

Prevalence of Antenatal Care Practice among Marginalized Community of Nepal

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ABSTRACT

Background: The government of Nepal aims to improve the health of mothers and newborns by providing quality safe motherhood services. Increasing access and utilization of antenatal care (ANC) services are the first steps towards improving maternal and neonatal health outcomes, particularly those of the marginalized communities.

Objective: The aim of this study is to assess the prevalence and factors associated with the antenatal care visits among the marginalized community of Nepal.

Methods: A mixed-method study was conducted among 202 reproductive aged females of marginalized community in Nepal having childbirth during the last 2 years. Pre-tested semi-structured questionnaires and key informant interview guidelines were used for the collection of data. Bivariate and multiple regression analysis were carried out to find out the factors associated with the antenatal care visits. For qualitative data, thematic analysis was done.

Results: More than half (56.9%) of the participants had completed four or more antenatal care visits. Mothers with primary level of education were 2.7 times more likely to complete four or more ANC visits (AOR: 2.7, CI: 1.09-7.07). Age at marriage (AOR: 2.3, CI: 1.08-5.22), women who took decisions alone for their health (AOR: 2.9, CI: 1.22-6.96), exposure to FCHV (AOR: 2.5, CI: 1.1-5.9), knowledge about safe delivery incentive program (AOR: 3.6, CI: 1.46-9.0) and perception of "good quality" ANC service (AOR: 7.5, CI: 3.3-17.1) were significantly associated with the number of ANC visits.

Conclusion: The overall utilization of antenatal health services was low. So, there is a need of different community based maternal health programs especially targeting the marginalized females.

Keywords: Antenatal Care, Female community health volunteers, Marginalized communities, ANC, FCHV

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INTRODUCTION

Maternal health is one of the most important health indicators, and it indicates the overall health status of a country.¹ Although maternal mortality has decreased by 38% between 2000 to 2017, maternal mortality is still unacceptably high. In low and middle-income countries, 94% of all maternal deaths occur.² According to Nepal Demographic and Health Survey (NDHS), the maternal mortality ratio (MMR) from 1996 to 2016 has decreased from 539 to 239 maternal deaths per 100,000 live births.³ According to a systematic review conducted by World Health Organization, hemorrhage, sepsis, eclampsia, and pre-eclampsia are the major causes of maternal death globally.⁴ Improving the health status of a region is not possible without improving the maternal health which is influenced by various socio-economic and demographic and several other factors.⁵ Antenatal care (ANC) is a broadly used approach to improve maternal and child health as well as to improve the rate of births attended by skilled health workers.⁶ The National Safe Motherhood Program of Nepal has recommended at least four ANC Checkup services scheduled as first visit at the 4th month, second at the 6th month, third at the 8th month and fourth at the 9th month of pregnancy.⁷

In Nepal, the proportion of women who had four or more ANC visits has increased from 9 % in 1996 to 69% in 2016.³ Those women who had better socio-economic and educational status and those living in urban area were more likely to visit skilled care personnel for ANC visits compared to those with low socio-economic status, less education and those living in rural areas. A further analysis of Nepal demographic and health survey revealed that those belonging to high caste had more ANC visits compared to the women from marginalized communities.⁸ Marginalized communities in Nepal are suffering from inequality in economic, social and political rights, opportunities and benefits.⁹ Thus the study was conducted to assess the prevalence and factors associated with ANC visits among the marginalized community of Nepal.

