregnancy

Benefits of extra food during pregnancy	Number	Percent
Baby & mother health and reduce complication	167	42
Baby health	138	34
Mother health	80	20
Baby and mother health	15	4
Total	400	100

Regarding benefits of extra food during pregnancy, 42% responded that they are needed for baby and mother health and reduced complication, followed by needed for baby health (43%), for mother health (20%).

Table18.Need of TT vaccine during pregnancy

TT vaccine needed	Number	Percent
No	13	3
Yes	387	97
Total	400	100

Most of the mothers (97%) told that TT vaccine was required during pregnancy.

Table19.Number of TT vaccine taken during pregnancy

Number of TT vaccine	Number	Percent
Twice	190	47
Once	198	50
Not taken	12	3
Total	400	100

50% of the mothers had taken TT vaccine once, followed by twice (47%) and not taken (3%).

Table20.Iron tablets needed during pregnancy

Need of iron tablets	Number	Percent
No	12	3
Yes	388	97
Total	400	100

Most of the mothers (97%) had responded the need of iron during pregnancy.

Table21.Benefits of iron tablet intake

Benefits of iron tablets	Number	Percent
Growth of baby	113	28
Prevent anemia	209	52
No idea	78	20
Total	400	100

52% of mothers replied that iron tablets in pregnancy was taken to prevent anemia, followed by growth of the baby(28%) and no idea of benefits of iron (20%).

Table 22.Duration of intake of iron tablets during pregnancy

Duration of iron intake	Number	Percent
Four-nine months	53	13
Four months to 45 days after delivery	186	47
No idea	161	40
Total	400	100

47% of mothers replied duration of iron intake from 4 months to 45 days after delivery, followed by no idea of duration of iron intake(40%), and 4-9 months (13%).

Table23.Intake of Anti-helminthes medicine during pregnancy

Intake of anti-helminthes	Number	percent
No	129	32
Yes	271	68
Total	400	100

Two thirds of mothers had taken anti-helminthic medicine during pregnancy.

Table24.knowledge of the danger signs during pregnancy

knowledge of the danger signs	Number	Percent
Yes	376	94
No	24	6
Total	400	100

Most of mothers (94%) had knowledge of danger signs during pregnancy.

Table25.type of danger signs during pregnancy

Type of danger signs	Number	Percent
Swelling of hand, face	155	41
Swelling of hand, face and bleeding, and other combination	98	26
Bleeding	83	22
Headache	40	11
Total	400	100

41% knew about swelling of hand and face, followed by swelling of hand, face and bleeding, and other combination (26%), bleeding (22%) and headache (11%)

Table26.management of danger sign during pregnancy

Management of danger sign	Number	percent
take to hospital	243	61
Take rest	105	26
No idea	52	13
Total	400	100

In case of danger signs, they took to hospital (61%), followed by taking rest (26%) and no idea what to do during danger signs (13%)

Table27.pregnant woman need to take rest in day time during pregnancy

Pregnant woman need to take rest	Number	Percent
Yes	43	11
No	357	89
Total	400	100

Most of the mothers (89%) responded that no rest was required during day time.

Table28.Duration of rest during day and night

Duration of rest	Number	Percent
2 hr day & 6-8 hr night	301	88
only night	49	12
Total	400	100

Most of mothers (88%) responded that they required rest two hour day and 6-8 hours in night.

Table29.knowledge about skilled birth attendant (SBA)

Knowledge about SBA	Number	Percent
Doctor and nurse	178	45
Health worker	186	46
Mother in law	20	5
No idea	16	4
Total	400	100

46% of the mothers knew that health workers were the skilled birth attendants, followed by doctors and nurses (45%), mother in law (5%).

Table30.Preparation regarding the child birth

Preparation regarding the child birth	Number	Percent
No	22	5
Yes	378	95
Total	400	100

Most of the mothers (95%) had made preparation for child birth during pregnancy.

Table31.kinds of preparation usually done for child birth during pregnancy

Column1	Number	Percent
Transportation	50	14
Place of delivery	93	25
Kit box	40	10
Collection of money	70	18
All preparation	109	28
Not done	22	5
Total	384	100

28% of mothers had done all types of preparation, followed by for place of delivery (25%), collection of money (18%), kit box (10%) and no any preparation by 5% of mothers.

