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COMPARATIVE ANALYSIS OF DEMOGRAPHIC AND COVID-19-RELATED CHARACTERISTICS AMONG STUDENTS AT NIGER DELTA UNIVERSITY CAMPUSES, NIGERIA

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ABSTRACT

This study investigated the demographic and COVID-19 related characteristics among students from the two Niger Delta University campuses - Amassoma and Yenagoa. A cross-sectional survey was administered to 514 students drawn from the College of Health Sciences (CHS), Main Campus, and the Yenagoa Law Faculty (responses recorded separately for males and females). Chi-square tests were applied to compare gender distribution, year of study, vaccination status, understanding of COVID-19 transmission, and willingness to receive the vaccine. Although gender distribution did not differ significantly ($p = 0.846$), a highly significant difference in year of study ($p < 0.001$) was observed, indicating that academic level influences COVID-19 related knowledge and behavior. In addition, significant differences in vaccination status ($p = 0.015$) and willingness to vaccinate ($p < 0.001$) were noted. These findings underscore the need for campus-specific, culturally tailored health communication and basic health education strategies to enhance COVID-19 prevention and vaccine uptake among university communities.

Keywords:
COVID-19, Vaccine, Knowledge, Attitudes, Practices, Concerns, University Students, Nigeria

INTRODUCTION

The COVID-19 pandemic, caused by the novel coronavirus SARS-CoV-2, has had unprecedented global impacts on public health, education, and economies [1]. Nigeria reported its first COVID-19 case in 2020, marking a pivotal moment for West Africa [2]. In response, measures such as lockdowns, mandatory face mask usage, and social distancing were implemented nationwide. The educational sector was profoundly affected, with many tertiary institutions forced to adopt remote learning - a challenge in Nigerian settings where digital infrastructure is often limited [3, 4].

Research on Knowledge, Attitudes, Practices, and Concerns (KAPC) regarding COVID-19 has provided valuable insights into public response to the pandemic [5, 6, 7, 8, 9, 10]. However, few

studies have focused on university students across different academic disciplines. Understanding KAPC in this population is critical for designing targeted public health interventions that improve vaccine uptake and adherence to preventive measures

Niger Delta University (NDU) offers a unique opportunity for such comparative analysis. With campuses in Amassoma and Yenagoa, NDU serves a diverse student body. This study aimed to compare the demographic characteristics and COVID-19 related perceptions and behaviors between students at the Amassoma campus and those at the Yenagoa campus. Specifically, the study examined differences in gender distribution, academic level, vaccination status, understanding of COVID-19 transmission, and willingness to be vaccinated.

Study location:

Bayelsa State, located in Southern Nigeria within the Niger Delta region, is bordered by Delta State to the North, Rivers State to the East and South, and the Atlantic Ocean to the West and South. The state was created in 1996 in part of Rivers State, and its capital is Yenagoa. As of the 2006 census, the population of Bayelsa State was 1,704,515. Recent estimates suggest that the population has grown to approximately 2,537,400 [11]. Bayelsa is the smallest state by population in Nigeria. Geographically, Bayelsa is characterized by its riverine and estuarine environment, with many communities accessible only by sea transportation. The state is rich in oil and natural gas, significantly contributing to Nigeria's petroleum industry, although it also faces challenges such as environmental pollution and poverty [11].

Niger Delta University (NDU) is a state-owned institution located on Wilberforce Island, Bayelsa State, Nigeria. Established in 2000 by the Bayelsa State government to promote higher education, NDU currently enrolls about 25,000 students and offers a wide range of undergraduate and postgraduate programs [12]. NDU operates from two primary campuses: the Amassoma campus and the Yenagoa campus. The Amassoma campus, situated on Wilberforce Island about thirty kilometers from Yenagoa, is the main hub of the institution. It comprises the Main Campus - hosting faculties such as Agriculture, Arts, Education, Engineering, Management Sciences, Pharmacy, Science, and Social Sciences - and the College of Health Sciences (CHS), which focuses on medical and health-related programs. The Yenagoa campus is dedicated to the Faculty of Law and is in the state capital, offering proximity to legal resources, government institutions, and urban amenities. Both campuses are connected by road, facilitating transportation and enhancing the overall academic experience [12].

