

Research Article

Knowledge and Attitude Towards COVID-19 Vaccine: A Cross-Sectional Study of Students at a Tertiary Educational Institution in Nigeria

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Abstract

The level of the COVID-19 vaccine uptake in African countries and especially Nigeria is still considerably low, when compared with other developed countries, despite the established fact on its efficacy in protecting the populace from the negative consequences of the disease. This research investigated the knowledge and attitudes of students at Ondo State College of Health Technology regarding the COVID-19 vaccine. Adopting a descriptive survey design, the study targeted Technician students from six departments, with 300 participants selected via random sampling. Data were gathered using a semi-structured questionnaire, "Trainee Health Workers Knowledge and Attitude Questionnaire," addressing four research questions and seven hypotheses. Frequency counts, percentages, and charts were used for analysis, while Chi Square was used to test hypotheses at a 0.05 significance level. Findings revealed a high acceptance rate of the COVID-19 vaccine among students, though fewer had taken the second and booster doses. Participants demonstrated high knowledge and positive attitudes toward the vaccine, with low levels of misconceptions. Gender and age did not significantly influence students' knowledge or attitudes. However, the course of study significantly affected their knowledge and attitudes toward the vaccine. Additionally, there was a significant relationship between knowledge and attitude, indicating that knowledge does not necessarily equate to willingness to accept the vaccine. Recommendations included increasing exposure to valid information about the COVID-19 vaccine and conducting college-wide sensitization campaigns to persuade unvaccinated students by emphasizing the vaccine's importance. These efforts should particularly target those with remaining misconceptions.

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Keywords

Students, Knowledge of COVID-19, Attitude Towards COVID-19

1. Introduction

The COVID-19 pandemic, which originated in Wuhan, China in December 2019, has had a devastating impact worldwide, resulting in over 6.3 million deaths by mid-June 2022 [1]. The disease, caused by the SARS-CoV-2 virus, was declared a global pandemic by the World Health Organization (WHO) in March 2020. Efforts to control the virus included travel restrictions, border closures, public health campaigns, social distancing, and mask mandates. Vaccines have since been developed and validated by the WHO to mitigate the disease's severity and transmission [2].

The first COVID-19 case in Africa was reported in Egypt on February 14, 2020, and the virus has since spread to all 55 African Union Member States. Nigeria confirmed its first case on February 27, 2020, involving an Italian citizen who was tested by the Lagos University Teaching Hospital's Virology Laboratory [3]. The anticipation for a breakthrough solution led to the rapid development of vaccines, which were expected to be widely embraced as a preventive measure. However, vaccine acceptance in Africa has been mixed, with only 63% indicating willingness to receive the vaccine and 73% expressing concerns about side effects [4].

In Nigeria, the government mandated vaccination for all public servants to address the high hesitancy rates. Nonetheless, vaccine acceptance remains low, particularly among trainee health workers, who are crucial to the future healthcare workforce [5]. This hesitancy is alarming, given the critical role these future health professionals will play in managing public health crises.

The COVID-19 pandemic's high mortality and morbidity rates necessitate serious public health interventions. Vaccines, validated by the WHO, have proven effective in reducing both infection rates and disease severity. Despite this, the emergence of new variants and concerns about waning immunity have fueled ongoing uncertainty [6, 7]. Some SARS-CoV-2 variants pose significant threats of severe illness and death, highlighting the need for extensive vaccine coverage to mitigate these risks [8].

Vaccine hesitancy, driven by factors such as trust in vaccine safety, perceived necessity, and accessibility, remains a significant barrier to achieving widespread immunization [9]. Misinformation, myths, and mistrust about COVID-19 and its vaccines exacerbate the issue, particularly in African contexts where misconceptions about the virus's origins and treatments persist [10-12]. Such misinformation can significantly influence public perception and acceptance of vaccines [13].

The introduction of COVID-19 vaccines was a pivotal development, yet skepticism among potential health workers threatens vaccination efforts. Vaccine hesitancy among trainee health professionals could undermine public health initiatives aimed at controlling the pandemic [14]. As of June 2022, Nigeria reported 256,573 confirmed COVID-19 cases and 3,144 deaths, with only 8.4% of the population fully vaccinated [15]. This vaccination rate is significantly lower than the global average.

This study aims to assess the knowledge and attitudes of students at the Ondo State College of Health Technology regarding COVID-19 vaccination, filling a gap in the literature and providing insights for targeted interventions to improve vaccine acceptance among future health professionals. By addressing these issues, the study seeks to enhance the overall effectiveness of vaccination campaigns and public health responses in Nigeria.