Table32.Preference for place of delivery

Preference for place of delivery	Number	Percent
Home	105	26
Hospital	96	24
Health post	199	50
Total	400	100

74% of the mothers had preferred for health post and hospital and 26% at home for baby delivery

Table33.Time to reach the nearest birth center

Time to reach the nearest birth center	Number	Percent
More than one hour	110	28
Thirty minute	151	38
Sixty minute	139	34
Total	400	100

Most of the birthing centers (72%) were within the reach of 30-60 minutes and 28% were more than one hour.

7. DISCUSSION

Among the mothers who were in the study, 60% belonged to nuclear type and 40% belonged to joint family type. 18% of the respondents were Muslim and 82% were Hindu. Occupation of husband was led by farmer (51%), followed by Foreign labourer (36%), businessman (9%), job holder (3%) and labourer (1%). Occupation of mother was led by housewife (75%), followed by farmer (23%) and business (2%). Education of mother was illiterate (70%), followed by primary (27%), secondary (2%) and higher education (1%). Literature suggests that improving women's educational status is the best strategy to improve the maternal health as well as women's status in the society. Studies in Nepal show that mother's education is the best predictor and most important factor that influence ANC visits in Nepal^{21, 22}. Educated women are more likely to realize the benefits of using maternal health services. Matsumura and Gubhaju emphasized that education increase the chances of women using maternal health care, if the service is available even in the rural areas³². Women's illiteracy rates in Nepal (65%) are nearly doubles that of men and should be the focus of female education²³. Evidence from Pakistan showed that removing barriers in limited and restricted mobility among girls and providing an opportunity for education has positive impact on maternal health outcomes¹⁸.

Socio-economic status

The source of income was agriculture (54%), followed by labourer (32%), others (11%), service (3%). Sufficiency of food year round was more than 12 month (22%), six-twelve months (51%), three-six month (25%) and less than three month (2%). About 37.7% of the populations live below the national poverty line in Nepal²³. Cost for essential services and supplies prevent many women from receiving skilled care during pregnancy, childbirth, and the postpartum period in Bangladesh²⁶. According to Griffith and Stephenson, the cost (including direct fees) needed to pay for the services and transport to reach to the health facilities and indirect costs in the form of the loss of the women's household duties being a barrier to services utilisation in India²⁷. Similarly, costs including direct fees as well as the cost of transportation, drugs and supplies, multiple demands on women's time are major obstacles in the maternal health service utilisation in Nepal²¹. This study explores the factors associated with neonatal mortality and maternal health care in Nepal. The subjects were 4375 births reported in the 1996 Nepal Family Health Survey. Maternal and child health care was found to have a significant association with neonatal mortality, although preceding birth interval and sex of child had stronger effects. Four aspects of maternal care were found to be highly associated with region, household ownership of assets, mother's education and father's education. This indicates that accessibility, affordability and availability of maternal health care are

important factors to consider in future research on neonatal mortality²⁸. Making the services affordable for all poor people is essential to improve the maternal health. Developing national policies that ensure the removal of financial barriers like fees for essential services and supplies that prevent many women from receiving skilled care during pregnancy, childbirth, and the postpartum period, should be the Government priority. Government of Nepal recent initiative of maternity allowance of 500, 1,000 to 1,500 rupees to be given to pregnant woman for institutional delivery and 300 rupees for a skilled attendant who conducts delivery is the positive action. This initiative should be advertised widely so that every pregnant woman is encouraged to have safe delivery and improved the service utilization. Improving communication and transportation system Improved transportation system can save women life when they need emergency obstetric services. The Three-Phases-of-Delay model identifies barriers to (or the potential for delay) in women accessing Emergency Obstetric²⁹. The three phases are: Phase 1: deciding to seek care on the part of the individual, the family, or both; Phase 2: reaching an adequate health care facility; Phase 3: receiving adequate treatment once at an appropriate health facility. Generally the poorest women have least knowledge of major obstetric complications or are least likely to seek medical care for any complications (Phase 1 delay), and they are also more likely to delay when they did seek care (Phase 2). Perceived poor quality of health services, difficulties in transportation and cost have been shown to deter women from seeking care and reaching a facility. Thus the poorest women are at greatest disadvantage in the first two phases of delay. Poor women are also probably disadvantaged when they actually get to a facility (Phase 3) in that they may have to wait longer before receiving adequate treatment once at an appropriate health facility. Provision of free ambulances could be important intervention, so that high-risk deliveries could be referred to hospitals or well-equipped obstetric and gynaecology centres without wasting time and also considering that the family may be too poor to afford the ambulance. Because of geographical inaccessibility, Shakya and McMurray recommended mobile clinic/camp could be useful to improve maternal health in Nepal³⁰.