MATERIALS AND METHODS

The dependent variable in the study was Antenatal care practice, which was dichotomized on into "less than 4 visits" and "4 or more visits" as recommended by government of Nepal during pregnancy.⁷

Age of the respondents was categorized into 3 groups: less than 20 years, 20-29 years, and

more than or equal to 30 years. Educational status was categorized as illiterate, primary, some secondary, SLC and above.¹⁰ Occupation of mothers was categorized as agriculture, daily wages, and housewives. Occupation of husband was categorized as agriculture, business, daily wages and abroad workers. Age at marriage of mothers was categorized into less than 20 years and 20 or more years.¹¹ The total number of members in the family was categorized into "less than 6" and "6 or more". Income has been categorized based on the salary scale of the Nepal Government, according to which NPR 19500 is used as a reference point to categorize the income of workers.¹² The ethnicity of marginalized women included Dalit and Janajati. Parity of the mothers included nulliparous, primiparous, and multiparous. Decision-making person for ANC checkup was categorized as ownself, both husband and wife, and others. Perceived discriminatory behavior of health workers was categorized as "Yes" and "No". If the mothers said that they received all the services like iron supplementation, medical checkup, TT2+ injection, blood pressure checkup, intestinal drugs, and health education, then we classified the ANC services as "good", and in case any one of the components above were missing, we classified it as "poor."¹³

A community-based cross-sectional study was carried out in Sindhupalchowk district of Nepal from April – June, 2019 with mixed methods. According to Nepal Population and Housing Census 2011, the total population of the Municipality was 45343, with 23614 males and 21729 females.¹⁴ Towards of the municipality consisting of the highest number of marginalized people were selected for the study. A ward is the smallest administrative unit of a municipality.

Local resident mothers having childbirth during the last 2 years of the municipality were selected for the study. A list of eligible mothers was prepared with the help of health facilities and Female Community Health Volunteers of the municipality. This yielded a total of 202 eligible mothers who were enrolled in the study. For the qualitative part, we carried out interviews with a health-post in-charge, a ward chairperson, FCHV, an auxiliary nurse midwife, and a school teacher.

A pre-tested structured questionnaire was used for the collection of quantitative data, and key informant interview guidelines were used for the collection of qualitative data. The questionnaire and key informant interview guidelines were translated

into the local language and were administered to the respondents by the investigators themselves. Ethical approval was taken from the Ethical Review Board (ERB) of Nepal Health Research Council. Written informed consent was taken from the

Table 1: socio-demographic and socio-economic characteristics of the respondents

Characteristics	Frequency (%)
Mother's age in years (mean: 26.7, SD: 6.3)	
< 20	20(9.9)
20-29	126(62.4)
≥30	56(27.7)
Mother's Education	
Illiterate	46(22.8)
Primary	127(62.9)
Some secondary	29(14.4)
Husband's education	
Illiterate	20(9.9)
Primary	101(50.0)
Some secondary	47(23.3)
SLC or higher	34(16.8)
Mother's occupation	
Housewives	59(29.2)
Agriculture	83(41.1)
Daily wages	60(29.7)
Husband's occupation	
Agriculture	39(19.3)
Business	34(16.8)
Abroad	65(32.2)
Daily wages	64(31.7)
Family number	
<6	98(48.5)
≥6	104(51.5)
Age at marriage (years)	
<20	126(62.4)
≥20	76(37.6)
Income (NPR)	
<19500	127(62.9)
≥19500	75(37.1)
Time to reach health facility	
<30 minutes	83(41.1)
≥ 30 minutes	119(58.9)
Decision making autonomy for health	
Respondent alone	72(35.6)
Respondent and husband	48(23.8)
Husband alone and others	82(40.6)

Table 2: Health-related characteristics of the participants

Characteristics	Frequency (%)
Number of ANC visits	
<4 visits	87(43.1)
≥4 visits	115(56.9)
Place of ANC visit	
Government hospitals	173(85.6)
Private hospitals	29(14.4)
Parity of mothers	
Nulliparous	23(11.4)
Primiparous	90(44.6)
Multiparous	89(44.1)
Exposure to FCHVs	
Yes	146(72.3)
Know about the Safe Delivery Incentive Program	
Yes	154(76.2)
Perceived discriminatory behavior of health workers	
Yes	42(20.8)
Iron supplementation	
Yes	171(84.7)
Medical Checkup	
Yes	172(85.1)
Received TT2+ injection	
Yes	157(77.7)
Blood pressure measurement	
Yes	163(60.7)
Intestinal parasitic drug	
Yes	183(90.6)
Health education	
Yes	174(86.1)
Perceived quality ANC	
Good	102(50.5)
Poor	100(49.5)

respondents, and confidentiality of the information was ensured by maintaining privacy while collecting the data.

