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Awareness, perception, and uptake of Covid-19 vaccine among students of a tertiary institution in northeastern Nigeria

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ABSTRACT

Background: The COVID-19 pandemic caught the entire world off guard, leading countries across the globe to implement lockdown measures and resulting in a significant loss of life and physical impairment. The study aimed to assess the demographic factors affecting awareness, perception, and uptake of COVID-19 vaccines among students of a tertiary institution in northeastern Nigeria. **Methods:** A cross-sectional study design was employed, and data were collected randomly through the administration of a structured questionnaire. **Results:** Among the study population, 451 (86.1%) were aware of COVID-19 vaccines. Of these, only 188(41.7%) had received the vaccine, while 263(58.3%) had not been vaccinated. Among the vaccinated, 119(63.3%) had received one of the five COVID-19 vaccines stated, while 69(36.7%) had no knowledge of the type of vaccine they had received. Of the 263(58.3%) unvaccinated respondents, 209(79.5%) attributed their hesitancy to a lack of trust in the vaccine. Although the positive perception of COVID-19 vaccines was higher than the negative perception among the respondents, but with no statistical difference ($P=0.149$). There was no significant relationship between respondents' awareness of COVID-19 vaccines with their gender ($P=0.3341$), marital status ($P=0.1657$), and age group ($P=0.0713$), but religion showed a strong significant relationship ($P=0.0015$). There was no significant relationship between respondents' perception of COVID-19 vaccines with gender ($P=0.1885$), marital status ($P=0.5869$), and religion ($P=0.2286$). **Conclusion:** These findings highlight the importance of tailored information campaigns addressing vaccine hesitancy, promoting accurate knowledge, and addressing safety concerns to increase vaccine acceptance and uptake among students in tertiary institutions.

Introduction

Corona disease also known as COVID-19 is a respiratory communicable disease caused by a virus called severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) [1]. It is a communicable disease, meaning it can be transmitted from person to person through respiratory droplets when an infected individual

coughs, sneezes, talks, or breathes [2]. The initial emergence of this disease was documented on November 17, 2019 in Wuhan, China [3]. The World Health Organization (WHO) designated the outbreak as a pandemic in March 2020 following its speedy transmission to various countries of the world [4]. As of 29th June, 2023, the global tally of COVID-19 cases reached over 767 million, with a

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staggering death toll of over 6.9 million attributed to this highly contagious disease [5]. Of this, over 275 and 9.5 million cases were documented in Europe and Africa respectively. Between January 3, 2020, and June 28, 2023, Nigeria recorded a staggering 266,675 confirmed COVID-19 cases, resulting in over 3,155 fatalities [5]. However, the most recent death attributed to COVID-19 in Nigeria was reported on September 12, 2022, and there have been no reported deaths since then [5]. To combat the spread of the virus and reduce the severity of the disease, scientists and researchers worked tirelessly to develop vaccines. Vaccines are a critical tool in preventing infectious diseases by training the immune system to recognize and fight specific pathogens.

Following the approval of the first vaccines by the World Health Organization (WHO) and the U.S. Food and Drug Administration (FDA) in 2020, multiple COVID-19 vaccines utilizing different technologies have been developed. These include vaccines based on live adenovirus, such as Oxford-AstraZeneca, Covishield, and Johnson & Johnson; inactivated vaccines like Sinopharm; and ribonucleic acid (RNA) vaccines such as Pfizer and Moderna. Among these, all require a booster dose except one vaccine (Johnson & Johnson) which requires only a single shot [6]. The vaccines mentioned are currently being utilized in vaccination campaigns across the world, and in Nigeria [7]. Although the COVID-19 vaccines have been adjudged safe, even for individuals with pre-existing comorbidities, it is important to acknowledge that the efficacy of these vaccines may vary depending on the SAR-CoV-2 variant [8-10]. Despite the approval of some of these COVID-19 vaccines for the prevention of the COVID-19 disease, the uptake of these vaccines has been suboptimal worldwide [11]. In the same vein, Nigeria did not make it onto the list of fifteen African countries that had effectively vaccinated 10% of their entire population as of September, 2021 despite the million's doses of COVID-19 vaccines distributed [1]. As of 26th January 2022 however, approximately 10.5% of the population in Nigeria had received their first dose of the COVID-19 vaccine, while only around 4.6% of eligible Nigerians had received the second dose. Furthermore, by 11th August 2022, about 25.2% of eligible Nigerians had completed their vaccination with the second dose, indicating full vaccination, while approximately 10.6% had received their first

dose [12]. On the other hand, as of 19th March 2023, the total number of administered vaccine doses in Nigeria reached 116,606,863 [5].

