Research Article
Factors Influencing Birth Preparedness in Rapti Municipality of Chitwan, Nepal

Kusmita Silwal, 1 Jiwan Kumar Poudyal, 1 Rajani Shah, 1 Sumitra Parajuli, 2 Yubanidhi Basaula, 2 Sabika Munikar, 3 and Kanchan Thapa 4

1 Shree Medical and Technical College, Bharatpur, Nepal
2 Bharatpur Hospital, Bharatpur, Nepal
3 Om Health Campus, Chabahil Kathmandu, Nepal
4 Safa Sunaulo Nepal, Kathmandu, Nepal

Correspondence should be addressed to Kanchan Thapa; kanchanraj3@gmail.com

Received 11 October 2019; Revised 3 March 2020; Accepted 7 April 2020; Published 24 April 2020

Academic Editor: Samuel Menahem

Copyright © 2020 Kusmita Silwal et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Introduction. Birth preparedness is crucial for health quality of mother and newborn and acts as a strong contributor in mitigating maternal and newborn mortalities. Different factors are predicted to have an influence upon birth preparedness practice. This paper aims at exploring relationship between various factors and birth preparedness practice. Methods. A cross-sectional study design was used to find out the relationship between various factors and birth preparedness practice. One hundred sixty-five women residing at ward number 1 of Rapti Municipality, Chitwan who delivered in the last twelve months were selected consecutively and interviewed using a semistructured questionnaire. The collected data were analyzed using descriptive and bivariate techniques. Results. Three quarters (75.2%) of the respondents had better birth preparedness, institutional delivery was 63.0%, antenatal care (ANC) visit as per protocol was about 62.0%, and about 90% of the respondents had received counseling during ANC. Age, religion, family types, education, age at marriage, parity, number of children, knowledge on birth preparedness, knowledge on danger sign, place for ANC and delivery, and decision-makers were found to be statistically significant ($P$ value $< 0.05$) with birth preparedness practice. Conclusion. Better knowledge on birth preparedness led to a better preparedness status. Age, religion, family type, education of women and partners, parity, and number of children were the factors that influence birth preparedness. Counseling during ANC played a significant role in birth preparedness.

1. Introduction

A safe motherhood program aims at reducing maternal mortality and morbidity [1]. The average annual rate of reduction in maternal mortality is 2.9 percent; however, this is less than half of the 6.4 percent annual rate needed to achieve the sustainable development global goal of 70 maternal deaths per 100,000 live births [2]. Birth preparedness and complication readiness (BPCR) is an intervention included by World Health Organization (WHO) as an essential element of the antenatal care (ANC) package [3]. The BPCR intervention package based on the WHO IFC framework is effective in building the capacities of women and in engaging men positively in maternal and neonatal health [4]. Birth preparedness includes active preparation and decision-making for childbirth, pregnancy, and postpartum period by pregnant women and their family members [5, 6]. The effective birth preparedness plan (BPP) can positively influence and affect the health of the mother and newborn and the use of health services [5].

BPCR is nationally endorsed as a component of safe motherhood programs in countries like Ethiopia. Though high emphasis is put on improving BPCR among pregnant women, studies show that few women were saving money, identified skilled birth attendant, and were aware of the danger signs during pregnancy [7]. Nineteen percent of pregnant women residing in Cameroon did not make preparations as required by the BPCR plan [8]. Good BPCR practice was found in Thailand with the major factors influencing birth preparedness to be adult pregnancy, being married, high
education, being employed, high income, extended family, multiparity, first ANC visit <12 weeks, and average distance to hospital >2 hours [9]. Low compliance of ANC worldwide is considered as a hurdle for maternal and neonatal child health programs. In Nigeria, seventy-one percent of pregnant women are aware of the danger signs [10].

Complications during childbirth and delivery are common. WHO indicates that ninety-eight percent of stillbirth and newborn death occur in low- and middle-income countries: complications of obstetric and labor are responsible for such mishap. The care during the period is important for improving maternal and child health [11]. Nepal aims to reduce the maternal mortality ratio (MMR) to seventy per lakh live birth and neonatal mortality rate (NMR) to less than one per thousand live birth by 2030 [12]. However, Nepal still has poor birth preparedness practices, low institutional delivery, and assistance by a nonskilled practitioner during delivery [13]. It results in various complications during pregnancy, childbirth, and labor that act as major contributors for neonatal and maternal death [13, 14].