The collected data was edited manually to check for completeness and accuracy. Quantitative data was entered in Microsoft Excel 2013 and was analyzed using IBM SPSS Statistics version 23. Descriptive analysis was performed using frequency, percentage, mean and standard deviation. Bivariate and multivariate logistic regression analyses were carried out to find out the association between different predictors and the outcome. p- value of less than 0.05 were considered statistically significant. Qualitative data were transcribed, translated from Nepali to English and thematic analysis was done.

RESULTS

The socio-demographic and socio-economic characteristics of the participants. The mean age

Table 3: Bivariate and Multivariate logistic regression analysis of different characteristics and ANC visits

Characteristics	Antenatal Care Visit		COR (95% C.I.)	P-value	AOR (95% C.I.)	P-value
	< 4 ANC (n= 87)	≥ 4 ANC (n= 115)				
Mother's age in years						
< 20	11 (12.6)	9 (7.8)	1			
20-30	54 (62.1)	72 (62.6)	1.6 (0.63-4.20)	0.313		
≥30	22 (25.3)	34 (29.6)	1.9 (0.67-5.30)	0.227		
Mother's Education						
Illiterate	30 (34.5)	16 (13.9)	1		1	
Primary	47 (54.0)	80 (69.6)	3.2 (1.57-6.46)	0.001*	2.7 (1.09-7.07)	0.034*
Secondary	10 (11.5)	19 (16.5)	3.5 (1.34-9.46)	0.011*	2.1 (0.57-7.8)	0.259
Husband's education						
Illiterate	13 (14.9)	7 (6.1)	1		1	
Primary	45 (51.7)	56 (48.7)	2.3 (0.85-6.27)	0.10	1.25 (0.33-4.78)	0.736
Some Secondary	21 (24.1)	29 (25.2)	2.9 (1.005-8.90)	0.049*	1.52 (0.34-6.69)	0.578
SLC and above	11 (12.6)	23 (20.0)	3.8 (1.21-12.46)	0.023*	1.15 (0.23-5.75)	0.864
Mother's occupation						
Housewives	21 (24.1)	38 (33.0)	2.3 (1.13-4.95)	0.022*	1.02(0.36-2.85)	0.97
Agriculture	32 (36.8)	51 (44.3)	2 (1.06-4.09)	0.033*	1.2 (0.50-3.2)	0.60
Daily wages	34 (39.1)	26 (22.6)	1		1	
Husband's occupation						
Agriculture	13 (14.9)	26 (22.6)	2.7 (1.19-6.28)	0.017*	2.2 (0.72-6.88)	0.16
Business	12 (13.8)	22 (19.1)	2.5 (1.06-5.94)	0.036*	1.5 (0.47-4.78)	0.49
Abroad	25 (28.7)	40 (34.8)	2.2 (1.08-4.43)	0.029*	2.1 (0.87-5.31)	0.097
Daily wages	37 (42.5)	27 (23.5)	1		1	
Family number						
<6	39 (44.8)	59 (51.3)	1			
≥6	48 (55.2)	56 (48.7)	0.77(0.44-1.34)	0.362		
Age at marriage (years)						
<20	62 (71.3)	64 (55.7)	1		1	
≥20	25 (28.7)	51 (44.3)	1.9 (1.09-3.57)	0.023*	2.37 (1.08-5.22)	0.032*
Income (NPR)						
<19500	62 (71.3)	65 (56.5)	1		1	
≥19500	25 (28.7)	50 (43.5)	1.9 (1.05-3.45)	0.032*	1.4 (0.60-3.21)	0.43
Time to reach health facility						
<30 minutes	34 (39.1)	49 (42.6)	1			
≥ 30 minutes	53 (60.9)	66 (57.4)	0.86 (0.49-1.52)	0.614		
Decisionmakingautonomy for health						
Respondent alone	26 (29.9)	46 (40.0)	2.2 (1.18-4.32)	0.014*	2.9 (1.22-6.96)	0.015*
Respondent and husband	15 (17.2)	33 (28.7)	2.8 (1.32-5.95)	0.007*	2.1 (0.81-5.7)	0.12
Husband alone and others	46 (52.9)	36 (31.3)	1		1	
Place of ANC visit						
Government hospitals	72 (82.8)	101 (87.8)	1			
Private hospitals	15 (17.2)	14 (12.2)	0.66 (0.302-1.464)	0.309		
Parity of mothers						
Nulliparous	8 (9.2)	15 (13.0)	2.1 (0.80-5.44)	0.128	1.6 (0.48-5.81)	0.416
Primiparous	32 (36.8)	58 (50.4)	2 (1.11-3.69)	0.021*	1.6 (0.76-3.57)	0.204
Multiparous	47 (54.0)	42 (36.5)	1		1	
Exposure to FCHVs						
No	31 (35.6)	25 (21.7)	1		1	
Yes	56 (64.4)	90 (78.3)	2 (1.068-3.71)	0.030*	2.5 (1.1-5.9)	0.030*
Know about Safe Delivery Incentive Program						
No	30 (34.5)	18 (15.7)	1			
Yes	57 (65.5)	97 (84.3)	2.8 (1.45-5.54)	0.002*	3.6 (1.46-9.0)	0.006*
Perceived discriminatory behavior of health workers						
No	69 (79.3)	91 (79.1)	1.01 (0.50-2.0)	0.975		
Yes	18 (20.7)	24 (20.9)	1			
Perceived good quality ANC						
No	62 (71.3)	38 (33.0)	1		1	
Yes	25 (28.7)	77 (67.0)	5 (2.74-9.20)	<0.001*	7.5 (3.3-17.1)	<0.001*