The COVID-19 pandemic has elicited a wide range of perceptions, encompassing both negative and positive viewpoints. These varying perceptions may influence the willingness to uptake COVID-19 vaccine. According to a nationwide poll conducted in the United States and a cross-sectional study carried out in China, it was found that rural residents exhibited a higher level of COVID-19 vaccine hesitancy [13]. The acceptance or lack of willingness to receive a COVID-19 vaccine are influenced by several factors [14]. Furthermore, even the most effective vaccine would lose its effectiveness if it is not accepted by the targeted population. Despite limited advancements in public vaccination efforts in Nigeria, there remain significant obstacles to achieving comprehensive immunization against COVID-19, we hypothesize high uptake of the vaccine among students in tertiary institution in Nigeria because of their level of awareness and ability to source for information. However, a particular factor that could militate against students' willingness to accept COVID-19 vaccination may be the prevalence of misinformation and conflicting narratives circulating on social media concerning the efficacy, safety or otherwise of the vaccines [4,15]. Therefore, this study was undertaken to determine the awareness or knowledge, perception and uptake of COVID-19 vaccines among students of a tertiary institution in Northeastern Nigeria.

MATERIALS AND METHODS

Study area

The research was conducted among students attending the Federal Polytechnic Mubi, which is situated in the Mubi-north Local Government Area (LGA) of Adamawa State. The coordinates of the institution are approximately 10°16'45.8" N 13°17'24.3" E. The study area experiences a tropical climate, with a rainy season spanning from May to October, and a dry season from November to April. The temperature ranges from 23 to 29°C, and the region has high humidity levels [16].

Study design

This study utilized an institutional-based cross-sectional design. Specifically, the researchers

focused on a single public higher institution, namely the Federal Polytechnic Mubi. To gather data, a closed-ended structured questionnaire was employed, which consisted of questions that required respondents to provide either a "Yes" or "No" response, or to choose from the provided multiple choice options.

Study Population

Six hundred (600) students of Federal Polytechnic Mubi, Adamawa State, Nigeria were recruited for this study using simple random sampling technique.

Inclusion criteria

Only students 18 years and above of the aforementioned institution were included in the study population

Exclusion criteria

Non-students including staff and their wards, students of other institution, and students of the institution who declined informed consent were all excluded from participating in the study population.

Data collection

The data for this study were collected by administering a structured closed-ended questionnaire by the authors. A total of 600 questionnaires were randomly distributed to students who willingly gave their informed consent to participate. The questionnaire was written in English, and distributed in print form. The questionnaire was divided into three parts; participant's demographics, Perceived knowledge and uptake of Covid-19 vaccine, and perception of COVID-19 vaccine. The participants demographic examined include, age, gender, marital status, state of origin, and religion. A pretest was done in 5% of students from the Department of Biological Science Technology, Federal Polytechnic Mubi to ensure the validity and reliability of the questionnaire. Data collection took place from 6th March to 30th April, 2023; 300 hundred questionnaires were administered and retrieved every four weeks for the said period.

Data analysis

The data obtained from the study were analyzed using the Statistical Package for Social Sciences (SPSS) software version 26 for Windows, developed by SPSS Inc. in Chicago, IL, USA. Frequencies and percentages were calculated for the relevant variables to provide descriptive statistics. Odds ratios were utilized to assess the association

between demographic characteristics of the respondents and their COVID-19 vaccine awareness, perception, and uptake. Additionally, the non-parametric Mann-Whitney test was employed to determine any significant differences in students' perception of COVID-19 vaccines. A significance level of $p < 0.05$ was used to determine statistically significant differences.

Ethical consideration

All participating students provided verbal informed consent, and approval was obtained from the Department of Biological Science Technology at Federal Polytechnic Mubi, Nigeria. Confidentiality of each participant's responses was maintained throughout the study period,

RESULTS

Demographic characteristics of the respondents

A total of 524 questionnaires were retrieved from the study population of 600, signifying a recovery rate of 87.3%. Of the 524 respondents, 224(42.7%) and 300(57.3%) were male and females respectively. Up to 471(89.9%) of the respondents were single, while 53(10.1%) were married. Also, 389(74.2%) and 135(25.8%) were of the Christian and Moslem faith respectively. Respondents were with the age group 18 to 38 years and above. While the age group 18-22 years (47.1%) constitute the majority, the age group 38 years and above (3.1%) were the least (**Table 1**).