Socioeconomic factors influence the birth preparedness status. Marital status, residence, maternal occupation, partner’s educational levels, and type of health facility attended by the pregnant women were found to be significantly associated with birth preparedness [15]. Maternal and neonatal deaths can be mitigated by enhancing birth preparedness practices [8]. The present study aims at exploring the relationship between various factors and birth preparedness practices in a community of Chitwan.

2. Materials and Methods

2.1. Study Area and Period. This study was conducted in ward number 1 of Rapti Municipality, Chitwan district, Nepal, from January 1 to February 1, 2019. It is one of 77 districts of Nepal and is located in the southwestern part of province 3. It covers an area of 2,238.39 (sq. km) and in 2011 had a population of 579,984 (279,087 male and 300,897 female) people. The Rapti Municipality of Chitwan district lies in the eastern part of Chitwan. Rapti Municipality ward number 1 borders with Lothar river in the east, Rapti municipality ward no. 2 in the west, Rapti municipality ward no. 11 in the north, and the Chitwan national park or Rapti river in the south. The area covered by the Rapti Municipality ward no. 1 is 26.33 (sq. km).

2.2. Study Design. A cross-sectional study was carried out among the mothers of the ward 1 of Rapti Municipality of Chitwan who delivered in the past 12 months.

2.3. Sample Size and Sampling Methods. The sample size was calculated assuming the maximum heterogeneity of population, i.e., unknown prevalence ($P = 0.5$) at 95% confidence interval and 8% margin of errors using the formula for calculation of sample size as below: Where $n = \text{minimum sample size}, \frac{Z^2 \times d^2}{n} = 5\% \text{ level of significance, i.e., } 1.96, p = \text{prevalence } 50\%(0.5), \text{ and } q = 1 - p; \text{ hence, } q = 1 - 0.5 = 0.5, d = \text{maximum tolerable error set at } 8\%\text{or } 0.08$.

Thus, substituting the formula:

$$n = \left(\frac{(1.96 \times 1.96) \times (0.5) \times (0.5)}{0.08}\right)^2 = 150. \quad (1)$$

Considering 10% nonresponse rate, the desired sample size was calculated as $n = 150 + 15 = 165$.

The two-step sampling procedure was used. First, the ward number 1 was selected purposively and then the respondent consecutively until we reached the desired sample size of 165 on the first contact basis with the researcher.

2.4. Data Collection. A pretested semistructured questionnaire was used to collect information from respondents. Pretesting of the data collection tool was done among ten percent of the respondents at the adjoining ward of the municipality. Modification on the questionnaire was done as per the findings of pretesting. Face-to-face interview was done for 15 to 20 minutes by visiting the house of the respondents. Recall bias was minimized by involving women who gave birth recently (in the past 12 months). Content validity was maintained through pretesting. The questionnaire was translated into the local language and was retranslated to English to check for consistency. The questionnaire consisted of 49 questions exploring information on sociodemographic status, knowledge and practices on birth preparedness, family and community role in birth preparedness, and health service-related data.

2.5. Data Processing and Analysis. The collected data were then checked for completeness and recoded for analysis. All the data were entered into SPSS version 20.0 for analysis. The data were analyzed using a descriptive and bivariate analysis at 95 percent confidence level. The characteristics were stated significant at the chi-squared and Fisher exact tests at $P < 0.05$.

2.6. Ethical Consideration. The present study obtained ethical approval from the Institutional Review Committee of Shree Medical and Technical College (Ref# SMTC-IRC-20190107-10). Informed written consent was obtained from the respondents before data collection. Those respondents who were not willing to give information, who were unable to hear/speak and/or mentally ill were excluded in this study. The voluntary participation of the respondents was ensured throughout the study. Confidentiality and privacy were maintained.

2.7. Study Variables

2.7.1. Dependent Variable. The dependent variable was birth preparedness.

2.7.2. Independent Variables. Sociodemographic variables include age, education, caste/ethnicity, religion, occupation, family type, parity, sex of recent child, and age at marriage. Knowledge-related variables include knowledge about BPCR, source of information, obstetric problems/complications, danger signs, reason of not having BP, delivery place, knowledge about ANC, and visit as per protocol.
Roles of family and neighbors include decision-making and support. Service-related variables include availability of skilled health workers, availability of drug and equipment, adequacy of physical facilities, distance to health facilities, perception to health services, and satisfaction with care.

