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Knowledge, Attitude and Perception Toward COVID-19 Vaccine among the General People

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ABSTRACT

Background

The most effective method of controlling the spread of the SARS-CoV-2 virus is to protect oneself from exposure and immunize against it, a public health priority. This study aimed to identify knowledge, attitudes, and perceptions regarding the COVID-19 vaccine in Nepal.

Methods

A cross-sectional descriptive web-based study was conducted among 449 adults aged 18 to 40 years in August 2021. A Google form survey was used which included 18 structured questions, where an overall greater score denotes positive knowledge, attitude, and perception toward COVID-19 vaccination. Data were analyzed using SPSS.

Results

Out of 449 respondents, two-thirds were female, with a mean age of 20.71 years (SD = 2.98). The mean knowledge score regarding COVID-19 vaccination was 2.96 (SD = 1.16), while the mean attitude score was 15.93 (SD = 2.08). Overall, 84.2% of participants agreed that vaccines are essential to them, and 90.2% reported encouraging their family members to receive the COVID-19 vaccine. Additionally, 86.2% believed that the vaccine could have side effects, and 54.3% thought that preventive measures could eliminate the need for vaccination.

Conclusions

The study concluded that the general population possesses an average level of knowledge and females had a better attitude towards vaccine and were generally supportive of it. Most people continued to worry about the vaccine's adverse effects. Continued community education regarding the COVID-19 vaccine and its benefits should be conducted.

Keywords: attitude; Covid-19 vaccine; knowledge; Nepal; perception.

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INTRODUCTION

Coronavirus disease (COVID-19), caused by SARS-CoV-2, has led to over 199 million confirmed cases and more than 4.2 million deaths worldwide, with nearly 4 billion vaccine doses administered as of August 2021.^{1,2} Given its high transmissibility, vaccines remain the most crucial preventive measure.³ Nepal began its vaccination campaign on 27 January 2021, with 6.95% of the population receiving the first dose and 1.2% the second dose.⁴ However, vaccine hesitancy persists. A study among 266 healthcare workers in Nepal showed only 38.3% willingness to be vaccinated, mainly due to safety concerns.⁵ The pandemic has severely affected daily life globally, with a disproportionately higher impact on poorer countries like Nepal, India, and Bangladesh.^{6,7} Government responses aim to limit the damage⁸, but public attitudes and awareness about vaccines are essential to immunization success.⁹ This study assesses general people's knowledge, attitude, and perception of COVID-19 vaccines to inform more effective vaccination strategies.

METHODS

A cross-sectional descriptive web-based study was conducted in August 2021 among the general population of Nepal aged 18 to 40 years to assess their knowledge, attitude, and perception regarding the COVID-19 vaccine. Due to government-imposed lockdowns and mandatory social distancing measures during the pandemic, a web-based survey was the most feasible method for data collection. Ethical clearance was obtained from the Institutional Review Committee of Bharatpur Hospital (Ref. No.: 078/79-001). Participants were informed about the purpose of the study, confidentiality, and their right to decline participation. Consent was implied when participants clicked the "Next" button on the form. A structured online questionnaire, developed using Google Forms in English, was distributed through the investigator's personal contacts via various social media platforms such as Messenger, Viber, and email. The inclusion criteria were: Nepalese citizens aged 18 to 40 years, unvaccinated at the time of the survey, willing to

