

# Maternal Health Care Seeking Behavior of Nepalese Woman: A Perspective of Socio Ecological Model

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## Research article

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# Abstract

**Background** Nepal has a very high Maternal Mortality Ratio (MMR) in the South Asian region partly owing to the low utilization of maternal health services. One of the leading causes for maternal death in the rural areas of Nepal is lack of awareness about mental health. The prominent objective of this study is to explore the influencing factors utilization of maternal health care service among Nepalese women.

**Methods** This is a qualitative study performed in Kathmandu district at Tribhuvan University Teaching Hospital, in Nepal. In-depth interviews (IDIs) were administrated with 18 women with recent delivery case (within seven days). Furthermore, five Key-informants interview (KIIs) with their husbands was conducted. The data was thematically analyzed using content analysis, where Social-Ecological Model (SEM) was applied as a theoretical framework to lead thematic content.

**Results** Women's knowledge, perception, decision-making autonomy in interpersonal level, mother-in-law and husband's role in intrapersonal level, employment organization in institutional level, peer groups, and neighbors in community level, and safe-motherhood program in policy level were influencing factors to obey adequate Maternal Health Care Seeking Behavior (MHCSB). Also, negligence of women in MHC check-up, inadequate health facilities, health facilities without maternal requirement and non availability gynecologist were observed as a core barrier for utilization of MHCSB.

**Conclusions** There were numerous causes for not utilizing MHCSB: inadequate health facilities, health facilities without maternal services, and unavailability of gynecologist especially in health facilities of rural areas in Nepal. More health facilities should be built especially in remote areas and adequately equipped with maternal health services, drugs, and specialist. Further, existing health facilities should be promoted with overall maternal health care requirement with its specialist. Free MHCS should cover the cost of items required for delivery in addition to ANC, PNC check-up and institutional delivery.

## Introduction

Maternal health is a health of women during pregnancy, childbirth, and postpartum period (WHO, 2018). Especially, it includes receiving four times ANC, PNC check-up, and deliverables at health institutions or being assisted by Skilled Birth Attendants (SBA) at health institutions or home, which are crucial to prevent newborn and maternal deaths. Its prime concern is to prioritize reproductive health of women along with the well-being of newborn (Bhaskar & Bhusal, 2018).

Nepal has a very high Maternal Mortality Ratio (MMR) (258 per 100,000 live births), which is higher to its South Asian neighbors such as India (174), Bhutan (148), Bangladesh (176), Maynmar (178), Pakistan (178), and Srilanka (30) (WHO et al, 2015). Although there has been a reduction in pregnancy-related mortality in Nepal from 543 deaths per 100,000 live-births in 1996 to 259 deaths per 100,000 in 2016, much more needs to be achieved (MoHP, 2019). Nepal has low MMR partly owing to the low utilization of MHCSB (UNICEF, 2016).

In 2016, 84% of pregnant women had at least one ANC contact with a skilled provider defined as a doctor, nurses or midwife/auxiliary nurse midwife. The percentage of women who had 4 or more ANC visits increased steadily from 50% in 2011 to 69% in 2016. Similarly, the proportion of institutional delivery increased from 35% to 57% in 2011 and 2016. Similarly, the percentage of women who received a PNC assessment within two days following delivery rose from 45% in 2011 to 57% in 2016 (NDHS, 2016).

Nepal is a signatory to the Sustainable Development Goals (SDGs) target 3.1, which has set ambitious target for the country to reduce the MMR to 70 per 100,000 live births and neonatal mortality to 12 per 1,000 live births, and to achieve coverage of 90% for four ANC visits, institutional delivery, SBA delivery, and 3 PNC check-ups by 2030 Nepal Planning Commission (NPC) (NPC, 2017). To achieve this ambitious target, Nepal will need to reduce its MMR by at least 7.5% annually addressing severe inequities in maternal health access, utilization and quality.

Nepal has been implementing its safe motherhood program since 1997 with the broad aims of reducing maternal and Neonatal morbidity and mortality, and improving maternal and neonatal health. As per Department of Health Services (DHS) the safe motherhood program includes strategies focused on birth preparedness, ANC check-ups, and institutional delivery that reduce the risks of complications during pregnancy and child birth and address factors associated with mortality and morbidity (DHS, 2018). In 2005, Nepal introduced the Aama Program (Maternity Incentive Scheme) aiming to reduce financial barriers for women who seek institutional delivery and are given a case incentive of Nepali Rupees (NRs) 3,000, (NRs) 2,000, and (NRs) 1,000 in Mountain, Hill, and Terai districts respectively, with an additional NRs 800 to those women who complete four ANC visits per national protocol Family Health Division (FHD) (FHD, 2018).