2.8. Operational Definitions

2.8.1. Birth Preparedness. Women were considered prepared for birth when at least one of five components of birth preparation, i.e., identifying transport, saving money, identifying health facility, identifying blood donors, and identifying skilled health providers, was practiced. It was further categorized into poor and better preparation [16]. In the present study, there were 6 questions related to preparation. The categorization was done as follows.

(1) Poor preparation: when the respondents had less than two birth preparation as mentioned in definition of birth preparedness
(2) Better preparation: when the respondent had three or more birth preparation as mentioned in the definition of birth preparedness

2.8.2. Knowledge. It is the total knowledge of danger sign, antenatal care, and preparation for child birth [17]. In the present study, there were total of 10 knowledge-related questionnaires. The knowledge classification was done based on following scoring

(a) No knowledge: the respondents who did not answer any question correctly
(b) Poor knowledge: the respondents who gave less than two correct answers
(c) Better knowledge: the respondents who gave 3 and more answers correctly.

2.8.3. Counseling. It is the delivery of information regarding birth preparedness that health service provider provides during ANC visit [18]. There were altogether 6 counseling-related questionnaires. The following categorization was done as below

(a) No counseling: if the health personnel did not give any counseling during ANC to the respondent then it was categorized as no counseling
(b) Poor counseling: if the health personnel gave 2 or less information during ANC to the respondent then it was categorized as poor counseling
(c) Better counseling: if the health personnel gave 3 or more information during ANC to the respondents then it was categorized into better counseling.

2.8.4. Level of Satisfaction and Perception. It means the respondents’ satisfaction and perceived need of health service were provided by the nearest health facilities or by the health personnel.

2.8.5. Available Health Workers. Presence of health workers in health facility was categorized as sometimes, always, and do not know.

2.8.6. Sufficiency of Physical Infrastructure. Sufficient, insufficient, and do not know [19].

3. Results

In this study, seventy-seven percent of respondents were of the age group 21 to 35 years (Table 1). There was nearly eight percent of respondents whose age was 20 or less years. The Hindu and Buddhist respondents were forty-seven and forty-one percent respectively. Nearly seventy-eight percent were Janajati. Thirty-eight percent were educated up to the primary level whereas thirty-four percent had secondary and higher level of education. Similarly, forty-nine percent of the husbands had a primary level education, whereas eighteen percent did not have any formal schooling. Among total respondents, ninety-three percent were housewives or involved in agricultural works, whereas seven percent were engaged in other professions. Agriculture was a major profession among approximately forty-one percent of husbands. The age at marriage was less than 20 years for almost sixty-seven percent of the respondents. At present, fifty-seven percent of the respondents had male children followed by forty-three percent having a female child.

Among the respondents, eighty-four percent had ANC check-up. Among them, only sixty-two percent had four visits as per protocol. The major causes of not visiting for ANC were distance (31%) and lack of information (58%). Similarly, among those who attended ANC, only about fifty-three percent received better counseling. Furthermore, seventy percent of the respondents had better knowledge about danger signs requiring treatment during pregnancy. Seventy-seven percent of the respondents had heard about birth preparedness. The most important source of information reported was health workers (87%) followed by friends/relatives (76%). Furthermore, seventy-five percent reported to have done birth preparation. Among those who did not do any preparation, forty-nine percent reported they did not need to prepare, whereas twenty-nine percent reported they lacked the information about BPP. Seven percent of them also reported having birth preparedness being bad for the child (Table 2).

Sixty-two percent of the respondents reported joint decision-making by husband and wife, and thirty percent of them stated being able to decide themselves about childbirth. Ninety-four percent knew about the place for delivery. However, still, there were thirty-seven percent respondents who gave birth at home. Non-health worker conducted delivery at home. Among the total respondents, forty-three percent had some sorts of complications during pregnancy and delivery. The complications prevalent among the respondents were severe headache (14%), vaginal bleeding/severe abdominal pain (53.5%), blurring vision (1.4%), swollen
hands and feet (14.1%), and labor lasting more than twelve hours (29.6%) (Table 3).