participate voluntarily, and having reliable internet access. The sample size was determined using Cochran's formula with a 95% confidence level, assuming a prevalence (p) of 57% based on a previous study by Islam et al.¹⁰ This yielded a sample size of 377, which was increased to 415 after accounting for a 10% nonresponse rate. The actual number of participants exceeded this estimate. A pretest was conducted on 40 individuals to ensure feasibility, and these respondents were excluded from the final analysis. The self-administered questionnaire, adapted with permission from Islam et al.,¹⁰ as modified to suit the local context and included four sections: sociodemographic information (9 items), knowledge (5 items), attitude (6 items using a 3-point Likert scale), and perception (6 items including 4 yes/no and 2 open-ended questions). A correct answer in the knowledge section was scored as 1, giving a total possible score ranging from 0 to 5. Attitude scores ranged from 6 to 18. Data were exported from Google Forms to Excel, and incomplete or invalid responses were excluded. The final dataset underwent comprehensive analysis utilizing the Statistical Package for the Social Sciences (SPSS) version 16. Univariate analysis was performed to describe the distribution of individual variables, employing measures of frequency, mean, and standard deviation. For bivariate analysis, the correlation test was applied as appropriate to examine associations between variables.

RESULTS

The total questionnaire was sent to 550 respondents and the response rate was 81.6%. A total of 449 respondents participated in the study. Among them, 58.1% were below 20 years and 1.3% were above 30 years with a mean age of 20.71 (SD=20.71±2.9). Most of them were female (66.1%) and were from Bagmati Province (67.5%). Regarding the family type, 65.5% were from a nuclear family, 53.9 % of participant had education upto higher secondary level and a majority 82.2% of respondents follow Hindu religion (Table 1).

Regarding the source of knowledge about the

Table 1. Respondent's sociodemographic characteristics. (n=449)	
Variables	Frequency (%)
Age in years	
<20	261 (58.1)
20-30	182(40.5)
≥30	6(1.3)
Mean±SD=20.71±2.9	
Sex	
Female	297(66.1)
Male	152(33.9)
Address	
Koshi	9(2)
Madhesh	50(11.1)
Bagmati	303(67.5)
Gandaki	70(15.6)
Lumbini	12(2.7)
Karnali	4(0.9)
Sudur Paschim	1(0.2)
Family type	
Extended	10(2.2)
Joint	145(32.3)
Nuclear	294(65.5)
Education	
Up to Higher Secondary	242 (53.9)
Bachelors	193 (43.0)
Master and above	14 (3.1)
Religion	
Hindu	396(88.2)
Buddhist	38(8.5)
Christian	5(1.1)
Muslim	6(1.3)
Others	4(0.89)

COVID-19 vaccine, the majority of respondents (36.5%) first learned about it through social media platforms such as Facebook and Twitter. This was followed by the internet (27.6%) and mass media sources like radio and television (22.7%). A smaller proportion received information from family members and relatives (6.2%), friends and neighbors (5.1%), and newspapers (1.1%) (Figure 1).

Regarding knowledge, 93.1% of respondents were aware of the COVID-19 vaccine. Additionally, 77.3% were aware of vaccine effectiveness, and 73.9% had knowledge of vaccine overdose. A smaller proportion,

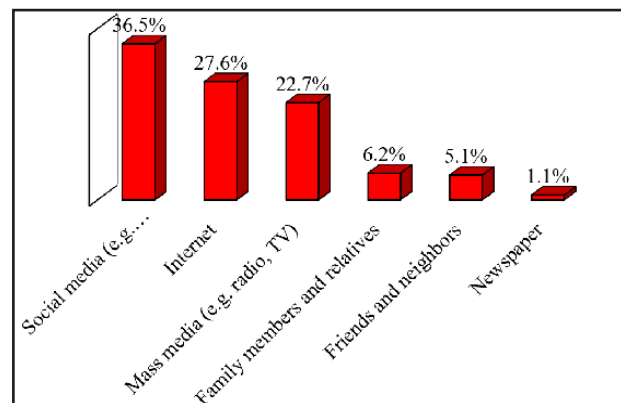


Figure 1. Source of knowledge about the COVID-19 vaccine.

33.6%, reported that vaccines increase allergic reactions, while 19.4% indicated an increased risk of autoimmune disease associated with vaccination (Table 2).