2. Method

2.1. Study Design

This research utilized a descriptive survey design to evaluate the knowledge and attitudes of students at the Ondo State College of Health Technology, Akure, Nigeria, regarding the COVID-19 vaccine. The descriptive survey design is appropriate for this study as it allows for the systematic collection and analysis of data from a representative sample, providing a snapshot of the current understanding and perceptions among the student population. By employing this design, the study aims to identify trends, attitudes, and levels of awareness, which can inform future educational and policy interventions.

2.2. Sampling Technique

The sample size for this study was determined using the Yamane formula (1967), which calculates the required sample size based on the population size and a predefined margin of error. Given a total population of 1,195 students across six departments. The calculated sample size was approximately 300 students. A simple random sampling technique was employed to ensure that every student had an equal chance of being selected, thereby reducing selection bias. The sample was proportionally allocated across the six departments to reflect their respective sizes, ensuring comprehensive repre-

sensation. For instance, the Pharmacy Technician department with 135 students had 34 participants selected, while the Health Information Management department with 326 students had 82 participants selected.

2.3. Data Collection

Data were collected using a structured questionnaire named the Trainee Health Workers' COVID-19 Vaccine Knowledge and Attitude Questionnaire (THWCVKAQ). The instrument consisted of three sections:

1. Section A gathered demographic information of the respondents.
2. Section B assessed the knowledge of the COVID-19 vaccine.
3. Section C evaluated attitudes towards the COVID-19 vaccine.

To ensure the reliability and validity of the instrument, a pilot study was conducted with 20 students from the National Open University of Nigeria, Oka-Akoko Study Centre. The test-retest method was used, and the resulting data yielded a correlation coefficient of 0.9, indicating high reliability. The face validity of the questionnaire was confirmed through a review by the research supervisor, who provided feedback to refine the questions.

Data collection was facilitated by the researcher and several lecturers from the respective departments. This approach ensured that the process was organized and that a high response rate was achieved. The collected data were then analyzed using the Statistical Package for Social Science (SPSS) software, employing both descriptive statistics and inferential statistics (Chi-Square test) at a significance level of 0.05.

2.4. Ethical Consideration

Ethical approval for the study was obtained from the Ethics Committee of the College of Health Technology, Akure, Ondo State. The ethical guidelines ensured that the study was conducted with respect for the rights and dignity of all participants. Informed consent was obtained from each participant, ensuring that they were fully aware of the study's purpose, procedures, potential risks, and benefits. Participation was voluntary, and respondents were assured of the confidentiality and anonymity of their responses. Ethical considerations were paramount in maintaining the integrity and credibility of the research process.

3. Result

3.1. Socio-Demographics Characteristics

The socio-demographic characteristics of the 300 respondents reveal that a significant majority are female (79.0%), with most being under the age of 25 (77.3%) and single (97.0%). The respondents are distributed across various departments, with the highest representation from Health Information Management (27.3%) and the lowest from Pharmacy Technician (11.3%). In terms of sources of information about the COVID-19 vaccine, social media (51%) and the internet (46.3%) are the most common, followed by college sensitization/lecturers (48%), family and friends (42%), and electronic media (39%).

Table 1. Socio-demographics characteristics of respondents.

Characteristics (N=300)	Frequency	Percentage
Gender		
Male	63	21.0%
Female	237	79.0%
Age groups (years)		
25 and Above	68	22.7
Below 25	232	77.3
Marital status		
Married	9	3.0%
Single	291	97.0%
Department		
Community Health Extension Workers	58	19.3%
Dental Health Technician	35	11.7%
Environmental Health	50	16.7%

Characteristics (N=300)	Frequency	Percentage
Health Information Management	82	27.3%
Medical Laboratory Technician	41	13.7%
Pharmacy Technician	34	11.3%
Source of COVID-19 Vaccine information.		
Internet	139	46.3%
Social media	153	51%
Electronic Media (Radio/TV)	117	39%
College Sensitisation/Lecturers	144	48%
Family and Friends	126	42%

3.2. COVID-19 Vaccine Taken

Results from [table 2](#) indicate that 222 participants, representing 74% had receive COVID-19 vaccine while 78 participants (26%) had not taken the jab.

Table 2. Have you taken COVID-19 Vaccine?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	78	26.0	26.0
	Yes	222	74.0	100.0
	Total	300	100.0	100.0

3.3. Vaccine Received

[Table 3](#) shows that among those that had received the vaccine, just 20 participants (6.7%) had received the first two doses and the booster dose. Ninety-three participants (31%) had taken the first and second doses while the majority (104) of the participants representing 36.3% had only taken the first dose.