Awareness of COVID-19 vaccines

Among the study population, 451 (86.1%) had one time or the other heard about the existence of COVID-19 vaccines, while 73(13.9%) had no previous knowledge of the existence and administration of COVID-19 vaccines (**Table 2**).

COVID-19 vaccines uptake and knowledge

Of the 451(86.1%) respondents that were aware of the COVID-19 vaccines, only 188(41.7%) had received the vaccine, while 263(58.3%) were yet to be vaccinated. Among the vaccinated, 119(63.3%) had received one of these five COVID-19 vaccines; Astra Zeneca, Johnson & Johnson (Janssen), Moderna, Pfizer-BioNTech, and Sputnik. The study shows that 43(22.9%), 40(21.3%), 21(11.2%), 11(5.9%), and 4(2.1%) of the respondents respectively received Johnson & Johnson, Astra Zeneca, Pfizer-BioNTech, and Sputnik. However, 69(36.7%) of the respondents had no knowledge of the type of vaccine they had received (**Table 2**).

Moreso, the second dose of the COVID-19 vaccine was received by 113(60.1%) respondents, while the remaining 75(39.9%) had only a dose of the vaccine. The result further shows that it takes up to 4 weeks to obtained the second doses in 37(32.7%) respondents, while it takes up to 3 months, 4 months, and 6 months respectively to obtained the second doses of the vaccines in 55(48.7%), 11(9.7%), and 9(7.9%) respondents (**Table 2**).

The result in **Table 2** shows that 136(72.3%) respondents received the COVID-19 vaccines in their various localities, while only 37(19.7%), and 15(8.0%) received the vaccines respectively in their schools and worship centers.

COVID-19 vaccines hesitancy

Of the 263(58.3%) respondents that were yet to receive COVID-19 vaccines, 209(79.5%) attributed their hesitancy to lack of trust in the vaccine, while 37(14.1%) and 15(5.7%) respectively attributed non-availability and non-accessibility of the COVID-19 vaccine as a reason for their hesitancy (**Table 3**).

Students' perception of COVID-19 vaccines

Students' perception of COVID-19 vaccines was documented in **Table 4** as either positive or negative perception. The positive perception has a mean standard error of 308 ± 44.28 , while the negative perception has a mean standard error of 216 ± 44.28 . Although the respondents with

the positive perception of COVID-19 vaccines were higher than those with negative perception, but with no statistical difference ($P=0.149$) as shown in **Table 4**.

Relationship between socio-demographic characteristics with COVID-19 vaccines awareness

There was no significant relationship between respondents' awareness of COVID-19 vaccines with their gender ($P=0.3341$), marital status ($P=0.1657$), and age group ($P=0.0713$). However, there was a strong significant relationship between respondents' awareness of COVID-19 vaccines with their religion ($P=0.0015$) as shown in **Table 5**.

Relationship between socio-demographic characteristics with COVID-19 vaccines uptake

There was statistically significant association between respondent's uptake of COVID-19 vaccines with their gender ($P=0.0108$), marital status ($P=0.0219$), religion ($P=0.0007$), and age group ($P=0.0109$) as shown in **Table 6**.

Relationship between socio-demographic characteristics with perception of COVID-19 vaccines

The results shows that there was no significant relationship between respondents' perception of COVID-19 vaccines with gender ($P=0.1885$), marital status ($P=0.5869$), and religion ($P=0.2286$) as shown in **Table 7**.

Table 1: Demographic characteristics of the respondents

SN	Parameter	Frequency	Percentage (%)
1	Gender		
	Male	224	42.7
	Female	300	57.3
	Total	524	
2	Marital status		
	Single	471	89.9
	Married	53	10.1
	Total	524	
3	Religion		
	Christianity	389	74.2
	Islam	135	25.8
	Total	524	
4	Age group		
	18 – 22	247	47.1
	23 – 27	204	38.9
	28 – 32	38	7.3
	33 – 37	19	3.6
	38 & above	16	3.1
	Total	524	