BPP was further compared with different variables of interest (Table 4). The age factor played an important role in birth preparedness. Seventy-seven percent of the respondents who were between 21 to 35 years reported having better preparedness. Buddhist and Hindu respondents had better preparedness status, whereas Christian respondents had poor preparedness. Among respondents living in nuclear family, 78 percent had better preparedness. Furthermore, among educated respondents eighty percent reported having better preparedness. Similarly, husband’s education played a significant role for BPP, and it is found that of the husbands with some sorts of education, 78 percent reported well prepared. Respondents who were married after the age of twenty had better preparedness. Those who had given only one birth were better prepared than others. Similarly, those who had three and more children were least prepared. Relationship of age, religion, family type, education, husband’s education, age at marriage, parity, and number of living children was statistically significant (P < 0.05) with birth preparedness practice. However, occupation had no significant relationship with birth preparedness (P value = 0.512).

Ninety-four percent of the respondents with better knowledge of birth preparedness had better status on BPP. About eighty-six percent who were able to demonstrate better knowledge about danger signs in pregnancy reported to have a better birth preparedness status. Ninety-five percent

### Table 1: Distribution of respondents by sociodemographic characteristics (n = 165).

| Background characteristics | Number (n) | Percent (%) |
|----------------------------|------------|-------------|
| Age (years)                |            |             |
| ≤20                        | 13         | 7.9         |
| 21-35                      | 127        | 77.0        |
| ≥36                        | 25         | 15.1        |
| Religion                   |            |             |
| Hindu                      | 77         | 46.7        |
| Buddhists                  | 68         | 41.2        |
| Christian                  | 20         | 12.1        |
| Family type                |            |             |
| Nuclear                    | 104        | 63.0        |
| Joint/extended             | 61         | 37.0        |
| Caste                      |            |             |
| Brahman/Chhetri            | 45         | 27.3        |
| Janajati                   | 112        | 67.9        |
| Dalit                      | 8          | 4.8         |
| Education                  |            |             |
| No schooling               | 46         | 27.9        |
| Primary level              | 63         | 38.2        |
| Secondary and above levels | 56         | 33.9        |
| Husband’s education        |            |             |
| No schooling               | 30         | 18.2        |
| Primary level              | 81         | 49.1        |
| Secondary and above levels | 54         | 32.7        |
| Occupation                 |            |             |
| House wife/agriculture     | 154        | 93.3        |
| Working women              | 11         | 6.7         |
| Husband’s occupation       |            |             |
| Farming                    | 67         | 40.6        |
| Business                   | 10         | 6.1         |
| Service                    | 25         | 15.2        |
| Labor                      | 34         | 20.6        |
| Foreign employment         | 29         | 17.6        |
| Age at marriage (years)    |            |             |
| >20                        | 110        | 66.7        |
| 20 to 34                   | 55         | 33.3        |
| Sex of recent child        |            |             |
| Male                       | 94         | 57.0        |
| Female                     | 71         | 43.0        |

### Table 2: Distribution of status of birth preparedness-related practices, knowledge, and status among respondents (n = 165).

| Characteristics                                      | Number (n) | Percent (%) |
|------------------------------------------------------|------------|-------------|
| ANC check-up in last pregnancy (n = 165)             | 139        | 84.2        |
| ANC visit as per protocol (n = 139)                  | 86         | 61.9        |
| Reason for not going ANC visit (n = 26)              |            |             |
| Distance to the health facility                      | 8          | 30.8        |
| Lack of information                                  | 15         | 57.7        |
| Shyness                                              | 3          | 11.5        |
| Counseling during ANC (n = 139)                      |            |             |
| No counseling                                        | 14         | 10.1        |
| Poor counseling                                      | 52         | 37.4        |
| Better counseling                                    | 73         | 52.5        |
| Knowledge about danger signs requiring treatment (n = 165) |  |             |
| No knowledge                                         | 15         | 9.1         |
| Poor knowledge                                       | 34         | 20.6        |
| Better knowledge                                     | 116        | 70.3        |
| Heard about birth preparedness (n = 165)             | 127        | 77.0        |
| Source of information for birth preparedness (n = 127)* |  |             |
| Health worker                                        | 110        | 86.6        |
| Radio/TV                                             | 11         | 8.7         |
| Newspaper                                            | 4          | 3.1         |
| Poster/pamphlet                                      | 4          | 3.1         |
| Friends/relatives                                    | 97         | 76.4        |
| Had birth preparedness (n = 165)                     | 124        | 75.2        |
| Reason of not having birth preparedness (n = 41)     |            |             |
| Bad for child                                        | 3          | 7.3         |
| No need to prepare                                   | 20         | 48.8        |
| Lack of information                                  | 12         | 29.3        |
| No problem arises before                             | 6          | 14.6        |