Mothers had to take permission from family head (82%) and permission not required in 18%. Decision maker in the family was father in law (43%), followed by husband (20%), mother in law (12%), self (22%). Mothers preferred to go with mother in law (73%). followed by husband (16%), friend (4%).

Mobility and education opportunity can play an important role on their exposure to new ideas, development and confidence in interacting with the larger world. Similarly, involving women in decision-making processes within the family can help them to use the health services. According to Sharma making education free and compulsory to girls will significantly and consistently improve women's ANC, postnatal care and childbirth survival rates. She also recommended that the information and education message regarding women's health needs should reach husbands and families, as they are the main decision makers³¹.

Increased health care worker emigration is contributing to a shortage of trained health professional in Nepal. Women's position in the society and women's vulnerability Nepalese women has low status in society. Women's lower status in the family, where decisions regarding mobility and expenditures for health care are in the hands of men or older females, may prevent them from seeking care for their own health problems³². According to Shakya and McMurray Nepalese husbands may not be willing to send their wives for medical checks when only male doctors are available³⁰. Likewise, other family members such as mothers-in-law may not want to send their daughters-in-law to the health facilities. Limited mobility and education opportunity for women have a major impact on their exposure to new ideas, development of inter-personal skills, initiative and confidence in interacting with larger world¹⁸. Furthermore, lack of freedom on movement prohibits women to access information. The majority of women in Nepal have to ask the head of house (husband or father in law) to spend money, even for health care services. Women's lack of decision-making power within the family and community, their lack of education and economic power, restrict their ability to seek and receive care during pregnancy and childbirth³³. Moreover Nepalese women also have poor knowledge about diet and nutrition. Therefore, nutritional anemia is one of the major contributors to the high maternal mortality rate in Nepal. Frequent pregnancies and inadequate nourishment of women during pregnancy place them at high risk during delivery²².

Knowledge about ANC:

Mothers had heard about ANC (96%) and 4% of the mother had not heard about ANC. Mothers had heard about ANC from Female community health volunteers (47%), followed by health workers (33%) and radio/television (12%). Programme interventions such as outreach worker's visits, radio programmes on maternal health, maternal health information disseminated through various mass media sources and raising women's status through education was able to explain the observed change in utilization. Health worker visits and educational status of women showed a large association, but radio

programmes and other mass media information were only partially successful in increasing use of maternal health services. Socioeconomic and demographic variables such as household economic status, number of living children and place of residence showed stronger association with use of maternal health services than did intervention programmes.³⁴

Most of the respondent mothers had visited ANC during their pregnancy (97%) and 3% of the mother had not visited ANC clinic. 41% of the mothers had visited four times (41%), followed by only once (34%), 2-3 times (22%), and more than four times (3%). Four times ANC visit is considered standard for complete antenatal care. At the national level, the reported coverage of at least four time antenatal visits was observed at 56.8 percent from among the ANC first visits during the FY 2066/67.³⁵

Reason for not visiting four times was that they thought four visits were not required (73%), followed by permission was not granted by family head (21%), economical problem (5%). Half of the mothers had complete information during ANC clinic visit and rest had got incomplete health information related to pregnancy. Although certain obstetric emergencies cannot be predicted through antenatal screening, women at least can be educated to recognise symptoms leading to potentially serious conditions and to take immediate action³⁶. ANC is an opportunity to inform women about the danger signs and symptoms for which assistance should be sought from a health care provider without delay. One of the most important functions of antenatal care is to provide health information and services that can significantly improve the health of women and their infants³⁷. The effective treatments of obstetric complications, by means of essential and emergency obstetric care, are vital. Maternal health services, such as ANC, skilled assistance during delivery and postnatal care, along with adequately equipped health institutions play a major role in the reduction of maternal mortality and morbidity²².

