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Knowledge on COVID-19 and COVID-19 vaccination among pregnant women attending tertiary care maternity hospital in Nepal

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Abstract
Objective: The aim of this study was to identify the knowledge of COVID-19 and COVID-19 vaccination among pregnant women attending Antenatal Clinic at a maternity hospital.
Design: A cross-sectional study.
Setting: Paropakar Maternity & Women's Hospital. Pregnant women aged 18 years or older with more than 3 months of gestation and able to communicate in Nepali and providing consent.
Outcome measures: A proforma was used to collect the information on the socio-demographics and other personal information face-to-face. Information on knowledge about COVID-19 and its vaccination were also collected.
Results: The Means age of the respondents was 25.68±4.63 years. Majority of the respondents were Hindu (81.5%), unemployed (82.28%), had their ANC visits (75.59%), lacked comorbidities (94.49%), and were not infected with COVID-19 (94.49%). Majority had knowledge on COVID-19 (82.28%), its transmission (90.16%), and protection measures (92.13%). The most common source of information was TV, radio, newspaper (70.47%).
Conclusion: Information regarding COVID-19 and vaccination is adequate among the pregnant women in Nepal and the information is being attained from TV, radio, and newspaper. Thus, targeted health promotion, education, and prevention to pregnant women can be provided through these channels for advocacy of Covid 19 vaccination.

Keywords: Pregnancy, knowledge, COVID-19 vaccine

Introduction
Coronavirus disease (COVID-19) is an infectious disease that can affect population of any age and results in serious adverse impacts on health [1]. In the absence of an effective treatment, public health and social measures for short period and herd immunity by vaccination at longer run are the only available methods of disease control [2]. Research into development of a vaccine for SARS-CoV-2 was undertaken immediately after the disease was identified [3].
The physiological changes in pregnant women make them susceptible to developing severe cases of COVID-19 and consequently being admitted to hospitals and intensive care units [4, 5]. Advanced maternal age, presence of comorbidities, and high body mass index are some of the factors leading to severe COVID-19 in expecting mothers [5]. Since knowledge about disease is important for its prevention, this study aimed to identify the knowledge of COVID-19 and COVID-19 vaccination among pregnant women attending Antenatal Clinic at a maternity hospital in Kathmandu valley.

Material and Methods
Study design and respondents
This was a cross-sectional single hospital-based study conducted at Propmaker Maternity and Women's Hospital located at Thapa thali, Kathmandu. The study included the data collected for six months at Propmaker Maternity and Women's Hospital, starting from mid-November 2021. Pregnant women aged 18 years or older with more than 3 months of gestation and able to communicate in Nepali and provide consent were included in the study. Pregnant women with cognitive impairment were however excluded from the study. The pregnant women accepting voluntary participation were included in the study.

Data collection tool and procedure

A proforma was developed to include the socio-demographic and other personal information, knowledge towards COVID-19, and other related questions. The questionnaire was administered face to face by the medical staff of the hospital. The medical staff of the hospital approached the pregnant women to determine their eligibility as per the inclusion criteria. Information was collected in a private room maintaining full privacy and the name of the respondent were not collected.

Data management and analysis

The information collected on the socio-demographics, other personal information and knowledge on COVID-19 and vaccination was entered and cleaned in the MS Excel and analyzed using the EZR software. Categorical variables were summarized using frequency and proportions whereas mean and SD were used to summarize continuous variables.

Ethical Consideration

This study is a part of a larger vaccine hesitancy study with the ethical approval obtained from the Institutional Review Board (IRB) of Propmaker Maternity and Women's Hospital (63/409 ka). The respondents of the study were informed about the purpose of the study and asked for their written consent. Privacy and anonymity were maintained wherever required. The medical staff provided information regarding the COVID-19 vaccine after the interview was completed.

Results

The Means age of the respondents was 25.68±4.63 years and majority of the respondents were Hindu (81.5%). Around one-third (36.63%) only had primary education and 82.28% were unemployed. More than half (53.54%) were having their first child, and more than three-fourth had their ANC visits (75.59%). Most of the respondents (94.49%) lacked comorbidities and were not infected with COVID-19 (Table 1 and 2).

Regarding knowledge on COVID-19 and COVID-19 vaccines, 82.28% of the pregnant women responded that they had knowledge of COVID-19, 90.16% had knowledge on its transmission, 92.13% had knowledge on protection from COVID-19, 70.47% had enough information about COVID-19 vaccine, and 69.29% thought that COVID-19 vaccination protects from COVID-19 infection. Regarding the source of information on COVID-19 and its vaccination, the most common source identified was television, radio, newspaper (70.47%), followed by social media (46.46%), family, relatives, friends (21.65%), health workers (12.20%), Female Community Health Volunteers (FCHVs) (6.69%) and lastly Nepal government website (3.94%) (Table 3).