In this context, this research analyzes maternal health care behavior (four ANC visits, as per national protocol in the 4<sup>th</sup>, 6<sup>th</sup>, 8<sup>th</sup>, and 9<sup>th</sup> month of pregnancy, institutional delivery, and PNC check-ups within 7 days for women during their pregnancy) of Nepalese women, using Socio-Ecological Model (SEM) approach. Furthermore, through the application of SEM approach, it can be reported that maternal health behavior is influenced by various factors such as interpersonal, intrapersonal, organizational, community, and policy levels.

## **Methodology**

### **Study design and sample size**

This is a phenomenological study which is carried out in the month of April 2020, in Nepal with the 23 target people. As per the aim and objectives of this study, researchers mainly focused to the recently delivered women who have 7 days child (N=18, IDIs) and their husband (N=5, KIIs) because of that these participants considerably have fresh information which assist to explore their experiences on MHCSB (Tong, Sainsbury, & Craig, 2007). The face to face interview was applied to the participants.

### **Research Questionnaire**

Questionnaire has been used to explore maternal health care behavior with women who had delivered within 7 days and their husbands. In this research, the IDIs and KIIs (see supplementary file 1, 2) were separately developed and employed to the participants. The questionnaire and guidelines were developed under the guidance of health experts focusing the maternal health care seeking behavior including demographic characteristics of participants, ANC, PNC check-up, and check-up during delivery. Before the final data collection, the questionnaire was pre-tested, reviewed and revised based on the outcome of the piloting.

## **Data collection**

The data collection for this research was performed in April, 2020. There were total 18 participants for IDIs and 5 for KIIs. The data were obtained through the application of IDIs and KIIs where face to face interview was conducted. The data obtained from the interview is documented in paper. Doing so, no incentives such as money or any goods were offered to the participants who agreed to be involved in this study.

## **Data analysis and theoretical framework**

Since this research follows phenomenological study, data were thematically analyzed using content analysis through the application of Socio-Ecological Model (SEM) approach (Shahabuddin et al., 2019). The SEM approach was applied as an analytical framework to develop an initial coding guide during data analysis. The SEM is a theory based framework that considers the complex interplay of multiple levels of a social system, including the interactions between individuals and the environment within the system. The SEM facilitated the exploration of mothers' experiences, the influences of their families, organizations/institutional, community, and policy levels' contexts that all work on different levels to influence maternal health care seeking behaviors.

Initial coding framework was generated by principal author (MKS) and co-authors (SPK, RA, JA, RB, DBA, and SK) separately in line with objectives of the study and the SEM after reading a subset of the transcripts. Then after all codes from subsequent transcripts were inductively added and final framework was formulated to make our model of factors or themes influencing maternal health care-seeking behavior, which is presented in the figure below. When new codes and themes were added to the framework, all data were re-evaluated to assess their relevance through content comparison. The data from IDI and KIIs were analyzed several times to obtain a sense of how these data contributed to the framework as a whole. In order to increase the validity of data, researchers with same background painstakingly read majority of the transcripts and provided input to the analysis process.

*(Adopted from Mcleroy, Bibeau, Steckler, & Glanz, 1988).*

The figure illustrates Socio-Ecological Model, which includes five levels; the individual/intrapersonal sphere, the interpersonal sphere, the organizational/institutional sphere, the community sphere, and the policy sphere (Mcleroy, Bibeau, Steckler, & Glanz, 1988).

## Ethical approval and consent

Prior to the start of this study, ethical approval was obtained from the Department of Education Ethical Board, Tribhuvan University, Nepal (registration number 512/076/077). Since all women participants' have delivery within 7 days oral informed consent was approved by the Department. Participants received detailed explanations of the study was completely voluntary and the participations were informed that they had the right to refuse to answer any questions or stop the interview at any point. Confidentiality was painstakingly maintained, only the researchers had access to the data and no personally identifying information was kept that could personally identify participants after the research had been completed. All participants gave oral consent on the informed consent form prior to participating in the study.