All of the mothers responded that extra food is required during pregnancy. Regarding benefits of extra food during pregnancy, 42% responded that they are needed for baby and mother health and reduced complication, followed by needed for baby health (43%), for mother health (20%). Most of the mothers (97%) told that TT vaccine was required during pregnancy. 50% of the mothers had taken TT vaccine once, followed by twice (47%) and not taken (3%). Most of the mothers (97%) had responded the need of iron during pregnancy. 52% of mothers replied that iron tablets in pregnancy was taken to prevent anemia, followed by growth of the baby (28%)

and no idea of benefits of iron (20%). 47% of mothers replied duration of iron intake from 4 months to 45 days after delivery, followed by no idea of duration of iron intake (40%), and 4-9 months (13%). Two thirds of mothers had taken anti-helminthic medicine during pregnancy.

Danger signs of pregnancy:

Most of mothers (94%) had knowledge of danger signs during pregnancy. 41% knew about swelling of hand and face, followed by swelling of hand, face and bleeding, and other combination (26%), bleeding (22%) and headache (11%). In case of danger signs, they took to hospital (61%), followed by taking rest (26%) and no idea what to do during danger signs (13%). Most of the mothers (89%) responded that no rest was required during day time. Most of mothers (88%) responded that they required rest two hour day and 6-8 hours in night. Government should train more doctors and nurses to fill the shortfall and ensure that they do not all emigrate. Health care providers need to be trained to listen to women's needs, desires and fears, and to discuss highly personal or culture-specific aspects of pregnancy and delivery. Maintain the privacy and confidentiality is equally important to improve the maternal health care utilization. It is important to increase awareness among the general public as well as among primary level health care workers that every delivery is a potential high risk delivery, best conducted in a well equipped centre since 15 percent of the deliveries may have life threatening conditions. Education about the danger signs during pregnancy and delivery among the women is very important³⁸. Men involvement is needed in order to improve maternal well-being of women³⁹. Male involvement in maternal health has recently been promoted as a promising new strategy for maternal health⁴⁰. Since men are the primary decision maker of most Nepalese families, men's involvement in maternal health matter could promote a better relationship between men and women in household in women empowerment. Mullay and colleague state that involving husband/partner and encouraging couple joint decision making in maternal health may provide an important strategy in achieving women's empowerment, which ultimately help to reduce the maternal morbidity and mortality⁴¹.

The national average of ANC first visits as percent of expected pregnancy has shown 20 percent increase in the FY 2066/67 (87.4 percent) compared to FY 2065/66 (67.5 percent). According to MDG, delivery by SBA has to be achieved by 60 percent by the year 2015 (HMIS started collecting information on SBA and other than SBA only after FY2007/2008). There is also a sharp increase in the percentage of SBA

delivery at the health facility in FY2066/67(26.2%) compared to the previous FY2065/66 (15.9%). Percentage of delivery by other than SBA in health facility has also been slightly increased over the last one year period (from 1.4% in Y2065/66 to 2.3% in FY2066/67). Similarly, there is about 10 percent increase in the percentage of delivery by SBA at home in FY2066/67 compared to that in FY2065/66. During the FY 2066/67, 87.4 percent of the expected pregnant women received ANC services at least for one time. Similarly 41.3 percent of deliveries were conducted by health workers during the FY2066/67, which has increased by almost 10 percent compared to the FY2065/66. Institutional delivery has also been increased by more than 10 percent in FY2066/67 compared to the last fiscal year. Postnatal service coverage as a percentage of expected pregnancies were 49.7 percent during FY2066/67, showing sharp increase (almost 10% increases) compared to last fiscal year in F.Y 2065/66.³⁵

The age patterns of first marriage and motherhood and covariates of early marriage, delayed consummation of marriage and early motherhood in Nepal using data from the 2000 Nepal Adolescent and Young Adult Survey (NAYA). Both unmarried and married male and female youths (age 14–22) were included in the survey. The analysis is based on 2800 urban youths and 5075 rural youths with complete information on the variables examined. Proportional hazard models are used to estimate covariates of early marriage and early motherhood, and logistic regression models are used to estimate covariates of delayed consummation of marriage. The results show that early marriage and early motherhood are quite common among Nepalese women, especially in rural areas. Early marriage is much less common among men. Delayed consummation of marriage is common among very young brides, especially in rural areas. The main covariates associated with early marriage and early motherhood was respondent's education, region of residence and ethnicity. The main covariates of delayed consummation of marriage are age at first marriage, region of residence and ethnicity. The study highlights the need to focus on less educated female youths in Terai region in order to reduce the reproductive and child health risks associated with early marriage and early childbearing²⁴.