Table 2. Knowledge regarding the COVID -19 vaccine.	
Knowledge about COVID -19 Vaccine	Frequency (%)
Know about the COVID-19 vaccine	418(93.1)
Effectiveness of COVID-19 vaccine	347(77.3)
Dangerous to use overdose vaccine	332(73.9)
Vaccination increases allergic reaction	151(33.6)
Vaccination increases autoimmune disease	87(19.4)

Regarding attitudes toward the COVID-19 vaccine, a majority of respondents (84.2%) agreed that COVID-19 vaccines are essential, while 11.1% were undecided and 4.7% disagreed. Most participants (90.2%) expressed willingness to encourage their family, friends, and relatives to get vaccinated, with only 7.8% undecided and 2.0% in disagreement. Additionally, 81.1% indicated they would receive the vaccine without hesitation if it were available in Nepal, whereas 11.6% were undecided and 7.3% disagreed. A substantial proportion (88.6%) agreed that the vaccine should be distributed fairly to all individuals, with 6.9% undecided and 4.9% disagreeing. Regarding the necessity of vaccination to reduce the incidence of COVID-19, 55.9% agreed, 22.3% were undecided, and 21.8% disagreed. Although 44.1% agreed that newly discovered COVID-19 vaccines are safe, 45.9% remained undecided, and 10.0% disagreed (Table 3).

Regarding perceptions of the COVID-19 vaccine, a large majority of respondents (86.2%) believed that the newly discovered COVID-19 vaccine

Table 3. Attitude regarding the COVID -19 vaccine. (n=449)			
Attitude regarding the COVID -19 Vaccine	Disagree	Undecided	Agree
Newly discovered COVID-19 vaccines are safe.	45(10.0)	206(45.9)	198(44.1)
COVID-19 vaccines are essential for us	21(4.7)	50(11.1)	378(84.2)
COVID-19 vaccine without any hesitation if it is available in Nepal	33(7.3)	52(11.6)	364(81.1)
Encourage our family/friends/relatives to get vaccinated.	9(2.0)	35(7.8)	405(90.2)
Not possible to reduce the incidence of COVID-19 without vaccination.	98(21.8)	100(22.3)	251(55.9)
COVID-19 vaccine should be distributed fairly to all of us	22(4.9)	29(6.9)	398(88.6)

may have side effects, while only 13.8% reported otherwise. In response to whether the COVID-19 pandemic could be eradicated solely through preventive measures without vaccination, 54.3% agreed, whereas 45.7% disagreed with this notion. When asked who should receive the COVID-19 vaccine, 79.5% indicated that everyone should be vaccinated. A smaller percentage believed

believed businessmen should be vaccinated first. Likewise, most respondents (94.0%) agreed that the COVID-19 vaccine should be provided free of charge in Nepal, while only 6.0% opposed this. Furthermore, if the government did not provide the vaccine free of charge, 63.3% stated they would be willing to purchase it at their own expense, while 36.7% reported they would not (Table 4).

Table 4. Perception regarding the COVID -19 vaccine.		
Perception regarding the COVID -19 Vaccine	Response	Frequency (%)
Newly discovered COVID-19 vaccine may have side effects	Yes	387(86.2)
	No	62(13.8)
COVID-19 can be eradicated without vaccination if preventive measures followed	Yes	244(54.3)
	No	205(45.7)
Who should be Vaccinated?	Everyone	357(79.5)
	Not infected individuals	58(12.9)
	Currently infected individuals	26(5.8)
	Recently recovered	8(1.8)
Who should be vaccinated first?	Health workers	354(78.8)
	General public	51(11.4)
	Teachers/Students	36(8.0)
	Public/Private employees	5(1.1)
	Businessmen	3(0.7)
Should the vaccine be provided free of charge in Nepal?	Yes	422(94.0)
	No	27(6.0)
Would you buy the vaccine if not provided free by the government?	Yes	284(63.3)
	No	165(36.7)

that the vaccine should be administered to those who had not yet been infected with COVID-19 (12.9%), those currently infected (5.8%), and individuals who had recently recovered (1.8%). Concerning priority groups for vaccination, the majority (78.8%) indicated that health workers should be vaccinated first. This was followed by 11.4% who prioritized the general public, 8.0% who favored teachers and students, 1.1% who selected public/private employees, and 0.7% who