Table 1: Socio-demographics characteristics

SN	Variables	Frequency	Percentage
1	**Religion**		
	Hindu	207	81.50
	Buddhist	23	9.06
	Christian	19	7.48
	Kirati	4	1.57
	Muslim	1	0.39
2	**Education**		
	Illiterate	16	6.30
	Able to read and write	44	17.32
	Primary	93	36.61
	Secondary	74	29.13
	Higher	27	10.63
3	**Occupation**		
	Unemployed	209	82.28
	Business	30	11.81
	Private Service	7	2.76
	Public Service	6	2.36
	Daily wages	2	0.79

Table 2: Pregnancy related Characteristics

1	**Gravida**		
	1	136	53.54
	2	96	37.80
	3	17	6.69
	4	3	1.18
	5	2	0.79
2	**ANC done**		
	No	62	24.41
	Yes	192	75.59
3	**Comorbidities present**		
	No	240	94.49
	Yes	14	5.51
4	**Infected with COVID-19**		
	No	240	94.49
	Yes	14	5.51

Table 3: Knowledge on COVID-19 and COVID-19 vaccines

Sr. No	Variables	Frequency	Percentage
1	**Knowledge of COVID-19**		
	No	45	17.72
	Yes	219	82.28
2	**Knowledge of COVID-19 transmission**		
	No	25	9.84
	Yes	229	90.16
3	**Knowledge on protection from COVID-19**		
	No	20	7.87
	Yes	234	92.13
4	**Heard about COVID-19 from**		
4.1	**Television, radio, newspaper**		
	No	75	29.53
	Yes	179	70.47
4.2	**Nepal government website**		
	No	244	96.06
	Yes	10	3.94
4.3	**Social media (Facebook)**		
	No	136	53.54
	Yes	118	46.46

4.4	**Health workers**		
	No	223	87.80
	Yes	31	12.20
4.5	**Female Community Health Volunteers (FCHVs)**		
	No	237	93.31
	Yes	17	6.69
4.6	**Family, relatives, friends**		
	No	199	78.35
	Yes	55	21.65
5	**Have enough information about COVID-19 vaccine**		
	No	75	29.53
	Yes	179	70.47
6	**Think that COVID-19 vaccination protects from COVID-19 infection**		
	No	34	13.39
	Do not know	44	17.32
	Yes	176	69.29

Discussion

In this study 81.50% of the respondents were Hindu, 36.63% had only primary education, and 82.28% were unemployed. A key indicator report from the Nepal Demographic and Health Survey (NDHS) 2022 reports 83.4% of women of reproductive age group (15-49 years) as Hindu and 31% having basic education [6]. The detailed report of NDHS 2016 had identified 85.8% women of reproductive age group (15-49 years) as Hindu, 16.7% having primary education, and 56.9% currently employed [7]. More than half (53.54%) of the respondent were pregnant with their first child in this study which is much more than the percentage of women having one living child as identified in NDHS 2016 [7].

75.59% pregnant women had their ANC visits which is lower than the key indicator report from NDHS 2022 which showed 94% of women receiving antenatal care from a skilled provider for their most recent live birth or stillbirth and 81% having at least four ANC visits for their most recent live birth [6]. In this study most of the respondents lacked comorbidities. A prospective cohort study has also identified that 85% of pregnancies were of low-risk [8]. Furthermore, most of the respondents in this study were not infected with COVID-19. Though COVID-19 being a novel infection with no herd immunity and high susceptibility, and pregnant women, in general, being vulnerable to respiratory infection [4], the lower cases of COVID-19 infection in this study may be due to good implementation of public health and social measures (PHSM). Studies have shown that surge of COVID-19 daily cases in Nepal followed after decline in the severity index for PHSM [9]. In this study four-fifth of the pregnant women had knowledge about COVID-19 and majority had knowledge about COVID-19 transmission and protection from COVID-19. Different studies have also identified adequate knowledge about COVID-19, its transmission and protection among pregnant women [10, 11]. Around seven out of 10 respondents had enough information about COVID-19 vaccine and thought that COVID-19 vaccination protects from COVID-19 infection. Studies at different countries have identified high percentage of pregnant women with information on COVID-19 and its uses [12, 13]. Most common source for information was television, radio, newspaper, followed by social media and family, relatives, friends in this study. Health workers, Female Community Health Volunteers (FCHVs) and Nepal government website were reported to be used less for information. A study has identified social media as the most common source of information followed by television. [13] However, a study in North India reported that pregnant and lactating mother with higher education level and socio-economic class were more likely to be influenced by reliable sources like the healthcare providers or government agencies [14]. NDHS 2016 had reported that majority of women aged 15 to 49 years preferred television followed by listening to radio and only 23.9% ever having used the internet. [7] This study is a part of a broader vaccine hesitancy study and thus presents descriptive analysis of the respondents and their knowledge regarding COVID-19 and COVID-19 vaccination without any inferential analysis.

Conclusion

Knowledge and awareness on COVID-19 through trusted channel has been identified as the major factor for vaccine acceptance. Targeted vaccination campaigns for pregnant women with involvement of trusted channels for awareness should be done to increase the advocacy of Covid 19 vaccination.

Author contribution

SKM conceptualized the study and applied for the Institutional Review Board for ethical clearance. SKM collected the data in proforma, and BT entered the data in MS Excel and cleaned it. GD reviewed literature and performed the analysis. SKM, GD and BT collectively prepared the manuscript.

Conflict of Interest

None

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