Data on ever-married women aged 15-49 from the 2001 Nepal Demographic and Health Survey were analyzed to explore three dimensions of women's position within their household-decision making, employment and influence over earnings, and spousal discussion of family planning. Logistic regression models assessed the relationship of these variables to receipt of skilled antenatal and delivery care. Few women reported participation in household decision making, and even fewer had any control over their own earnings. However more than half reported discussing family planning with their husbands, and there were significant differences among subgroups in these indicators of women's position. Though associations were not consistent across all indicators, spousal discussion of family planning was linked to an increased likelihood of receiving skilled antenatal and delivery care (odds ratios, 1.4 and 1.3, respectively). Women's secondary education was also strongly associated with the greater use of health

care. Gender inequality constrains women's access to skilled health care in Nepal. Interventions to improve communication and strengthen women's influence deserve continued support. The strong association of women's education with health care use highlights the need for efforts to increase girls' schooling and alter perceptions of the value of skilled maternal health care²⁵

This study result showed that percentage of women with educational attainment of School Leaving Certificate (SLC) and above who attended the ANC visits was double as compared to the illiterate women. Similarly, data on economic status against ANC use shows that 81.4% of women with more than four thousand per monthly income avail the ANC services. The coverage is nearly 5 times higher for four or more ANC visits made by these women as compared to the women with lesser income.

Even with the best possible antenatal screening, any delivery can become a complicated one requiring emergency intervention. Therefore, skilled assistance is essential to delivery care. ANC being a pathway to institutional delivery as seen in many studies, this study tried to look upon the relation between these variables in the study area. The results showed that the difference in the percentage of hospital delivery among women who made four or more visits as compared to women who never visited ANC clinics was obvious. Around 90% women following four or more ANC visits were hospital delivered as compared to 18.18% of women not making any ANC visits. The difference was found to be statistically significant ($p < 0.01$). The results showed that 66% of the deliveries happened in hospital and assisted by the doctors. And 34% were the home deliveries, among which 26% were assisted by the family or relatives and 8% by the traditional birth attendants (TBA). Seventy percent of women in 20-34 years of age group whereas 58% of women of over 35 years of age delivered in assistance of doctor. Nearly seventy nine percent of women with first pregnancy and 69.6% of women with second pregnancy, delivered in health facility as compared to 50% of women with fourth or more pregnancies. Like ANC service use the place and attendance during delivery was found to be associated with education and economic status. The percentage of delivery assisted by doctors was nearly double in women with SLC and above education as compared to illiterates. Sixty percent of illiterate women delivered in assistance of family or relatives. Similarly, 69.8% of women with higher income level delivered at hospital in assistance of doctor as compared to 42.9% of women with lesser income⁴³.

According to the study based on world DHS, the relationship between four or more antenatal care visits and delivering in a medical facility – hospital, health centre or clinic – is even more pronounced. Women reporting at least four antenatal care visits were on average 3.3 times more likely to deliver in a medical facility than other women. The difference between the two groups of women is especially large in Bangladesh and Ethiopia, both countries with low overall levels of antenatal care use Educational status plays vital role in availing health services. World DHS

suggests that women with secondary education are twice more likely to have antenatal care than women with no education. But in some countries the disparity is much larger, particularly in Asia. In Nepal, women with secondary education are 8 times more likely to report at least four antenatal visits than women with no education. This study showed that the percentage of women of more than 35 years of age, who did not attend the antenatal visits, is 36.8%. A good percentage of these women made the antenatal visits. Statistics suggests that antenatal coverage rate is increasing in these years. The similar findings can be seen in this study. World Demographic and Health Survey (DHS) on 45 developing countries showed that higher parity women less encounters antenatal care components. Age is one of the most important factors for pregnancy complications. Younger age group of 15-19 and over 35 age groups are considered risky. Studies showed that women older than 35 are less likely to make antenatal visits²⁷.