Table 3. If you had taken the vaccine, how many jabs?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid		78	26.0	26.0
	First and Second dose	93	31.0	57.0
	First dose only	109	36.3	93.3
	First, Second and Booster dose	20	6.7	100.0
	Total	300	100.0	100.0

3.4. Knowledge of COVID-19 Vaccine Among Students

Table 4 shows that a good majority of the participants had good knowledge of COVID-19 vaccine. However, despite the high knowledge of COVID-19 Vaccine demonstrated by the majority, there are surprisingly few who lacked adequate knowledge of the vaccine. For instance, 37.3% of the participants are not sure of the current mortality rate of the pan-

dem, 13% are not sure of the safety of the vaccine. Again, 31.7% are ignorant of the fact that the vaccine is meant for every health worker while 25.7% of the participants are not sure if all health workers are expected to be vaccinated. The results also surprisingly indicate that 117 representing 39% of the participants believed that the vaccine could worsen pre-existing health conditions, with just 104 (34.7%) that chose no while 26.3% are not sure.

Table 4. Participants' Knowledge of COVID-19 vaccine.

SN	ITEM	YES	N/S	NO
1	COVID-19 Vaccine is a serious disease.	284 (94.7%)	13 (4.3%)	3 (1.0%)
2	Mortality rate of COVID-19 vaccine is over 6 million.	182 (60.7%)	112 (37.3)	6 (2.0%)
3	There exist vaccine for COVID-19.	261 (87.0%)	27 (9.0)	12 (4.0)
4	COVID-19 Vaccine is very safe	254 (84.7%)	41 (13.7%)	5 (1.7%)
5	The vaccine can prevent and cure COVID-19 infection.	224 (74.7%)	63 (21.0%)	13 (4.3%)
6	Not all health workers are expected to take the jabs, it depends on the unit one works.	65 (21.7%)	77 (25.7%)	158 (52.7%)
7	I believe COVID-19 Vaccine will help stop the pandemic	258 (86.0%)	32 (10.7%)	10 (3.3)
8	COVID-19 vaccines could worsen pre-existing health conditions	117 (39.0%)	79 (26.3%)	104 (34.7)
9	I know that Corona virus infection can be prevented with a vaccine	259 (86.3%)	33 (11.0%)	8 (2.7%)
10	I am aware that COVID-19 vaccine is available free of charge.	280 (93.3%)	14 (4.7%)	6 (2.0%)
11	I know that aware that the COVID-19 vaccine should be taken in two doses, then booster dose follows.	254 (84.7%)	33 (11.0%)	13 (4.3%)
12	COVID-19 vaccine may cause mild side effects	184 (61.3%)	79 (26.3%)	37 (12.3%)
13	COVID-19 vaccine is not recommended for people less than 18 years of age and pregnant women	200 (66.7%)	68 (22.7%)	32 (10.7)

3.5. Attitude of Students

The results in table 5 indicate that most participants have good attitude towards COVID-19 vaccine. It is gratifying to note that most of the participants have a positive attitude as revealed by their responses to all items but few on the table. For instance, 15.7% felt COVID-19 vaccine could not be trusted while 30.3% are not sure of its trustworthiness. Just 54% of the participants could trust the

vaccine. Furthermore, 53.3% of the participants felt the infection could not be reduced or controlled with vaccination, 24.0% are not sure while less than a quarter (22.7%) felt it could be controlled via vaccination. The result also indicates that 29.7% are not just interested in COVID-19 vaccine whereas 58.7% are interested. Again, 20.33% of the participants are disturbed that taking the vaccine could lead to infection, 61.7% felt otherwise while 18.0% aren't sure that taking the jab could predispose them to infection.

Table 5. Attitude towards receiving COVID-19 vaccine.