The mean knowledge and attitude regarding covid vaccine among general people are 2.96(1.16) and 15.93(2.089) respectively. Regarding the level of knowledge of the respondents, 307(68.4%) have good knowledge, and 142 (31.6%) have poor knowledge. Likewise, regarding the level of attitude of the respondents, 415 (92.4%) have a positive attitude while 34 (7.6%) have a negative attitude towards the COVID-19 vaccine. And there is no significant correlation between knowledge and attitude ($r = -0.014$, $p = 0.773$).

DISCUSSION

The COVID-19 vaccine has been presented as the best solution to the ongoing pandemic, and several vaccine candidates are being developed with positive results. Various countries, including Nepal, have authorized specific vaccines for their vaccination programs. However, the newness of the COVID-19 vaccination roll-out in Nepal has led to questions about vaccine distribution and acceptance. A study was conducted to assess the Nepali people's knowledge and attitudes toward COVID-19 vaccinations, and the findings indicate that socio-demographic factors play a role in people's understanding and attitudes. The study's findings are critical in developing awareness and health education programs related to COVID-19 vaccinations. In the present study, the mean knowledge and attitude of respondents towards COVID-19 vaccination is 2.96 (SD=1.16) and 15.93 (SD= 2.089) out of 18 respectively which is not consistent with the study conducted by Mesesle et al.,¹¹ which showed mean knowledge and attitude score 4.3 (SD=1.1) and 4.09 (SD=2.16) respectively. Regarding COVID vaccine hesitancy the study revealed that vaccine hesitancy appeared in 33% of total respondents which is similar to a study conducted by Issanov et al.,¹² which showed 36% of the respondents were Covid vaccine hesitant. In this study, 81.1% of respondents are willing to take covid vaccination. The study was similar to a study conducted by Acharaya SR et al.,¹³ and Elhadi M et al.,¹⁴ which showed 81.1% and 79.6% respectively were willing to take Covid vaccine and it is also similar to study conducted by Solís Arce et al.,¹⁵ that showed 80.3% of respondents of Low Middle Income Countries were willing to take COVID vaccine. Moreover, this study is contrast to the study of Fares et al.,¹⁶ which showed 21% were willing for COVID vaccine and the study of Solis Arce JS et al.,¹⁵ which showed 30.4% of

respondents of Russia and 64,6% of respondents of US were only willing to take vaccine.

Regarding statement “it should be distributed free of charge”, 94% of respondents agree with it which is like Elahid M et al.,¹⁴ in which 93% of respondents agree with that statement. Similarly, 90.2% of respondents mentioned that they will recommend the vaccine to family and friends which is somewhat similar to study conducted by Acharya SR et al.,¹³ in which 64.8% mentioned that statement. In the study, 44.1% of respondents answer covid vaccine is safe which is similar to the study which is conducted by Acharya SR et al.,¹³ and Mesesle et al.,¹¹ in which 36.7% and 40.7% answer covid vaccine is safe. In the study, 88.6% answer vaccine should be distributed fairly to all which is in contrast to the study of Mesesle et al.,¹¹ in which 56.9% answer it should be distributed fairly to all. In the present study. 84.2 % said vaccine is essential to them which is not similar to study conducted by Mesesle et al.,¹¹ in which 30% said that COVID vaccine is essential to them.

CONCLUSIONS

The study concluded that the general population possesses a significant amount of knowledge about the COVID-19 vaccine, accounting for approximately three-fourths of the total knowledge. Health professionals exhibit even higher levels of knowledge. Most individuals hold a positive attitude towards the vaccine, particularly females. However, concerns about potential adverse effects remain prevalent among most people. The study underscores the significance of continuous community education efforts to improve understanding, address concerns, and promote the benefits of the COVID-19 vaccine.

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