Limited resources and administrative capacity tied with strong underlying needs for health services create serious challenges to the Government of Nepal. Programmes aimed at reducing maternal mortality should be based on the principle that every pregnant woman is at risk for life-threatening complications. An important intervention for Safe Motherhood is to make available of health workers with midwifery skills at every birth including those in rural settings. Availability of quality emergency obstetric care and referral system are equally important. Reducing the maternal mortality rate cannot be achieved only by focusing on the availability of basic and comprehensive obstetric care in primary and secondary health facilities. Proper management of underpaid, poorly motivated and poorly organised health workforce, improved health infrastructure are basic requirement in the improvement of maternal health. Similarly, comprehensive health promotion through appropriate training of healthcare workers would be beneficial to improving maternal health in Nepal. Interventions should address not only the medical problems but also need to deal with wider social problems. Interventions should focus to improve the status of women in society including increasing female literacy and empowerment to tackle the maternal health problems⁴⁴.

Political instability Political instability and the deteriorating situation arising from political conflict remain a threat to health care delivery in Nepal. Attacks have damaged many health facilities, and staff is often reluctant or unable to travel in rural areas. Many women are reported to have died during childbirth because they could not reach emergency obstetric care due to strike, due to restricted movement of vehicles³¹. Because of lack of security and political conflict, health care professionals do not want to work in rural areas and this is one of the factors, which encourages medical doctors and qualified nurses to migrate abroad. There are limited health facilities and extreme pressure in Out-Patient Departments (OPD) in Nepal. Overcrowding in hospitals OPD makes it impossible to have privacy; lack of adequate training of health care providers to maintain confidentiality and privacy are issues that deter women from seeking care³¹. Poorly equipped government health facilities are discouraging women from using services which are easily accessible in urban areas of Nepal. Lack of resources and shortage of trained

health professional serious shortages of skilled attendants are common throughout developing countries. Nepal continues to experience imbalance in the health workforces due to shortage of personnel and geographical maldistribution²². Shortages are especially severe in rural areas, since health professionals are often concentrated in cities³⁵.

Birth preparedness:

46% of the mothers knew that health workers were the skilled birth attendants, followed by doctors and nurses (45%), mother in law (5%). The SBA includes doctors, staff nurses and ANMs while other than SBA include HA, AHW, MCHW and VHW. It is important to note that delivery by health workers (both SBA and other than SBA) has been increased substantially to 41.3% in FY2066/67 from 31.6% in FY2065/66. Most of the mothers (95%) had made preparation for child birth during pregnancy. 28% of mothers had done all types of preparation, followed by preparation for place of delivery (25%), collection of money (18%), kit box (10%) and no any preparation by 5% of mothers. 74% of the mothers had preferred for health post and hospital and 26% at home for baby delivery. Another study showed that mothers who received antenatal checkups are two to five times more likely to give birth in a medical institution than mothers who did not receive any antenatal check-up. Mother's age and education and child's birth order also have strong effects on the likelihood of institutional delivery. Household standard of living also has a substantial effect in most cases.⁴² Like ANC service use the place and attendance during delivery was found to be associated with education and economic status. The percentage of delivery assisted by doctors was nearly double in women with SLC and above education as compared to illiterates. Sixty percent of illiterate women delivered in assistance of family or relatives. Similarly, 69.8% of women with higher income level delivered at hospital in assistance of doctor as compared to 42.9% of women with lesser income⁴³.

Most of the birthing centers (72%) were within the reach of 30-60 minutes and 28% were more than one hour. Availability of quality emergency obstetric care and referral system are equally important. Reducing the maternal mortality rate cannot be achieved only by focusing on the availability of basic and comprehensive obstetric care in primary and secondary health facilities. Proper management of underpaid, poorly motivated and poorly organised health workforce, improved health infrastructure is basic requirement in the improvement of maternal health. Similarly, comprehensive health promotion through appropriate training of healthcare workers would be beneficial to improving maternal health in Nepal. Interventions should address not only the medical problems but also need to deal with wider social problems. Interventions should

focus to improve the status of women in society including increasing female literacy and empowerment to tackle the maternal health problems⁴⁴. There are very poor roads and a lack of bridges over major rivers in rural areas in Nepal. It could be very difficult for pregnant women to travel in such conditions. Poor women in rural areas have to walk more than an hour to reach the nearest health facility. Poor road infrastructure and lack of public transport make access difficult especially when there are complications. As a result, poor women seek health care from less trained providers who are more accessible or they never seek any care. According to Mumtaz and Salway in Pakistan, women and their families avoid travelling due to fear of abortion during pregnancy in such roads²⁴. Evidences show that Antenatal Care (ANC) helps to improve maternal health and reduce maternal death. Antenatal care is an important determinant of safe delivery^{45, 36, 46}.