SN	ITEM	YES	NOT SURE	NO
1	It is important to take COVID-19 Vaccine.	281 (93.7)	17 (5.7)	2 (0.7)
2	Taking COVID-19 vaccine is for my own good.	281 (93.7)	17 (5.7)	2 (0.7)

SN	ITEM	YES	NOT SURE	NO
3	There is no need to take the COVID-19 vaccine at all.	22 (7.3)	53 (17.7)	225 (75.0)
4	COVID-19 vaccines are not safe.	31 (10.3)	65 (21.7)	204 (68.0)
5	COVID-19 Vaccines were hurriedly prepared; hence it is not to be trusted.	47 (15.7)	91 (30.3)	162 (54.0)
6	It is not possible to reduce and control the incidence of covid-19 with vaccination.	68 (22.7)	72 (24.0)	160 (53.3)
7	I am not scared of COVID-19 vaccine but I am not just interested.	89 (29.7)	35 (11.7)	176 (58.7)
8	I feel that the COVID-19 vaccine must be taken by all that are eligible to take it.	254 (84.7)	23 (7.7)	23 (7.7)
9	I believe that the COVID-19 vaccine should be prioritized for a specific population	147 (49.0)	57 (19.0)	96 (32.0)
10	COVID-19 vaccine provide good protection after a few weeks against coronavirus infection.	201 (67.0)	62 (20.7)	37 (12.3)
11	I will freely discuss the benefit of COVID-19 vaccine with people around me.	257 (85.7)	28 (9.3)	15 (5.0)
12	I am disturbed that getting the vaccine could lead to infection.	61 (20.3)	54 (18.0)	185 (61.7)

3.6. Misconceptions About COVID-19 Vaccine

The data reveals various misconceptions and beliefs about COVID-19 and the vaccine among respondents. A majority reject the idea that COVID-19 is a conspiracy (73.7%) or that it is a divine punishment (72.7%). Similarly, most respondents do not believe that Blacks are immune to COVID-19 (73.0%) or that the virus is a population control plot (56.7%). Regarding

the vaccine, opinions are mixed: while 46.0% disagree that the side effects outweigh the benefits, a significant portion (28.3%) believe otherwise. Concerns about vaccine efficacy are also notable, with 45.3% disagreeing that vaccines are ineffective. A substantial number (49.0%) fear severe allergic reactions, though fewer believe it leads to infertility (55.7%) or contains harmful substances (48.0%). Additionally, 52.3% disagree that local herbs are more effective than vaccines, though a notable portion remains uncertain.

Table 6. Misconceptions about COVID-19 vaccine.

SN	ITEM	YES	NOT SURE	NO
1	COVID-19 is not real, it's a matter of conspiracy.	30 (10.0)	49 (16.3)	221 (73.7)
2	Blacks cannot be infected by COVID-19.	24 (8.0)	57 (19.0)	219 (73.0)
3	COVID-19 is a punishment from God, and nothing can stop it.	14 (4.7)	68 (22.7)	218 (72.7)
4	COVID-19 is a plot to reduce the world population.	49 (16.3)	81 (27.0)	170 (56.7)
5	The side effects of COVID-19 vaccine outweigh the positive impact.	85 (28.3)	77 (25.7)	138 (46.0)
6	The vaccines are not efficacious as been presented.	71 (23.7)	93 (31.0)	136 (45.3)
7	COVID_19 vaccine can lead to severe allergic reactions in most people that take it.	147 (49.0)	68 (22.7)	85 (28.3)
8	It can lead to infertility or birth defect in future.	34 (11.3)	99 (33.0)	167 (55.7)
9	The vaccine contains undisclosed controversial substances that can affect my health.	53 (17.7)	103 (34.3)	144 (48.0)
10	Local herbs can fight virus generally than any vaccine.	47 (15.7)	96 (32.0)	157 (52.3)

Hypothesis One: There is no significant relationship in the knowledge of the students at the Ondo State College of Health Technology, Akure on COVID-19 vaccine on the basis of age.

Table 7. Chi-Square Tests Analysis of age and COVID-19 knowledge.

	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.112 ^a	1	.146		
Continuity Correction ^b	1.513	1	.219		
Likelihood Ratio	2.378	1	.123		
Fisher's Exact Test				.183	.105
N of Valid Cases	300				

There is no age difference in the participants' knowledge of COVID-19 vaccine. There is no relationship between the two variables.

Hypothesis two: There is no significant gender difference in the attitude of students of the Ondo State College of Health Technology, Akure towards COVID-19 vaccine.

Table 8. Chi-Square Tests Analysis of Gender and Participants' Knowledge of COVID-19 vaccine.

	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.000 ^a	1	.991		
Continuity Correction ^b	.000	1	1.000		
Likelihood Ratio	.000	1	.991		
Fisher's Exact Test				1.000	.559
N of Valid Cases	300				

There is no gender difference in the participants' attitude towards receiving COVID-19 vaccine. There is no relationship between the two variables.

Hypothesis Three: There is no significant relationship in the knowledge of the students at the Ondo State College of Health Technology, Akure on COVID-19 vaccine on the basis of age.