Table 2: Awareness and uptake of COVID-19 vaccine among study population

SN	Parameter	Frequency	Percentage (%)
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A	level of awareness of COVID-19 vaccine among students (n=524)		
	Have you heard of COVID-19 vaccine?		
	Yes	451	86.1
	No	73	13.9
B	COVID-19 vaccine uptake and knowledge (n=451)		
1	Received COVID-19 vaccine?		
	Yes	188	41.7
	No	263	58.3
2	Types of vaccine received	(n=188)	
	Astra Zeneca	40	21.3
	Johnson & Johnson	43	22.9
	Moderna	11	5.9
	Pfizer BioNTech	21	11.2
	Sputnik V	4	2.1
	I don't know	69	36.7
3	Number of doses received	(n=188)	
	One dose	75	39.9
	Two doses	113	60.1
4	Duration before administration of 2 nd dose	(n=113)	
	1 month	37	32.7
	3 months	55	48.7
	4 months	11	9.7
	5 months	1	0.9
	6 months	9	7.9
C	Location of uptake of the COVID-19 vaccine (n=188)		
	My locality	136	72.3
	School	37	19.7
	Church/Mosque	15	8.0

Table 3: COVID-19 vaccine hesitancy

Parameter	Frequency (n=263)	Percentage (%)
Non-availability	37	14.1
Non-accessibility	15	5.7
Religious undertone	2	0.8
Lack of trust	209	79.5

Table 4: Student's perception of COVID-19 vaccine

SN	Perception	Frequency (n = 524)	
		Positive perception (%) ^a	Negative perception (%) ^a
1	Vaccines provide the best protection against COVID-19	369 (70.4)	155(29.6)
2	Are the approved COVID-19 vaccines safe?	333(63.5)	191 (34.5)
3	Is COVID-19 vaccine intended to reduce African population/child birth?	353(67.4)	171(32.6)
4	Is COVID-19 vaccine necessary?	177(33.8)	347(66.2)
	Mean perception (X±SE)	308 ± 44.28 (58.8)	216± 44.28(41.2)

Legend: a = parameters with the same superscript shows lack of statistical difference (P=0.149), X= mean, SE= standard error of mean. Mann-Whitney test was employed to determine any significant differences in students' perception of COVID-19 vaccines

Table 5: Relationship between demographic characteristics and students' awareness of COVID-19 vaccines

SN	Parameter	Yes	No	Odd ratio	95% Confidence interval	P-value
1	Gender					
	Male	189	35	1.2768	0.7777 – 2.0963	0.3341
	Female	262	38			
2	Marital Status					
	Single	402	69	2.1026	0.7352 – 6.0129	0.1657
	Married	49	4			
3	Religion					
	*Christianity	346	43	2.2990	1.3738 – 3.8472	0.0015
	Islam	105	30			
4	Age group					
	Lower age	383	68	0.4196	0.1632 – 1.0784	0.0713
	Higher age	68	5			

Legend: lower age 18-27 years, Higher age= 28-38 & above. Significant P-value is bolded. *denote significant variable

Table 6: Relationship between demographic characteristics and Uptake of COVID-19 vaccines

SN	Parameter	Yes	No	Odd ratio	95% Confidence interval	P-value
1	Gender					
	Male	92	97	0.6097	0.4169 – 0.8918	0.0108
	Female*	96	166			
2	Marital Status					
	Single*	160	242	0.4959	0.2721 – 0.9035	0.0219
	Married	28	21			
3	Religion					
	Christianity*	129	217	0.4635	0.2977 – 0.7217	0.0007
	Islam	59	46			
4	Age group					
	Lower age*	150	233	0.5082	0.3019 – 0.8556	0.0109
	Higher age	38	30			

Legend: lower age 18-27 years, Higher age= 28-38 & above. Significant P-values were bolded. *denote significant variables

Table 7: Relationship between demographic characteristics and students' perception of COVID-19 vaccines

SN	Parameter	Positive perception	Negative perception	Odd ratio	95% Confidence interval	P-value
1	Gender					
	Male	139	85	0.7889	0.5540 – 1.1233	0.1885
	Female	169	131			
2	Marital Status					
	Single	275	196	0.8503	0.4738 – 1.5261	0.5869
	Married	33	20			
3	Religion					
	Christianity	222	166	0.7810	0.5223 – 1.1679	0.2286
	Islam	86	50			

Discussion

The results of this study revealed that a significant proportion of the respondents were well-informed about the COVID-19 vaccination in Nigeria. Similar findings were observed in studies conducted in Nigeria [17], Bangladesh [18], and Ethiopia [19], where the majority of respondents demonstrated awareness of the COVID-19 vaccination efforts. However, during the initial rollout of COVID-19 vaccines, a study conducted in Ethiopia [20] reported low levels of awareness regarding the COVID-19 vaccination.