## Findings

### Characteristics of women and their use of maternal health services

The total 18 interviews were conducted with women having at least one child within 7 days. Of the total, 12 women were found with one child where other 6 had a first baby. Further, 5 KIIs with husbands of women were conducted. Respondents' were from the age between 16-34 years age, completed secondary to master's level education. In relation to maternal health care: N=12 women had completed their four times ANC checked-up and all N=18 delivered at hospital, and had PNC checked-up adequately.

### Social-ecological model to explore maternal health care-seeking behavior

"Ecological" means multiple levels, beyond the individual (Max et al., 2015). Thus, the Socio-Ecological Model (SEM) demonstrates that behavior is the result of the knowledge, values, and attitudes of individuals as well as social influence, including people with whom they associate, organizations to which they belong, and communities in which they live. The research presents the study findings within four broad categories that were found to influence the health care seeking-behavior of women. The study findings were categorized on the basis of SEM, which are presented level wise like individual, interpersonal, institutional, community, and policy levels.

### Individual level factors

The individual characteristics that influence behavior includes skills, knowledge, attitudes, sexual orientation, biology, motivation, gender identity, and spirituality (Mcleroy et al., 2016). As researcher noted, responses obtained from the respondents were sorted out in different four subcategories.

**Knowledge and perception of pregnancy and health risk.** Almost all of the respondents' women were aware of the pregnancy period. They revealed that it is both risk and opportunity, as illustrated by following quotes;

*'I adopted baby in close consultation with gynecologist. I had open heart surgery and taking regular medicine. I still would not adopt baby if gynoecia did not recommend me. It is a great opportunity to have*

*a child like me as a heart patient despite having its potential negative consequences'. (26-30) year's respondents, IDI)*

*'I have got married at a very young age (14) at that time my body was not physically fit and mature enough to have a child. So, I had miscarriage fourth time, this is my fifth pregnancy who is alive now. To get marry at the age of adolescent is high risk for the child and mother'. (16-20) year's respondents, IDI)*

In this scenario, out of 18 respondents, researcher found 5 of them had already one or more children. Despite their knowledge of the adverse effects of adolescent pregnancy, these women were unsuccessful at avoiding pregnancy. Remaining 13 others responded that they have a planned child.

**Knowledge and perception about maternal health.** All respondents reported that ANC visits and hospital deliveries were crucial, although (n=12) respondents reported that they received at least four times ANC visits where N=18 all delivered at the hospital. Respondent realized the importance of the ANC check up and hospital delivery like this way;

*'It is safe to go to hospital as the specialists (gynecologists) have better knowledge, they coordinate with intra specialist like cardiologist, neurologist and other many more if patients have multiple problem. (31-35) year's respondents IDI)*

There were few respondents who did not follow ANC systematically and timely due to their negligence and/or overconfidence. In response to why four times ANC visits is crucial for the child and mother of 28 years old revealed:

*'I knew that I became pregnant when my menstruation cycle stopped, it was not necessary to go to hospital for check-up. I only visited hospital during the last trimester of my pregnancy. (21-25) year's respondents, IDI)*

This is unfortunate, more than knowing a pregnancy state, what mattered the most is, it's implication in real life. There are two main reasons for such ignorance: the first being negligence and the other being mother's reluctance to share about her pregnancy.

**Decision making autonomy.** All respondents mentioned that they participated in household decision-making and the maternal health care. Mostly decisions were made with the agreement of spouse or older members of household. In response to the decision of being pregnant, a respondent replied:

*'We (spouse) were willing to have a child and didn't consult with any other person; however, family members always pressurized on planning a baby instantly after getting marriage. Further, we decided on having only one child. (31-35) year's respondents, IDI)*

The majority of respondents indicated they had decision-making autonomy towards their own health care, including maternal health. Respondents who made four times ANC visits, reported they visit as per the obtained information from differ sources like radio, television, pears, and newspapers.

## **Interpersonal/family members/relatives factors**

Interpersonal factors comprise of relationships with others and effects on social identity. The interrelationships with family members, friends, neighbors and social support, social networking, associations, culture, peer influence, emotional support and acquaintances influence significantly in the health related behavior of individuals. For instance, influences in the decision to visit a physician for non-emergency care, and the timing of doctor visits (Israel, 2015). In similar way, social relationships affect: how individuals value pregnancy period and adopt preventive health behaviors against potential risk in pregnancy ANC and PNC.