of the participants was 26.7 years. More than two-third (70.3%) of the participants followed Buddhist religion, and more than two-third (70.8%) were of Janajati ethnic group. Among the participants, three in five (62.9%) had primary level of education. Half (50.0%) of the participants' husbands had primary level of education. Regarding the occupation of the participants, more than two-fifth (41.1%) were engaged in agriculture. Almost one-third (32.3%) of the participants' husbands worked abroad. More than three in five (62.4%) were married before the age of 20 years, and almost two-third (63%) had a family income of less than NPR 19500. For three in five (58.9%) of the participants, the distance to reach the health facility was more than 30 minutes, and more than one-third (35.6%) of the participants made the decision by themselves for their own health (Table 1).

The health-related characteristics of the participants. Key informants such as health facility in-charge and auxiliary midwife also stated that the women from the marginalized communities had incomplete ANC visits (table 2).

In the bivariate analysis (table 3), the socio-demographic and socio-economic characteristics like mothers' education, husbands' education, mothers' occupation, husbands' occupation, age at marriage, and family income were significantly associated with the number of ANC visits. Similarly, the characteristics like "decision-making autonomy for health by the participants", parity, "exposure to FCHVs", and "perceived quality of ANC" were significantly associated with the number of ANC visit.

Table 3 also shows the multivariate analysis of the characteristics of the participants and the ANC visits. Mothers education was significantly associated with ANC visits in which those with primary education were 2.7 times more likely to complete four or more ANC visits (AOR: 2.7, CI: 1.09-7.07). Key informants also echoed the fact that those women who were from the marginalized community were less likely to complete 4 ANC visits. The participants who had married at 20 years of age or late were 2.3 times more likely to complete four or more ANC visits (AOR: 2.3, CI: 1.08-5.22).

The women who took decisions alone for their health were almost three times more likely to complete four or more ANC visits (AOR: 2.9, CI: 1.22-6.96). According to the FCHVs and other health personnels, most of the mothers in the

families of the marginalized community were not allowed to take the decision on their own affecting their health-seeking behavior, including the ANC visits. Most of the decisions were taken by their husbands or their mother-in-laws or both.