The higher level of COVID-19 vaccination awareness observed in this study could potentially be attributed to the status of the study population, which consists of students in higher learning institution. Another possible explanation for the higher level of COVID-19 vaccination awareness in this study could be attributed to the active involvement of government agencies and policymakers who have taken steps to raise awareness and address concerns related to COVID-19 uptake. Numerous studies have demonstrated that awareness of COVID-19 vaccination among the general population primarily originates from various sources, including social media platforms, print and electronic media, mass campaigns, and publicity efforts by health professionals [17,21,22].

The importance of raising public awareness about the COVID-19 pandemic and the effectiveness of the available intervention, namely the vaccine, cannot be overemphasized. It is essential to combat the pandemic and halt its spread. To accomplish this objective, it is crucial for all relevant stakeholders to work together collaboratively and with great effort to disseminate accurate information to the general public, particularly at the grassroots level. By doing so, we can counter the dissemination of dangerous falsehoods and misrepresentations about the pandemic and the vaccine. This, in turn, will significantly impact how people perceive and accept the COVID-19 vaccine on a global scale [23].

The findings of this study indicated that gender, marital status, and age bracket were not found to have a significant association with the level of COVID-19 vaccine awareness among the respondents. These findings align with previous studies conducted in other regions of Nigeria [17], and Ethiopia [20], which also reported no significant association between gender, and age bracket with the level of COVID-19 vaccine awareness. The

reason for lack of significant relationship between respondents' awareness of COVID-19 vaccines with some of their demographic parameters could be attributed to the global promotion of COVID-19 vaccines and the diligent efforts of Nigerian governments to inform her citizens irrespective of their demographic background, about the arrival, initiation, necessity, and safety of the COVID-19 vaccination campaign as previously insinuated [17].

However, the findings of this study revealed that religion plays a significant role in contributing to COVID-19 vaccine awareness. Similarly, a previous study documented that being a Moslem or a Christian influence awareness of COVID-19 vaccination [17]. In this study, it was observed that respondents of the Christian faith exhibited significantly higher awareness of the COVID-19 vaccine compared to respondents of the Moslem faith. This discrepancy could potentially be attributed to a higher representation of Christian respondents in the study population compared to Moslem respondents.

Varying responses among the study population on perceptions about the COVID-19 vaccine was observed in this study. However, overall, the majority of respondents exhibited a positive perception of the COVID-19 vaccine. This finding is consistent with a previous study conducted by **Adedeji-Adenola et al.** [17]. Nevertheless, it is worth noting that there was no statistical difference between the positive and negative perceptions of the COVID-19 vaccine, indicating that a higher proportion of the respondents also had negative perceptions. This suggests that the study population may be having mixed feelings regarding the efficacy and safety of the vaccination efforts.

Furthermore, the absence of a significant association between respondents' perception of COVID-19 vaccines and their demographic characteristics indicates that these factors did not have any influence on how the respondents perceived COVID-19. In other words, the study did not find any evidence to suggest that age, gender, or other demographic characteristics affected the way individuals viewed the COVID-19 vaccines. Contrary to the finding of this study however, a study in South-Western Nigeria documented that Sociodemographic factor such as respondents' age group, gender, religion, among others were all statistically significant with belief in COVID-19 vaccines [24].

Despite higher number of respondents awareness and perception of COVID-19 vaccines, only 41.7% of the respondents had received the vaccine. This observation highlights that awareness alone may not always translate into acceptance or uptake of the vaccine. In other words, being aware of the existence and importance of the vaccine does not guarantee that individuals will ultimately choose to receive it. In similar studies conducted among medical students in tertiary institutions in Nigeria and Ethiopia respectively, it was documented that only 20.6% [25] and 23.3% [19] of the respondents had received the COVID-19 vaccine. Uptake of COVID-19 vaccine (73.2%) higher than the one in this study was reported in a study from the South-Western Nigeria [24]. The differences could be attributed to differences in sociodemographic characteristics used, geographical locations, and the study populations.