Social relationships are essential aspects of social identity. They provide important social resources, including emotional support, information, access to new social contacts and social roles, and tangible and intangible assistance in fulfilling social and personal obligations and responsibilities. These social resources, frequently referred to as social support, are important mediators and important components of overall health care behavior.

### **Family support**

A supportive environment and good relation is essential within family especially between mother-in-law and daughter-in-law during pregnancy. Mothers-in-laws are considered to be the most experienced persons to share advice about maternal health issues. Thus, their decisions about maternal health services were often heeded. One of the respondents reported that her mother-in-law took her to the health care center. Respondents mentioned their female family members play the decisive role for MHCSB.

*'My mother-in-law took me to the hospital for pregnancy check-up. (16-20) year's respondents, IDI)*

Husband of this respondent stated in relation to mother's responsibility during pregnancy that

*'Mother took more responsibility and authority especially during pregnancy period to take care and guide to daughter-in-law in the belief that they understand women's issues and health. (16-20) year's respondents, KII)*

This statement illustrates that women reside with their husband's family after marriage, and during pregnancy they depend entirely upon their mother-in-law. Further, it revealed that mother in laws have strong decision-making power in relation to pregnancy and delivery as husbands generally know little about it.

### **Cultural determinants**

The parameters of cultural determinants namely hesitation and ignorance have a strong influence on MHSB (Babalola & Fatusi, 2009). Such factors largely impact on shaping health seeking behavior. Ignorance and hesitations for maternal healthcare during pregnancy are common factors that develop

due to cultural practices and beliefs (Bhattacharjee et al, 2013). In this regard, one of respondents revealed that

*'I did not visit hospital during my first trimester of pregnancy due to un-availability of male health worker. I visited hospital only after relatives and peers pressure. (16-20) year's respondents, IDI)*

Despite having knowledge on MHCSB, women do not want to visit health institution due to negligence on pregnancy. They were neither prohibited by social norms nor family members in fact did they feel shy to expose their pregnancy with the male service providers. Thus, it is the case that respondents do not feel convenience to share their reproductive problem with male doctors.

### **Organizational/Institutional factors**

The third level of Socio-Ecological framework concerns organizations organizational factors Specific areas of concern include how organizational characteristics can be used to support behavioral changes. Organizations provide important economic and social resources. Voluntary organizations, such as neighborhood and professional associations, may serve as important mediators or mediating structures between individuals and outer environment. Organizations are important sources and transmitters of social norms and values; it provides the opportunity to build social support for health related behavior formation.

A context for health behavior, some organizations have been supporting maternal health care activities particularly in their worksites.

*'I work only 5 hours at my office during pregnancy, and offered supplementary food in cafeteria to encourage staff like me. (31-35) year's respondents, IDI)*

In some cases like when female health service providers are absent, women are hesitant to seek maternal health care. Other factors such as poor infrastructures, non-availability of maternal equipment, and lack of transportation facility, unavailability of ambulance at the time of emergency prove to be discouraging factors to utilize MHCSB. In this concern one respondent mentioned that

*'There is no minimum standard infrastructure and health facility and gynecologist for delivery service in our rural health post. So, we came in this hospital despite many discomforts: lock-down, financial crisis, no vehicle (ambulance). (26-30) year's respondents, KII)*

In this context, health organization with poor infrastructure and low quality maternal health services are the barriers of MHCSB utilization. It is evident that health services provided by all health posts are not good as it should be, especially in rural areas of Nepal.

### **Community level factors**

Community has been viewed as availability and location of health care services that promote health behavior. The importance of community is its implications for the development and implementation of health promotion.

**Community health workers' role.** The female community health workers played a significant role to encourage pregnant women to seek healthcare facilities, both for their ANC visits and delivery mode and PNC. Most of the women responded that they received maternal health care information from community members where few revealed from the FCHV. Respondents from the remote areas reported that they obtained information from the FCHV about maternal health care, along with its importance of ANC, PNC, and deliveries at health facilities.

*'After third ANC visits, one of the FCHV suggested me to visit hospital with proper equipment and experienced gynecologist in order to minimize the potential health hazards of both child and mother and I did thoroughly. (26-30) year's respondents, IDI)*

**Role of neighbors.** In village, the pregnant women and their pregnant neighbors often went to the nearest health facility for their ANC check-up. On the other hand, in city, most pregnant women visited health facility with their husband; they went with family members only in the absence of their husband.