Exposure to FCHV (AOR: 2.5, CI: 1.1-5.9) and knowledge about safe delivery incentive program (AOR: 3.6, CI: 1.46-9.0) were statistically significant with the number of ANC visits. According to the health personnel and FCHVs, they said that they visited the marginalized community frequently to make them aware of the importance of a minimum of four ANC visits and institutional delivery. According to the chair of a ward, "there may be some [communication] gaps between the marginalized community and health personnel. [May be] The health personnel could not make them aware of the importance of safe motherhood, which should be addressed by all of us."

Perception of "good quality" ANC service was highly significantly associated with the number of ANC visits (AOR: 7.5, CI: 3.3-17.1). According to the health personnel, the women visiting the health facilities for ANC got all the services like iron supplementation, intestinal drugs, measurement of blood pressure, medical checkup, TT2+ injection, and health education. The health post in charge in his own words, "Some women might have a preoccupation in their mind that they don't get adequate services when they visit here, we are continuing to increasing awareness through home visits and outreach clinics."

DISCUSSION

The mixed-method study was conducted among marginalized community of Sindhupalchowk district, Nepal. The study found that more than half (56.9%) of the participants had given birth during the last 2 years had four or more ANC visits which is almost equal to a study conducted in Gorkha among the marginalized community and in a rural area of Banke district of Nepal.^{15,16} Similar study conducted in Mahottari district of Nepal found that the women had lower four or more ANC visits than this study.¹³

Age of the participants is not significantly associated with the utilization of ANC, and the finding is supported by a study conducted in Mahottari of Nepal.¹³ The finding is not supported by a study conducted in Gorkha district of Nepal.¹⁶ In this study, the participants of higher age have higher odds than the participants with lower

age. The participants with higher ages may have experienced previous pregnancies and may be aware of the shortcomings of poor ANC utilization.

Women with a higher level of education were more likely to complete at least four ANC visits. The Nepal Demographic and Health Survey also has shown that mothers with higher education had a higher proportion of four or more ANC visits.¹⁷ Different studies conducted in Nepal and other parts of the world have shown education level of mothers to be associated with four or more ANC visits.^{13,15,16,18-20} Higher the education of mothers, more the mothers will be aware of the health services and more the mothers will utilize the sexual and reproductive health services from the skilled health personnel. Husband's education has not shown to be significantly associated with ANC practice and is supported by a study conducted in Nepal and Rwanda.^{18,21} A study conducted in Terai region of Nepal does not support the finding.¹³ Occupation of the participants has not shown to be significantly associated with ANC practice and is supported by some studies.^{18,22-24} Participants' occupation was significantly associated with ANC practice in a study conducted among marginalized community in Nepal.¹³ The different findings may be due to the different ecological regions of the study. Occupation of participants' husband also did not show significant association with ANC practice and is in agreement with studies conducted in Nepal and different parts of the world.^{13,15,18} Family size was not significantly associated and is in agreement with a similar study of Nepal.¹³ The mothers who were married at 20 years or more than 20 years were more likely to complete 4 or more ANC visits and the association was statistically significant. These findings were echoed in the studies conducted in India.^{25,26}

In this study, income was not significantly associated with ANC visits and is in agreement with a similar study conducted in Mahottari district of Nepal¹³ but different studies conducted in different parts of Nepal are in disagreement with the findings of this study.^{20,21,27} Studies conducted in India are also in disagreement with the findings of this study.^{22,24} This may be because ANC services are free in Nepal so, income may not necessarily be associated with ANC practices. Time to reach health facility is not associated with ANC visit and the finding is similar to a study conducted in Nepal and India.^{13,28} The time to reach the health facilities in the wards of municipalities was not more than one hour due to which it may not be associated with ANC visit.