The findings of this study indicated that a majority of the respondents who had not received the COVID-19 vaccination attributed their hesitancy primarily to a lack of trust in the vaccine. This lack of trust could be influenced by the spread of false information regarding COVID-19 vaccines and concerns about the perceived rush in their development [25]. The apparently low uptake of COVID-19 vaccination in this study could be due to different factors. For example, the average concerned individual in Nigeria harbors various anxieties regarding the COVID-19 vaccine. These concerns encompass potential adverse effects or complications, fears of mutation, the unfounded notion of a microchip implantation, the misguided belief in the dominance and depopulation of the black race. It is disconcerting that, even at present, there are individuals who deny the existence of COVID-19. Even more troubling, certain people perceive COVID-19 as a mere myth, a joke, a political scam, a consequence of economic conflicts between global powers, a biological weapon, a result of a laboratory accident, or a failed vaccine trial. These negative perceptions, prevalent among the Nigerian population, undoubtedly pose obstacles to the successful deployment and acceptance of the COVID-19 vaccine [26]. In general, it is widely acknowledged that knowledge influences perception [27] and perception, in turn, impacts individuals' willingness to embrace a vaccination schedule.²⁸

The current study provided evidence that sociodemographic factors, such as gender, age

group, religion, and marital status, were significantly associated with the uptake of COVID-19 vaccination. These findings align with a previous study conducted in South-western Nigeria by **Olaoye et al.** [24] which also found a significant association between age group and religion in relation to COVID-19 vaccine uptake. The influence of religion on the uptake of COVID-19 vaccines in this study is not surprising, considering that Nigeria has a significant religious divide when it comes to important matters or decisions, including healthcare. Previous studies conducted in Nigeria have documented instances where the acceptance or rejection of vaccinations, such as polio vaccine, were influenced by religious undertones [29,30]. Therefore, the significance of religious beliefs, trust, and confidence in a program, such as the case of COVID-19 vaccines, cannot be overstated, as they have a significant impact on its acceptance and overall success.

The findings of this study revealed that younger respondents were more likely to be vaccinated compared to older respondents. This observation is consistent with the findings of a previous study conducted by **Olaoye et al.** [24]. However, it differs from the findings of other previous studies [31,32] which documented that older individuals were more likely to receive the COVID-19 vaccine. In this study, it was found that more females were likely to be vaccinated compared to their male counterparts. This finding contradicts previous studies that reported a positive correlation between male gender and COVID-19 vaccination [17, 33] or studies that indicated higher COVID-19 impact on males compared to females [34]. Additionally, in contrast to the findings of this study, another study reported a higher proportion of males receiving COVID-19 vaccination, although without statistical significance [24].

The discrepancies observed between the findings of this study and the comparative studies could be attributed to several factors. Firstly, differences in the study population, including demographic characteristics and socio-cultural factors, may have influenced the outcomes. Secondly, geographical variations can play a role, as attitudes and behaviors towards COVID-19 vaccination can differ among regions or countries. Lastly, the timing of the research might have influenced the results, as the perception and acceptance of COVID-19 vaccines can evolve over time due to changing circumstances, public health

campaigns, and evolving knowledge about the virus and its vaccines. Therefore, these factors should be taken into consideration when interpreting and comparing the findings of different studies.

Strength and Limitation of the Study

While it is true that the focus of this survey was limited to one tertiary institution, it is also crucial to recognize that each institution or community may have unique characteristics, demographics, and cultural factors that can influence vaccine awareness and uptake. Therefore, caution should be exercised when generalizing the findings of this study to other institutions or communities.

Despite this limitation, the study's findings are still relevant and informative for the studied population and can serve as a reference point for similar institutions or communities in the region. It highlights the importance of assessing and understanding vaccine awareness, perception, and uptake among specific demographics, which can be useful in designing targeted vaccination campaigns and public health interventions.

Conclusion

Based on the findings of this study, it is evident that a significant number of respondents were aware of the COVID-19 vaccine and held a positive perception toward it. However, despite this awareness and positive attitude, a considerable portion of the respondents had not received the vaccine. Furthermore, there was a notable level of vaccine hesitancy among certain respondents, who cited a lack of trust as a key reason for their reluctance to participate in the vaccine uptake.

Addressing safety concerns related to COVID-19 vaccines is of utmost importance and should be an ongoing effort. Clear and reliable targeted messages are crucial in order to alleviate these concerns and promote acceptance among the population. By consistently providing accurate and transparent information about the safety of the vaccines, we can foster engagement and build trust among individuals, encouraging them to embrace vaccination against COVID-19.

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