*Multiple answers.
of the respondents having ANC showed a better preparedness status. Those who were counseled at the time of ANC showed a better preparedness status. Ninety percent of respondents who made the decision about their childbirth showed a better preparedness status. Ninety percent of the respondents having ANC showed a better preparedness status. The majority of respondents in the present study were of the age group 20 to 35 years which is similar to the study conducted in Western Ethiopia where the mean was 28 (±5) years [23]. The observed differences and similarities might possibly be due to similar sociodemographic characteristics of countries. These factors may influence on birth preparedness. Another study indicates that those mothers aged more than thirty-five years and without education should be given more emphasis on explaining about complication readiness and birth preparedness [24]. Despite of higher frequency of lower-aged mother in this study, similar intervention on BPP seems essential.

In this study, four among ten had only a primary level of education whereas one among ten had completed secondary or higher education. So, important emphasis on education level is required. Similarly, birth preparedness practice was found better among those with higher education than with lower education in Thailand, too [25]. Findings from a narrative review from Nepal advocated for the education linked with job opportunities in order to improve the health status of women [26].

In this study, association between parity and birth preparedness practice was identified. Similarly, as per the study conducted in Thailand, primipara were more likely to prepare themselves for birth and its complications [23]. Likewise, respondents who had attended the antenatal clinic during pregnancy of recent delivery were two times more likely to prepare themselves than those who had not [23]. In Nepal, it is recommended to have at least four ANC visits from skilled service providers [27]. ANC visits are the primary contact visit with health care provider where they receive knowledge and information on birth preparedness. So, this paper gave emphasis on ANC visit and counseling. Thus, the ANC visit can lead to better birth preparedness.

### Table 3: Experiences, knowledge, and satisfaction with service provider during delivery by respondents (n = 165).

| Characteristics                                      | Number (n) | Percent (%) |
|------------------------------------------------------|------------|-------------|
| Final decision-maker (n = 165)                       |            |             |
| Self                                                 | 49         | 29.7        |
| Jointly                                               | 102        | 61.8        |
| Family members/relatives                             | 14         | 8.5         |
| Know about place for delivery (n = 165)              | 155        | 93.9        |
| Delivery place (n = 165)                             |            |             |
| Home                                                 | 61         | 37.0        |
| Health institution                                   | 104        | 63.0        |
| Attendant during home delivery (n = 61)               |            |             |
| Health workers                                       | 2          | 3.2         |
| Non-health workers                                   | 61         | 96.8        |
| Had complications during pregnancy and delivery      | 71         | 43.0        |
| Types of complications (n = 71)                      |            |             |
| Severe headache                                      | 1          | 1.4         |
| Vaginal bleeding/severe abdominal pain               | 38         | 53.5        |
| Blurring vision                                       | 1          | 1.4         |
| Swollen hands and feet                               | 10         | 14.1        |
| Labor lasting more than 12 hours                     | 21         | 29.6        |
| Availability of health workers at nearest health facility (n = 165) |            |             |
| Sometimes                                            | 72         | 43.6        |
| Always                                               | 73         | 44.2        |
| Do not know                                          | 20         | 12.1        |
| Perception of services in a health facility (n = 165) |            |             |
| Good                                                 | 66         | 40          |
| Average                                              | 80         | 48.5        |
| Do not know                                          | 19         | 11.5        |
| Availability of drugs and equipment (n = 165)         |            |             |
| Sometimes                                            | 69         | 41.8        |
| Always                                               | 74         | 44.8        |
| No                                                   | 2          | 1.2         |
| Do not know                                          | 20         | 12.1        |
| Sufficiency of physical infrastructure (n = 165)      |            |             |
| Sufficient                                           | 84         | 50.9        |
| Insufficient                                         | 62         | 37.6        |
| Do not know                                          | 19         | 11.5        |
| Satisfaction with care and respect provided (n = 165) |            |             |
| Often satisfactory                                    | 54         | 32.7        |
| Satisfactory                                         | 90         | 54.6        |
| Not satisfied/do not know                            | 21         | 12.7        |