*'I usually went to health facility for ANC check-up with a neighbor with whom my delivery dates was very close. (16-20) year's respondents, IDI)*

*I have never visited hospital without husband. I once went with my family member when my husband was out of country for his occupational business. (26-30) year's respondents, IDI)*

This statement showed that family members have decisive role during pregnancy period with regards to MHCSB.

## **Public Health Policy**

One of the defining characteristics of public health apart from its emphasis on the health of populations rather than the health of individuals is the use of regulatory policies, procedures, and laws to protect the health of community. The use of regulatory policies has had a dramatic effect on the health of the population. The success of these policies in reducing mortality and morbidity has led to the development of public policy approaches to address potential health risks from maternal period. These includes primarily a policy that restrict behaviors; such as prohibitions on having alcohol and smoking. Secondly, policies that allocate programmatic resources, such as the prevention economic and clothes grants along with grants establishment of free delivery/no delivery charge in each hospital.

**Safe Motherhood Program.** The Government of Nepal provisions different health policy for their civilian. Safe Motherhood Program is one of the policies under which Government of Nepal provides cash incentives to women making use of maternal health services, including ANC, delivery facility at health

institutions, and PNC. Despite delivering at home, women were reported to have visited health facility to receive money and baby clothes.

*'I delivered in the hospital because it provided money to the mother and clothes to the child, without any delivery charge. Quite importantly, I felt it was the safest and reliable place to minimize the health risks. (26-30) year's respondents, IDI)*

The government hospitals provide NPR 500-1000; Rs. 1000 at the hilly region, and Rs.500 in Terai. Thus, seeking remuneration is secondary; people primarily visit hospital for maternal health services. In some cases, despite public policy, hospitals and centers are unable to address cash incentive and other services people make use of MHCSB.

*'Free delivery do not address the transportation costs, other required drugs and equipment on delivery, and hospital ward charges. (31-35) year's respondents (KII)*

This is the representative voice of a civilian that nation should include overall expenditure while on delivering.

This civilian voice connotes that the nation should bear overall expenses while on delivering a child. The voice vividly addresses how government policy fails to encourage its civilians to utilize maternal health care facility.

## **Discussion**

This analysis focuses on the determinations of three outcomes variables of interest in maternal health care utilization: ANC check-up, institutional delivery, and PNC check-up. The determinants of analysis were made on the basis of MoHP recommendations: first, ANC visits at the 4<sup>th</sup> month (12-16 weeks of gestation), 6<sup>th</sup> month (20-24 weeks of gestation), 8<sup>th</sup> month (28-32 weeks of gestation), and 9<sup>th</sup> month (36-40 weeks of gestation) (Family Health Division, 2016), second, delivering at health institutions or being assisted by Skilled Birth Attendants (SBA) at health institutions, and third, three PNC check-ups: first within 24 hours of delivery, the second on the 3<sup>rd</sup> day, and the third on the 7<sup>th</sup> day of delivery Department of Health Services (DHS) (DHS, 2018). Further, for the thematic guidance, researcher utilized SEM approach: interpersonal, intrapersonal, institutional, community, and policy levels.

At the individual level, knowledge, awareness, decision making autonomy, and personal perception towards maternal health care systems, were perceived as positive influential factors to adopt maternal health behavior. In the same line of our findings, a study conducted in Indonesia sought that utilization of maternal health care behavior was closely associated with better maternal knowledge including ANC, PNC check-up, and skilled birth attendance (Kusumayati & Nakamura, 2007). Unfortunately, geographical difficulties to access to the health institutions and negligence were found as major barriers by women in seeking ANC, PNC, and institutional delivery. The similar study conducted in Nepal entitled women's status, household structure and the utilization of maternal health services found low decision making

autonomy, poor access or long distance of health post, poor awareness level were barrier of maternal health care services (Matsumura & Gubhaju, 2001). The same study found that employment of women was negatively associated with the use of maternal health services. This is because most of the women in Nepal live in rural areas and are heavily engaged in agriculture. Also, professionally engaged women have to share their burden both at home and workplace. Therefore, they barely had time to seek care,. In contrast, our research found whether women were employed or housewife it did not matter on their mental and physical health because their family members supported them throughout pregnancy.