In addition to this, improving communication systems such as telephone facilities in remote areas play a vital role in the improvement of maternal health. If complications arise, qualified health personnel can be called. Training of Traditional Birth Attendant (TBA) In many places in rural Nepal, the services from skilled professional healthcare providers are not available and TBAs are only the source of maternal health care. Differences in casts and cultures between providers of services and users can sometimes be a barrier in the utilisation of the maternal health services in Nepal. TBAs can provide culturally appropriate services in the community setting, offering a first-line link with the formal healthcare system, and distribution of nutritional supplements. In recent years, the importance of TBA training is controversial. However, CEDPA's TBA training evaluation in Nepal showed that the trained TBA has a positive impact on maternal health⁴⁷. Studies by Rodgers and colleagues in Bangladesh recommend that the TBA training alone is not sufficient for improving health outcomes, especially in terms of maternal mortality and morbidity⁴⁸. We recognized that training and integration of TBAs is not part of Nepal's Safe Motherhood approach, however in the absence of skilled attendance at birth in rural areas, these issues cannot be ignored.

8. CONCLUSION:

More than two third of mothers were illiterate. The source of income was agriculture followed by foreign labourer. More than three fourth of mothers had to take permission from family head .Decision maker in the family was father in law and husband. Less than fifty percent of the mothers had visited four times. Reason for not visiting four times were the lack of awareness in more than two third followed by permission not granted by family head, economical problem. Most of mothers had knowledge of danger signs during pregnancy. In case of danger signs, two third of the mothers took to hospital followed by taking rest and some had no idea what to do during danger signs. Most of the mothers had made preparation for child birth during pregnancy. Three-fourth of the mothers had preferred for health post and hospital and rest at home for baby delivery.

Maternal mortality remains one of the biggest public health problems in Nepal. Lack of access to basic maternal healthcare, difficult geographical terrain, poorly developed transportation and communication systems, poverty, illiteracy, women's low status in the society, political conflict, and shortage of health care professional and under utilization of currently available services are major challenges to improving maternal health in Nepal. In order to effect real improvements in maternal health, attention needs to be focused both on biomedical and social interventions. Improving health facilities, mother's nutrition, women's position in the society such as freedom of movement, providing education to female children, integrating Traditional Birth Attendants (TBA) into local health services can play a vital role in the improvement of mothers' health. Maternal mortality is one of the key indicators of the status of reproductive health care service delivery and utilization, but it also can be an indicator of women's status in a society.

9. RECOMMENDATION:

Limited resources and administrative capacity tied with strong underlying needs for health services create serious challenges to the Government of Nepal. Programs aimed at reducing maternal mortality should be based on the principle that every pregnant woman is at risk for life-threatening complications. An important intervention for Safe Motherhood is to make available of health workers with midwifery skills at every birth including those in rural settings. Availability of quality emergency obstetric care and referral system are equally important. Reducing the maternal mortality rate cannot be achieved only by focusing on the availability of basic and comprehensive obstetric care in primary and secondary health facilities. Proper management of underpaid, poorly motivated and poorly organized health workforce, improved health infrastructure is basic requirement in the improvement of maternal health. Similarly, comprehensive health promotion through appropriate training of healthcare workers would be beneficial to improving maternal health in Nepal. Interventions should address not only the medical problems but also need to deal with wider social problems. Interventions should focus to improve the status of women in society including increasing female literacy and empowerment to tackle the maternal health problems. The education in mothers, level of health awareness in the community, involvement in decision making, economical condition, health service compliance were some issue to improve ANC visit and BPP (Birth preparedness practices) and finally to reduce maternal and child mortality. Thus, the reports were submitted to NHRC with appropriate recommendations to the concerned authority on the basis of conclusions of the study.