Table 9. Chi-Square Tests Analysis of Age difference in the respondents' Attitude towards COVID-19.

	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.899 ^a	1	.168		
Continuity Correction ^b	1.445	1	.229		
Likelihood Ratio	2.026	1	.155		
Fisher's Exact Test				.218	.113
N of Valid Cases	300				

There is no age difference in the participants' attitude towards receiving COVID-19 vaccine. There is no relationship between the two variables.

Hypothesis four: There is no significant relationship in the attitude of the students of the Ondo State College of Health Technology, Akure on COVID-19 vaccine on the basis of course of study.

Table 10. Chi Square Analysis of Participants' Course of Study and Attitude towards receiving COVID-19 vaccine.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	19.736 ^a	5	.001
Likelihood Ratio	21.009	5	.001
N of Valid Cases	300		

There is influence of course of study in the participants' attitude towards COVID-19 vaccine. There is a relationship between the two variables.

Hypothesis five: There is no significant relationship between participants' knowledge of COVID-19 vaccine and attitude towards COVID-19 vaccine.

Table 11. Chi Square Analysis of Participants' Knowledge of COVID-19 vaccine and Attitude towards receiving COVID-19 vaccine.

	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	72.992 ^a	1	.000		
Continuity Correction ^b	68.975	1	.000		
Likelihood Ratio	55.750	1	.000		
Fisher's Exact Test				.000	.000
N of Valid Cases	300				

There is relationship between participants' knowledge of COVID-19 vaccine and attitude towards COVID-19 vaccine. There is a relationship between the two variables.

4. Discussion

4.1. Rate of COVID-19 Vaccination Among Trainee Health Workers

The study reveals a high acceptance rate of the COVID-19 vaccine among participants, with 74% having received at least the first dose. This rate is notably higher than the global and national averages as of October 2022. According to the World Health Organization [16], approximately 68.04% of the global population had been vaccinated, while Nigeria had a significantly lower vaccination rate at 21.89% of its population. This higher local acceptance rate aligns with findings from Leela et al. [17], who reported high vaccine acceptance among medical students in Kerala, India. The high vaccination rate among the trainee health workers in Akure may be attributed to their educational background and increased awareness of the importance of vaccination in preventing the spread of COVID-19.

4.2. Knowledge of COVID-19 Vaccine Among Students

The results indicate that the students of the Ondo State College of Health Technology possess a high level of knowledge about the COVID-19 vaccine. This finding is consistent with a study by Li et al. [18], which found that staff at geriatric care facilities in Anhui Province, China, also had a very high level of knowledge about the vaccine. High knowledge levels among the students can be linked to their health education, which likely emphasizes the importance of understanding and combating infectious diseases. This comprehensive knowledge base is crucial in fostering informed attitudes and behaviors towards vaccination.

4.3. Attitude Towards COVID-19 Vaccine

The study reveals a generally positive attitude towards the COVID-19 vaccine among the participants, as evidenced by the high number of students who had received at least the first dose. However, fewer participants had received the second and third doses, indicating a potential area for improvement in follow-up vaccination efforts. This finding is like the positive attitudes observed among geriatric care facility staff in Anhui Province, China, as re-

ported by Li et al. [18]. The positive initial uptake suggests that the students recognize the importance of vaccination, but the drop-off in subsequent doses highlights the need for continued education and encouragement to complete the vaccination series.

4.4. Misconceptions About COVID-19 Vaccine

The findings show that while most participants do not hold many misconceptions about the COVID-19 vaccine, a significant minority still believe in some falsehoods. For instance, some participants believe in conspiracy theories about the vaccine, its side effects, and its efficacy. This is troubling as misconceptions can hinder vaccination efforts and public health initiatives. Addressing these misconceptions is crucial, as evidenced by studies such as the one by Bono et al. [19], which found that misinformation significantly impacts vaccine acceptance. Effective communication strategies and educational campaigns are needed to dispel myths and promote information about the COVID-19 vaccine.

4.5. Influence of Age on Knowledge of COVID-19 Vaccine

The findings from the study indicate that age significantly influences the knowledge of COVID-19 vaccine among students at the Ondo State College of Health Technology. This result contrasts with the findings of Li et al. [18], who found that gender, rather than age, influenced the knowledge of COVID-19 among geriatric care facility staff in Anhui Province, China. Additionally, Syan et al. [20] discovered age-related differences in COVID-19 knowledge among Ontario residents, which also contrasts with this study's findings. The discrepancy may be due to different educational backgrounds and information dissemination methods tailored to different age groups within the health technology college, which might not be as prevalent in other settings.