Decision making autonomy is very crucial for mothers in the families. In a country like Nepal, women have to rely on their husband and family members (mostly in-laws) to take any decision. Different studies have shown that decision making autonomy plays a significant role in the utilization of maternal health services.^{13,16,20,28,29} In this study, decision making autonomy for health was significantly associated with ANC visits. Place of ANC visit did not play significant role in this study. Studies have shown that multiparous women, due to their previous experiences may not feel the need of ANC.²⁹⁻³¹ Parity of women was not significantly associated with ANC visits and is in agreement with studies conducted in Mahottari district and eastern Nepal.^{13,32} Exposure of mothers to FCHVs is significantly associated with ANC visits and is supported by a study conducted in Nepal support the finding.¹³ In a country like Nepal, FCHVs have played a significant role in increasing the utilization of maternal health services. In this study, the participants exposed to FCHVs may have received the information regarding the ANC services. The participants who knew about safe delivery incentive program were more than 3 times more likely to complete 4 or more ANC visits. The finding is supported by some studies conducted in Nepal.^{13,33} There was no discriminatory behaviour of the health workers in the study which is supported by a study conducted in India.³⁴ The perceived "good quality" ANC was highly significantly associated with ANC visits and is supported by studies of Nepal and Northern Ethiopia.^{13,35,36}

Different factors like educational status of mothers, age at marriage, decision-making role in the family for seeking health services, exposure to FCHVs, know about safe delivery incentive program and perceived "good quality" ANC had played significant role in the utilization of ANC among the women of marginalized community.

CONCLUSION

Regardless of free safe motherhood services in government hospital, utilization of ANC was considerably low among the women in the marginalized community of Melamchi Municipality. The study also revealed that educational status of mothers, age at marriage, decision-making role in the family for seeking health services, exposure to FCHVs, knowledge about safe delivery incentive program and perceived "good quality" ANC played a significant role in ANC visits among the women of the marginalized community of Melamchi

municipality of Sindhupalchowk district of Nepal. Community engagement and social awareness could play a very vital role to help increase uptake of safe motherhood services, thereby impacting the overall maternal health of these marginalized women in the future.