4. Discussion

Birth preparedness has been globally recognized as an essential component of safe motherhood helpful in reducing the delay to reach, seek, and receive care. These delays are avoidable and are crucial in saving the life of the mother and newborn [5]. Decision-making is one of the factors for timely treatment and receiving care. The autonomy of the mother and the decision-making process has a significant contribution in reaching care on time. A study reports that the process is influenced by various other factors such as women education, belief system of family, resource scarcities and financial constraints [20].

A study from Nepal highlighted that men are the major decision-makers in the family [21]. In this study, too, respondents who made the decision jointly with their husbands are found to have better birth preparedness. It is crucial to state the findings from Bangladesh that it is important to engage husband positively in maternal and newborn health [4]. These engagements might also have cultural influences. It is realized about the importance of engaging males in decision-making about birth preparedness from the study of the northeast part of Ethiopia which recommended advocating policies, strategies that can improve awareness and engagement of men in maternal care [22].
status through better counseling. More than eight among ten have their first ANC visit; however, only six among ten completed their ≥4 ANC, which is similar to the context in Thailand where seven out of ten pregnant women planned to attend at least four antenatal visits with a skilled provider [25]. The major barriers for ANC visits identified in this study were distance and lack of information about birth preparedness. One among two received better counseling regarding childbirth and pregnancy at the time of ANC visit. Moreover, seven among ten were aware, that if there was any unexpected danger sign, they need to visit the health service provider.

The major source of information about birth preparedness identified in this study was health workers followed by friends/relatives. The health service providers are the valued sources of information for birth preparedness. It is also advocated for the inclusion of messages about birth preparedness as an important package in promoting the institutional delivery in Ethiopia [28]. In this study, eight out of ten women heard about the birth preparedness; however, seven out of ten women were better prepared on BP which is in contrast to the findings of Western Ethiopia, where seven out of ten reported to have known about BP; however, only three out of ten were well prepared for birth and its complications [23]. The findings of this study, however, are similar to that of Thailand where eight out of ten had good BPCR [25]. In this study, the major reasons for poor birth preparedness were lack of information and misconception of birth preparedness being bad for a child.

Birth preparedness is directly focused on reducing newborn death where Nepal has experience of implementing the community-based newborn program [18]. Furthermore,
there are still challenges such as inadequate policy environment, resources, funding gaps, inadequate programs, and insufficient supplies and commodities in the health system of Nepal [29].

The immediate family members and relatives were the major birth attendant for home delivery in this study. Similar findings have been presented by another study of Nepal which indicates that about sixty-five percent of home deliveries were conducted by family members/relatives [30]. Another study reveals that the reason for home delivery is an easy and convenient environment which is also influenced by different sociodemographic characteristics [31]. A published review stated that higher socioeconomic status, education, privileged ethnicities, Hindu people, having access to transport and health services, getting family support, able to decide themselves, empowered, and having a birth preparedness plan are the major determinants of maternal health [26]. Another study concluded that emphasis should be given to women without education, to improve accessibility and provide advice on birth preparedness and danger signs to reduce home delivery [32].

Thus, the present study only provided the status of birth preparedness through cross-sectional study in a ward of Rapti Municipality located at Chitwan of Nepal in 2019. However, there are other information to explore, and still, there are several shortcomings in this paper. Therefore, recommendation on another study with large sample size and a more sophisticated and reliable technique converging the larger areas had been done.

5. Conclusions

Better knowledge on birth preparedness led to a better preparedness status. Age, religion, family type, education of women and partners, parity, and number of children were the factors that influenced birth preparedness. Counseling during ANC played a significant role in birth preparedness. Therefore, emphasis should be on counseling through completed ANC about birth preparedness and danger signs.

Data Availability

The data used to support the findings of this study is available from the corresponding author upon request.