At the interpersonal level, this research found that family members and peer groups influenced women's maternal health behavior. Most of the respondent reported that in spite of family intensive support and care and some member themselves being doctors, they still preferred institutional delivery. In contrast, a qualitative research in Nepal observed that women with low decision-making mostly followed their mothers-in-law's plans for their pregnancy and delivery care needs (Simkhada, Porter, & Teijlingen, 2010). Further, in line with other studies conducted in Nepal, (Shrestha et al, 2012), our findings showed that mothers-in-laws were considered as a most experienced and skillful person concerning maternal health service where men were the obedient one. Some other studies conducted in Nepal revealed that wealth, husband's education and good communication with the spouse increased antenatal care and delivery-service use(Anwar et al, 2009). This research found that even some family members themselves were doctors, they strongly recommended for the institution delivery due to availability of modern equipment and specialist.

At the institutional level, research found that the low accessibility of health institutions and maternal health service providers especially in rural areas. Previous studies such as (Dutta & Sengupta) 2018 and (Glei & Goldman) 2003 are similar with our findings about that parameters of geographical factors such as distance and road conditions have no significant effects on shaping MHCSB among studied population. A previous research conducted by (Koblinsky et al, 2006) stated that a number of factors are likely to be contributing to low rates of utilization of maternal health services: poor physical access to health care services due to difficult geographical locations, limited health infrastructure, and inadequacy of disease specialist in rural areas of developing countries. In sharp contrast, our research indicates that despite lock-down, poor financial resources, and paid ambulance services, women still chose hospital expecting a quality maternal health services.

As a result, in search for quality maternal health service, women head towards capital city from different areas despite lock-down and other unseen difficulties. In this context (Koblinsky et al, 2006) 's findings seems same as in many developing countries, rural postings go unfilled due to low remuneration, low prestige, poor infrastructure for babies, social isolation and lack of health facilities.

At the community level, research found that community health workers and neighbors role significantly influenced women to go for maternal health services: ANC, PNC check-up, and institutional delivery. This study viewed location of health care services promotes health behavior. The community makes importance it by enhancement and implications of health services. In same line with our findings

(Kusumayati & Nakamura, 2018) concluded that maternal health care should be provided through trained health authorities to people so that they practice it appropriately and that women are not reluctant to get those free services.

At the policy level, researcher found the government's initiative program and quality of care influenced maternal health-seeking behavior. This finding is similar to (Shahabuddin et al., 2019), quality of health services in health post, positive attitudes of health care providers, and initiative of government program directly influenced maternal health-seeking behavior of adolescent girls. In our research, some mother sought that Safe Motherhood Program (SMF) provides cash and clothes initiatives for the use of maternal health care services including ANC and PNC check-up, and an institutional delivery. In line with our findings, some studies concluded that many more people now came to the health centers for ANC and delivery because it is now free (Agan et al, 2017). The same research stated that the cost of items required for delivery, not covered by the free MHC, as a major barrier to health facility delivery utilization.

Interestingly, all mothers were outside the Kathmandu valley, in search for quality service with specialist and modern equipment. Similar studies performed in Bangladesh showed that shortage of staff and resources, poor infrastructure and the unavailability of trained medical personal impeded women who were seeking skilled maternal health services (Islam et al., 2015). Concluding the policy level factors, all respondents revealed that they visited hospital especially in search of quality services than cash incentives and clothes which government provided for systematic ANC and PNC check-up and an institutional delivery.

## Conclusions

The research revealed that in individual level, women's knowledge, perception, and decision making autonomy encouraged them to utilize the maternal health care services. In addition, family members (especially mother in law) and husband also played a prominent role in interpersonal level for females to utilize MHC services. Many factors assisted and encouraged women to opt for MHC. From a community level, neighbors and peer groups whose due date was more or less on a similar time frame assisted each other. Since, policy that includes cash prize and clothes for the new born baby encouraged women to go for MHC, more than that their awareness level plays a significant to ANC, PNC, and institutional delivery of the participants. On the another hand, negligence/over confidence of the women, geographical difficulties in rural areas, unavailability of maternal services and gynecologist in health post were found as a major barrier for utilizing MHC services.