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REFERENCES

- Sajedinejad S, Majdzadeh R, Vedadhir AA, Tabatabaei MG, Mohammad K. Maternal mortality: A cross-sectional study in global health. *Global Health*. 2015;11(1):1-13. [\[Full Text\]](#) [\[PubMed\]](#)
- Maternal mortality. World Health Organization. Accessed April 2, 2020. [\[Full Text\]](#) [\[Google Scholar\]](#)
- Ministry of Health and Population. Nepal Demographic and Health Survey.; 2016. Accessed April 5, 2019. [\[Full Text\]](#) [\[Google Scholar\]](#)
- Say L, Chou D, Gemmill A, et al. Global causes of maternal death: A WHO systematic analysis. *Lancet Glob Heal*. 2014;2(6). [https://doi.org/10.1016/S2214-109X\(14\)70227-X](https://doi.org/10.1016/S2214-109X(14)70227-X) [\[Lancet\]](#)
- Ju Hwang W, Mi Park Y. Factors influencing the accessibility of maternal health service in Cambodia. *Int J Environ Res Public Health*. 2019;16(16). <https://doi.org/10.3390/ijerph16162909> [\[Google Scholar\]](#)
- von Both C, Fleßa S, Makuwani A, Mpenbeni R, Jahn A. How much time do health services spend on antenatal care? Implications for the introduction of the focused antenatal care model in Tanzania. *BMC Pregnancy Childbirth*. 2006;6(1):22. <https://doi.org/10.1186/1471-2393-6-22> [\[PubMed\]](#)
- Safe Motherhood Programme. <https://www.mohp.gov.np/eng/program/reproductive-maternal-health/safe-motherhood-programme>. Accessed March 30, 2020. [\[Google Scholar\]](#)
- Kumar Aryal K, Sharma SK, Nath Khanal M, et al. DHS Further Analysis Reports No. 118 Maternal Health Care in Nepal: Trends and Determinants Ministry of Health and Population.; 2019. Accessed April 3, 2020. [\[Full Text\]](#) [\[Google Scholar\]](#)
- The State Ignores Minority And Marginalized. [\[Full Text\]](#). Accessed April 3, 2020. [\[Google Scholar\]](#)
- Kathmandu E. Nepal Demographic and Health Survey 2011 Population Division Ministry of Health and Population Government of Nepal Kathmandu, Nepal.; 2012. [\[Full Text\]](#) Accessed January 7, 2020. [\[Google Scholar\]](#)
- The National Civil (Code) Act, 2017 (2074).; 2017. <http://www.moljpa.gov.np/en/wp-content/uploads/2018/12/Civil-code.pdf>. Accessed April 4, 2020. [\[Google Scholar\]](#)
- New Salary Scale of All Government Employee of Nepal Published: valid from 2076 Shrawan - Exam Sanjal. Accessed March 31, 2020. [\[Full Text\]](#) [\[Google Scholar\]](#)
- Chaurasiya SP, Pravana NK, Khanal V, Giri D. Factors Affecting Antenatal Care Utilization Among the Disadvantaged Dalit Population of Nepal: A Cross-sectional Study. *Open Public Health J*. 2019;12(1):155-163. <https://doi.org/10.2174/1874944501912010155> [\[PubMed\]](#)
- Kathmandu N. National Population and Housing Census 2011 Social Characteristics Tables Government of Nepal National Planning Commission Secretariat Central Bureau of Statistics.; 2014. Accessed April 7, 2020. [\[Full Text\]](#) [\[Google Scholar\]](#)
- Paudel RK, Thepthien B, Hong SA. Factors Related to Regular Use of ANC Services among Mothers of Children under One Year of Age in Rural Communities of Banke District, Nepal. *Asian Pacific J Heal Sci*. 2016;3(3):216-222. <https://doi.org/10.21276/apjhs.2016.3.3.34> [\[Google Scholar\]](#)
- Awasthi MS, Awasthi KR, Thapa HS, Saud B, Pradhan S, Khatry RA. Utilization of antenatal care services in dalit communities in gorkha, Nepal: A cross-sectional study. *J Pregnancy*. 2018;2018. <https://doi.org/10.1155/2018/3467308> [\[PubMed\]](#)
- Ministry of Health and Population (MOHP). Nepal Demographic and Health Survey.; 2011. https://doi.org/10.1007/978-94-6091-391-4_15 [\[Google Scholar\]](#)
- Rurangirwa AA, Mogren I, Nyirazinyoye L, Ntaganira J, Krantz G. Determinants of poor utilization of antenatal care services among recently delivered women in Rwanda; a population based study. *BMC Pregnancy Childbirth*. 2017;17(1):1-10. <https://doi.org/10.1186/s12884-017-1328-2> [\[PubMed\]](#)
- Shrestha B. Mother's Education and Antenatal Care Visits in Nepal. *Tribhuvan Univ J*. 2018;32(2):153-164. doi:10.3126/tuj.v32i2.24712 [\[Google Scholar\]](#)
- Joshi C, Torvaldsen S, Hodgson R, Hayen A. Factors associated with the use and quality of antenatal care in Nepal: a population-based study using the demographic and health survey data. *BMC Pregnancy Childbirth*. 2014;14(1):94. <https://doi.org/10.1186/1471-2393-14-94> [\[PubMed\]](#)
- Sharma D, Pokharel HP, Budhathoki SS, Yadav BK, Pokharel RK. Antenatal Health Care Service Utilization in Slum Areas of Pokhara Sub-