Ethical Approval

The present study received ethical approval from the Institutional Review Committee of Shree Medical and Technical College (Ref# SMTC-IRC-20190107-10).
**Conflicts of Interest**

The authors declare no conflicts of interest.

**Acknowledgments**

We would like to acknowledge all the participants in the present study. We would like to thank the Institutional Review Committee of Shree Medical and Technical College (SMTC-IRC).

**References**

[1] Family Health Division, Department of Health Services HMG of N, National Safe Motherhood Plan, 2002.

[2] UNICEF, Maternal mortality declined by 38 per cent between 2000 and 2017 [Internet]. Matern. MortalAvailable from: https://data.unicef.org/topic/maternal-health/maternal-mortality/.

[3] G. Carroli, J. Villar, G. Piaggio et al., “WHO systematic review of randomised controlled trials of routine antenatal care,” Lancet, vol. 357, no. 9268, pp. 1565–1570, 2001.

[4] A. E. Rahman, J. Perkins, T. Mazumder et al., “Capacities of women and men to improve maternal and newborn health : effect of a community-based intervention package in rural Bangladesh,” Journal of Global Health, vol. 9, no. 1, 2019.

[5] M. P. RA, N. Khadka, J. M. Moore, and M. Sharma, “Are birth-preparedness programmes effective ? Results from a field trial in Siraha District,” Journal of Health, Population and Nutrition, vol. 24, pp. 479–488, 2006.

[6] D. Marcos and D. Bogale, “Birth preparedness and complication readiness among women of child bearing age group in Goba woreda , Oromia region , Ethiopia,” BMC Pregnancy Childbirth, vol. 14, no. 1, article 1157, 2014.

[7] A. K. Berhe, A. A. Muche, G. A. Fedak, and G. M. Kassa, “Birth preparedness and complication readiness among pregnant women in Ethiopia: a systematic review and meta-analysis,” Reprod Health, vol. 15, no. 1, article 624, p. 182, 2018.

[8] Y. P. Ijang, S. N. N. Cumber, C. N. Nk fusai, M. A. Venyuy, F. Bede, and P. M. Tebeu, “Awareness and practice of birth preparedness and complication readiness among pregnant women in the Bamenda Health District Cameroon,” BMC Pregnancy Childbirth., vol. 19, no. 1, article 2511, p. 371, 2019.

[9] N. Kiataphiwas and K. Kaewkiattikum, “Birth preparedness and complication readiness among pregnant women attending antenatal care at the Faculty of Medicine Vajira Hospital, Thailand,” International Journal of Women’s Health, vol. 10, pp. 797–804, 2018.

[10] A. O. Sabageh, O. A. Adeoye, A. A. Adeomi, D. Sabageh, and A. A. Adejimi, “Birth preparedness and complication readiness among pregnant women in Osogbo Metropolis, Southwest Nigeria,” Pan African Medical Journal., vol. 27, article 27-74-4493-7266, 2017.

[11] M. Islam, “The safe motherhood initiative and beyond,” Bulletin of the World Health Organization, vol. 85, no. 10, p. 735, 2007.

[12] D. Marcos and D. Bogale, “Birth preparedness and complication readiness among women of child bearing age group in Goba woreda, Oromia region, Ethiopia,” BMC Pregnancy and Childbirth, vol. 14, no. 1, p. 282, 2014.

[13] Ministry of Health, Nepal; New ERA; ICF International. Nepal Demographic Health Survey (NDHS) Report 2016, 2016, Available from: https://www.dhsprogram.com/pubs/pdf/FR336/FR336.pdf.

[14] R. Shrestha, “Maternal mortality in nepal: addressing the issue,” Inquiries Journal, vol. 4, no. 10, 2012.

[15] J. Cheptum, “Factors affecting birth preparedness among pregnant women attending public antenatal clinics in Migori County, Kenya,” Biomedical Journal of Scientific & Technical Research, vol. 3, no. 4, 2018.

[16] D. Paudel, A. Thapa, P. R. Shedain, and P. Paudel, Trends and determinants of neonatal Mortality in Nepal: Further analysis of the Nepal Demographic and Health Surveys, 2001-2011, Nepal Ministry of Health and Population, New ERA, and ICF International, Calverton, MD, USA, 2013.