More health facilities should be built especially in remote areas and adequately equipped with maternal equipment, drugs, and specialist. Similarly and significantly, existing health facilities should be promoted with overall maternal health care amenities. Free MHC should cover the cost of items required for delivery in addition to ANC, PNC check-up and institutional delivery.

## Abbreviations

ANC, Antenatal Care; DHS, Demographic Health Survey; FCHV, Female Community Health Workers, FHD, Family Health Division; IDI, In-depth Interview; KII, Key-informant Interview; MHC, Maternal Health Care; MHCSB, Maternal Health Care Seeking Behavior; MoHP, Ministry of Health and Population; MMR, Maternal Mortality Rate; NDHS, Nepal Demographic Health Services; NPC, Nepal Planning Commission; NR, Nepalese Rupee; PNC, Postnatal Care; SBA, Skilled Birth Attendance; SDG, Sustainable Development Goal; SEM, Socio-Ecological Model; UNICEF, United Nations International Children's Emergency Fund; WHO, World Health Organization.

## **Declarations**

### **Ethics approval and consent to participate**

Prior to the start of this study, ethical approval was obtained from the Department of Education Ethical Board, Tribhuvan University, Nepal (registration number 512/076/077). Since all women participants' have delivery within 7 days oral informed consent was approved by the Department. Participants received detailed explanations of the study was completely voluntary and the participations were informed that they had the right to refuse to answer any questions or stop the interview at any point. Confidentiality was painstakingly maintained, only the researchers had access to the data and no personally identifying information was kept that could personally identify participants after the research had been completed. All participants gave oral consent on the informed consent form prior to participating in the study.

### **Consent for publication**

Not applicable.

### **Availability of data and material**

Not applicable.

### **Competing interests**

The authors declare that they have no competing interests.

### **Funding**

The authors declare that no funding source for this study.

### **Author's contributions**

MKS is the principal investigator of the study; made substantial contributions in conception selecting design, data collection as well as analysis and interpretation of data. RA and JA were the supervisors of the research; participated in designing and managing data collection and analysis. SKP, DBA, and SK were involved in drafting and revising critically the manuscript. RB was the language editor of this study. All authors also agreed to be accountable for all aspects of the work in ensuring that questions related to

the accuracy or integrity of any part of the work are appropriately investigated and resolved. All authors read and approved the final manuscript.

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## Figures

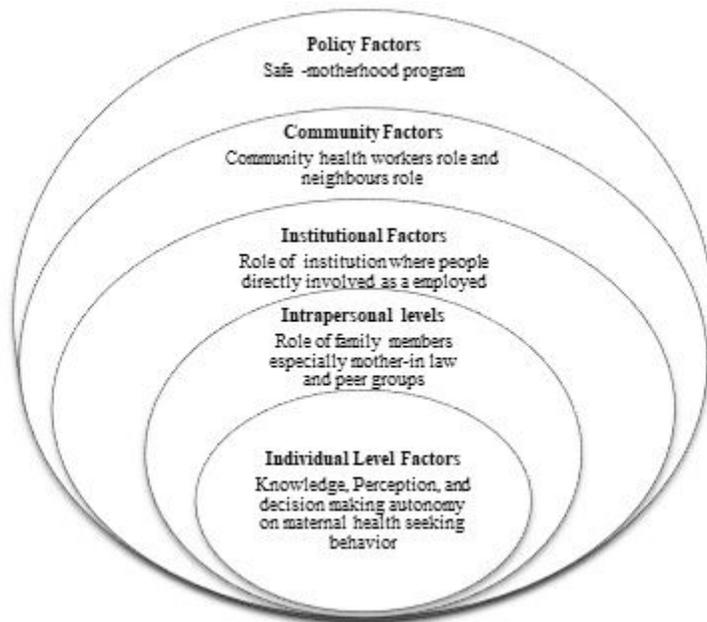


Figure 1

(Adopted from Mcleroy, Bibeau, Steckler, & Glanz, 1988). The figure illustrates Socio-Ecological Model, which includes five levels; the individual/intrapersonal sphere, the interpersonal sphere, the organizational/institutional sphere, the community sphere, and the policy sphere (Mcleroy, Bibeau, Steckler, & Glanz, 1988).

## Supplementary Files

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- [2.Consolidatedcriteriaforreportingqualitativestudies.pdf](#)
- [Supplementaryfileno2Questionnaire.pdf](#)
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