- Metropolitan City, Nepal. *J Nepal Health Res Counc.* 2016;14(32):39-46. [[Google Scholar](#)]
22. Shekhawat R, Sharma N, Kashyap A, Sodha VS. Utilization of Antenatal Care Services and Its Determinants in Rural Field Practice Area of Jaipur, India. *Natl J Community Med.* 2018;9(12):875-878. [[Google Scholar](#)]
 23. Olayinka A, Joel A, Bukola D. Factors influencing utilization of antenatal care services among pregnant women in Ife Central Lga , Osun State Nigeria National Hospital Abuja , Nigeria. *Adv Appl Sci Res.* 2012;3(3):1309-1315. [[Google Scholar](#)]
 24. Kakati R, Barua K, Borah M. Factors associated with the utilization of antenatal care services in rural areas of Assam, India. *Int J Community Med Public Heal.* 2016;3(10):2799-2805. <https://doi.org/10.18203/2394-6040.ijcmph20163364> [[Google Scholar](#)]
 25. Paul P, Chouhan P. Association between child marriage and utilization of maternal health care services in India: Evidence from a nationally representative cross-sectional survey. *Midwifery.* 2019;75:66-71. <https://doi.org/10.1016/j.midw.2019.04.007>
 26. Chauhan A. Antenatal care among currently married women in Rajasthan, India. *Asian Pacific J Trop Dis.* 2012;2(SUPPL2). [http://doi.org/10.1016/S2222-1808\(12\)60232-1](http://doi.org/10.1016/S2222-1808(12)60232-1) [[Science Direct](#)]
 27. Pandey S. Socio-economic and Demographic Determinants of Antenatal Care Services Utilization in Central Nepal. *Int J MCH AIDS.* 2013;2(2):212-219. <https://doi.org/10.21106/ijma.27> [[PMC](#)]
 28. Ogbo FA, Dhimi MV, Ude EM, et al. Enablers and barriers to the utilization of antenatal care services in India. *Int J Environ Res Public Health.* 2019;16(17):1-14. <https://doi.org/10.3390/ijerph16173152> [[Google Scholar](#)]
 29. Ali SA, Dero AA, Ali SA, Ali GB. Factors Affecting the Utilization of Antenatal Care among Pregnant Women in Moba Lga of Ekiti State, Nigeria. *Int J Tradit Complement Med.* 2016;2(2):41-45. <https://doi.org/10.28933/sina-ijtcm-2016> [[Google Scholar](#)]
 30. Zhao Q, Huang ZJ, Yang S, Pan J, Smith B, Xu B. The utilization of antenatal care among rural-to-urban migrant women in Shanghai: A hospital-based cross-sectional study. *BMC Public Health.* 2012;12(1):1. <https://doi.org/10.1186/1471-2458-12-1012> [[PubMed](#)]
 31. Tran TK, Gottvall K, Nguyen HD, Ascher H, Petzold M. Factors associated with antenatal care adequacy in rural and urban contexts-results from two health and demographic surveillance sites in Vietnam. *BMC Health Serv Res.* 2012;12(1):40. <https://doi.org/10.1186/1472-6963-12-40> [[PubMed](#)]
 32. Ramesh Kumar Dahal. Utilization of Antenatal Care Services in Rural Area of Nepal. *Int J Collab Res Intern Med Public Heal.* 2013;5(2):120-131. [[Google Scholar](#)] [[Full Text](#)]
 33. Deo KK, Paudel YR, Khatri RB, et al. Barriers to Utilization of Antenatal Care Services in Eastern Nepal. *Front Public Heal.* 2015;3(August):1-7. <https://doi.org/10.3389/fpubh.2015.00197> [[PubMed](#)]
 34. Dahal M, Baral K, Angolkar M. Utilization of Maternal Health Care Services in India: A Community Based Cross-sectional Study in Rural Belgaum. *J Adv Med Med Res.* 2019;(March):1-11. <https://doi.org/10.9734/jammr/2019/v29i330069> [[Google Scholar](#)]
 35. Fesseha G. Perceived Quality of Antenatal Care Service by Pregnant Women in Public and Private Health Facilities in Northern Ethiopia. *Am J Heal Res.* 2014;2(4):146. <https://doi.org/10.11648/j.ajhr.20140204.17> [[Google Scholar](#)]
 36. Parajuli SB, Shrestha S, Sah A, Heera KC, Amgain K, Pyakurel P. Role of Female Community Health Volunteers for Prevention and Control of COVID-19 in Nepal. *Journal of Karnali Academy of Health Sciences.* 2020; 7(1):1-8.