4.6. Gender Differences in Attitude Towards COVID-19 Vaccine

The study reveals no significant gender difference in the attitude towards the COVID-19 vaccine among the students. This finding diverges from Li et al. [18], who found that gender significantly influenced the attitude towards the COVID-19 vaccine among geriatric care facility staff in Anhui Province. The lack of gender difference in the current study suggests that within the health technology college, both male and female students might receive similar levels of information and encouragement regarding vaccination, thereby leveling their attitudes. This uniformity could be attributed to the college's comprehensive public health education that transcends gender biases.

4.7. Influence of Age on Attitude Towards COVID-19 Vaccine

The results indicate that age does not significantly influence the attitude towards the COVID-19 vaccine among the participants. This finding is not aligned with the study by Li et al. [18], which found age to be a significant factor affecting the attitudes of geriatric care facility staff towards the vaccine. Similarly, Syan et al. [20] identified age-related differences in attitudes towards COVID-19 vaccination in Ontario. The divergence may be explained by the specific educational environment of the Ondo State College of Health Technology, where age-related differences in attitudes might be mitigated by uniform curricular and extracurricular activities promoting vaccine acceptance.

4.8. Influence of Course of Study on Attitude Towards COVID-19 Vaccine

The study shows that the course of study significantly influences students' attitudes towards the COVID-19 vaccine. This suggests that students from different departments may have varying exposure to vaccine-related information and healthcare practices, shaping their attitudes. For instance, students in departments directly related to patient care and public health, such as Community Health Extension Workers, may have a more positive attitude due to their deeper understanding of vaccine efficacy and safety. Supporting this, Yoda and Katsuyama [21] found that medical students and healthcare professionals had higher vaccine acceptance rates compared to non-medical students. Similarly, Barello et al. [22] observed that healthcare students' exposure to clinical settings positively influenced their vaccination attitudes, emphasizing the need for tailored educational interventions across different departments.

4.9. Relationship Between Knowledge and Attitude Towards COVID-19 Vaccine

The study reveals a significant relationship between participants' knowledge of the COVID-19 vaccine and their attitude towards it. This finding implies that while knowledge about the vaccine is crucial, it does not automatically translate into vaccine acceptance. This aligns with previous research indicating that knowledge alone is insufficient to change attitudes and behaviors significantly. For example, a study by Bono et al. [19] found that despite high levels of knowledge, vaccine hesitancy persisted due to underlying mistrust and misconceptions. This underscores the need for comprehensive strategies that address both knowledge gaps and attitudinal barriers through targeted education and engagement initiatives.

5. Conclusion

This study concludes that while a significant number of participants have received the first dose of the COVID-19 vaccine, fewer have completed the second and booster doses. Knowledge about COVID-19 is generally high among students at the Ondo State College of Health Technology, though some gaps remain. The overall attitude towards the vaccine is positive, yet a minority of future health workers hold less favorable views. Importantly, the study found no significant influence of age or gender on the students' knowledge or attitudes towards the COVID-19 vaccine. Additionally, there is no significant relationship between the participants' knowledge and their attitudes towards the vaccine. These findings underscore the need for continuous education and targeted interventions to ensure comprehensive vaccine uptake and address lingering misconceptions.

6. Recommendations

1. Increase Exposure to Valid Information: Students should have greater access to accurate and reliable information about the COVID-19 vaccine to enhance their understanding and dispel any misinformation.
2. College-Wide Sensitization Campaigns: Implement comprehensive sensitization programs across the college to encourage vaccination. These campaigns should specifically target individuals harboring misconceptions about the vaccine, emphasizing its importance and safety.
3. Discipline-Specific Health Programs: Health sensitization programs should be tailored to different courses of study, recognizing that students' academic disciplines influence their perceptions and attitudes towards vaccination.
4. Active Encouragement from College Management: The college administration, along with other stakeholders, should take deliberate steps to promote vaccine acceptance and uptake among students.
5. Encouragement for Complete Vaccination: Efforts should be made to ensure that all students complete the full vaccination schedule, including the first, second, and booster doses, addressing the current shortfall in booster dose uptake.

Abbreviations

COVID-19	Corona Virus Disease- 2019
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus
THWCVKAQ	Trainee Health Workers' COVID-19 Vaccine Knowledge and Attitude Questionnaire

Conflicts of Interest

The authors declare no conflicts of interest.

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