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11. ANNEXES:

Data Collection Instruments:

Antenatal Care (ANC) & Birth Preparedness Practices (BPP) among Mothers in Mahottari, District, Nepal

A. General Information:

i. S.N. ...Name of Respondant: VDC: Ward No.....

ii . Cluster No A B C D

iii. Religion: 1. Hindu 2. Muslim 3. Buddhism 4. Others (Specify).....

iv. Caste: 1. Schedule cast 2. General 3. Backward 4. Tribe 5. Other (specify)

v. Family Type: a) Nuclear family b) Joint family c) Extended family

vi Occupation of father: a. Farmer b. foreign labour c. Job holder d. Businessman

vii Occupation of mother: a. Housewife b. Farmer c. Job holder d. Businessman

viii. Educational Status of mother a) Illiterate b) Primary c) Secondary d) Higher Sec /slc or higher

B. Socio-economic status

1) What is your main source of income? a) Agriculture b) Service c) Labor d) Other

2) For how many months your income is sufficient? a) <3 b) 3-6 c) 6-12 d) >12

3) Do you have to take permission from your family for seeking of health services during pregnancy?
Yes/No

4) Who is decision maker in your family for seeking of health service?

a) Husband b) Father-in-law c) Mother-in-law d) Self / Others

5) With whom you prefer to go for health checkup?

a) Husband b) Mother-in-law c) friends d) Other family member/ Alone

C. Knowledge and practice about Antenatal Care and BPP

- 1) Have you heard about Antenatal care? a) Yes b) No
- 2) If yes, from where?
 - a) Health worker b) FCHV c) Husband d) Mother-in-law
 - e) Friend f) Radio/Television g) Others
- 3) Have you visited ANC clinic during your recent pregnancy? Yes/No
- 4) If yes how many times did you visit?
 - a) Once b) 2-3 times c) 4 times d) More than four times
- 5) If No why didn't you visited? a) No idea b) Not sent from home c) Not needed d) Others
6. What make you not to visit four times (Service Compliance?)
 - a. Not permitted by Husband b. Not required c. hospital is too far d. No Money
- 7) What types of information did you get from there?
 - a) Personal hygiene b) Importance of proper balanced diet and use of iodize salt
 - c) T.T. immunization d) Harmful effect of smoking and alcohol intake e) All of the above
- 8) Does a pregnant woman need extra food? a) Yes b) No
- 8) If yes why should pregnant women need extra food?
 - a) For the growth and development of baby b) For the mother's health
 - c) To prevent from the complication d) All of them e) Others
- 9) Does a pregnant woman need to take immunization against tetanus? Yes/No
- 10) If yes how many times did you take? a) once b) twice c) More than 2 times d) Not needed
- 11) Does a pregnant women need to take Iron Capsule? Yes/No
- 12) If yes why it is needed?
 - a) To prevent from the anemia b) For the growth and development of the baby

c) To prevent from the complication d) No idea

13) If yes what is the duration of taking Iron Capsule?

a) 4-9 months b) 4 month-45 days of delivery c) No idea

14) Have you taken Anti-helminthes medicine during pregnancy? Yes/No

15) Do you know about the danger sign arising during pregnancy? Yes/No

16) If yes what type of danger sign arouse during pregnancy?

- a) Swelling of hands/face b) Bleeding c) Sever headache
d) Sever abdominal pain e) Others

17) In your opinion how do you manage danger sign during pregnancy?

a) Have to take hospital b) Have to take rest c) No idea

18) In your opinion does a pregnant woman need to take rest in day time during pregnancy? Yes/No

19) If yes what is the duration of taking rest during day and night?

- a) 2 hours in day and 8 hours in night b) 2 hours in day and 6 hours in night
c) 4 hours in day and 6 hours in night d) Day time not needed; only in night

20) In your opinion who are the skilled birth attendant?

a) Doctors/Nurses b) Health personal c) Mother-in-law/friends/relative d) Others

21) Do you know about the preparation regarding the child birth? Yes/No

22) Did you do any preparation for your child birth? Yes/No

23) If yes what kinds of preparation usually done for child birth? a) Collection of money
b) Arrangement of kit box c) Place for delivery d) Management of transportation e) All of them

24) If No what is the reason you were unable to prepare for birth?

- a) Lack of knowledge b) Lack of money
c) Unco-operative behavior of family d) No tradition of preparation for birth before delivery

25) Which place did you prefer for your delivery? a) Home b) Health post c) Hospital d) Dhami ghakari

26) How long does it take you to reach the nearest birth center?

a) 15 minutes b) 30 minutes c) 60 minutes d) more than 60 minutes