[17] F. V. Moshi, A. Ernest, F. Fabian, and S. M. Kubisi, “Knowledge on birth preparedness and complication readiness among expecting couples in rural Tanzania: Differences by sex cross-sectional study,” PLOS ONE, vol. 13, no. 12, 2018.

[18] F. August, A. B. Pembe, E. Kayombo, C. Mbkenega, P. Axemo, and E. Darji, “Birth preparedness and complication readiness—a qualitative study among community members in rural Tanzania,” Global Health Action, vol. 8, no. 1, p. 26922, 2015.

[19] R. Shah, E. A. Rehfueuss, M. K. Maskey, R. Fischer, P. B. Bhandari, and M. Delius, “Factors affecting institutional delivery in rural Chitwan district of Nepal : a community-based cross-sectional study,” BMC Pregnancy and Childbirth., vol. 15, no. 1, 2015.

[20] A. S. Miltenburg, Y. Roggeveen, J. van Roosmalen, and H. Smith, “Factors influencing implementation of interventions to promote birth preparedness and complication readiness,” BMC Pregnancy and Childbirth, vol. 17, no. 1, p. 270, 2017.

[21] Y. R. Baral, K. Lyons, J. Skinner, and E. R. van Teijlingen, “Determinants of skilled birth attendants for delivery in Nepal,” Kathmandu University Medical Journal, vol. 8, no. 3, pp. 325–332, 2012.

[22] A. G. Mersha, “Male involvement in the maternal health care system: implication towards decreasing the high burden of maternal mortality,” BMC Pregnancy and Childbirth, vol. 18, no. 1, p. 493, 2018.

[23] T. Asrat, N. Baraki, N. Assefa, and G. Alemkere, “Birth preparedness among women who gave birth in the last twelve months in Jardega Jarte District, Western Ethiopia,” Journal of Pregnancy, vol. 2019, 8 pages, 2019.

[24] G. A. Azeze, T. M. Mokonnon, and M. W. Kercho, “Birth preparedness and complication readiness practice and influencing factors among women in Sodo town , Wolaita zone , Southern Ethiopia , 2018 ; community based cross-sectional study,” Reproductive Health, vol. 16, no. 1, 2019.

[25] V. Kamineni, A. D. Murki, and V. L. Kota, “Birth preparedness and complication readiness in pregnant women attending urban tertiary care hospital,” Journal of Family Medicine and Primary Care, vol. 6, no. 2, pp. 297–300, 2017.

[26] R. B. Khatri and R. Karkee,”Social determinants of health affecting utilisation of routine maternity services in Nepal: a narrative review of the evidence,” Reproductive Health Matters, vol. 26, no. 54, pp. 32–46, 2018.

[27] Ministry of Health and Population, Annual Report Department of Health Services, 2014, Available from: http://dohs.gov.np/wp-content/uploads/2014/04/Annual_Report_2070_71.pdf.
[28] C. Rosado, J. A. Callaghan-Koru, A. Estifanos et al., “Effect of birth preparedness on institutional delivery in semiurban Ethiopia: a cross-sectional study,” *Annals of Global Health*, vol. 85, no. 1, 2019.

[29] R. B. Khatri, S. R. Mishra, V. Khanal, K. Gelal, and S. Neupane, “Newborn health interventions and challenges for implementation in Nepal,” *Frontiers in Public Health*, vol. 4, 2016.

[30] P. M. S. Pradhan, S. Bhattarai, I. S. Paudel, K. Gaurav, and P. K. Pokharel, “Factors contributing to antenatal care and delivery practices in village development committees of Ilam District, Nepal,” *Kathmandu University Medical Journal*, vol. 11, no. 1, pp. 60–65, 2014.

[31] P. Dhakal, M. Shrestha, D. Baral, and S. Pathak, “Factors affecting the place of delivery among mothers residing in Jhoro-ahat VDC, Morang, Nepal,” *International journal of community based nursing and midwifery*, vol. 6, no. 1, 2018.

[32] M. Siyoum, A. Astatkie, S. Mekonnen et al., “Home birth and its determinants among antenatal care-booked women in public hospitals in Wolayta Zone, southern Ethiopia,” *PLOS ONE*, vol. 13, no. 9, 2018.