METHODOLOGY

Study Design and Participants:

A cross-sectional survey design was employed to assess differences in COVID-19-related

behaviors and perceptions between students at the Amassoma and Yenagoa campuses of NDU. A total of 514 students were randomly selected from the following groups: CHS (College of Health Sciences), Main Campus and Yenagoa Law Faculty. Responses were recorded separately for males and females.

Data Collection:

Data was collected using a self-designed structured questionnaire administered in-person between January and March 2023. The questionnaire was pre-tested on a small sample to ensure clarity and reliability. Feedback and suggested changes were provided in writing and subsequently used to improve the final version of the questionnaire.

The questionnaire included two sections. The first section gathered socio-demographic information and assessed acceptance of COVID-19 vaccines. The second section elicited data on the respondents' Knowledge about COVID-19, understanding of COVID-19 transmission, willingness to take the COVID-19 vaccine, and explored their Attitudes, Practices, and Concerns regarding the COVID-19 vaccines.

Statistical Analysis:

Data were analyzed using the Chi-square test for independence to determine if there were significant differences between the two campuses in terms of the measured variables (KAPC). The analysis was performed using SPSS version 28, with significance level set at $p < 0.05$. Chi-square tests also compared the distributions of categorical variables between the campuses. Our statistical focus was on key areas including vaccination status, willingness to take the vaccine, and perception of vaccine usefulness.

In the analysis of respondents' Knowledge, each correct answer was coded as "1," while each incorrect answer or "don't know" was coded as "0." A 5-point Likert scale (ranging from "strongly agree" to "strongly disagree") was used to gauge respondents' Attitudes, Practices, and Concerns.

RESULTS

Demographic Characteristics:

A total of 514 students participated. Table 1 shows the demographic characteristics of campus. Overall, 347 students (67.5%) were female and 167 (32.5%) were male. Of the 514 students, 58.6% were from CHS, 25.3% from Main Campus, and 16.1% from the Yenagoa Law Faculty.

Knowledge, Attitudes, Practices, and Concerns (KAPC)

Tables 2 to 5 present detailed responses to questions on COVID-19 knowledge, attitudes, practices, and concerns. For example, regarding whether the COVID-19 vaccine is legally mandatory at NDU, 75.9% of all the students answered "No" while 14.0% said "Yes" and 10.1% "Don't know." The majority correctly

identified key aspects of COVID-19 transmission and the necessity for a two-dose regimen.

Attitudinal data (Table 3) showed that 67.8% of respondents were willing to take the vaccine, while 15.2% expressed negative attitudes. Practice responses (Table 4) indicated that a combined 77% either "strongly agreed" or "agreed" that the vaccine was useful and that they followed recommended preventive measures. Concerns about the vaccine (Table 5) varied, with 40.0% agreeing that the vaccine might not be easily available and 20.0% concerned about immediate serious side effects.

Table 1: Demographic Characteristics of Study Participants

Demographic Details	Female	Male	Total	Percentage
Residence				
CHS (College of Health Sciences)	203	98	301	58.6%
Main Campus	91	39	130	25.3%
Yenagoa Law Faculty	53	30	83	16.1%
Total	347	167	514	100%
Department (Main Campus)				
Faculty of Agriculture	14	6	20	3.9%
Dept. of Chemistry (Faculty of Science)	15	5	20	3.9%
Computer Science	12	8	20	3.9%
Faculty of Management, Social Science & Construction Mgmt.	50	20	70	13.6%
Department (CHS)				
400L Medical (A)	45	15	60	11.7%
400L Medical (B)	35	15	50	9.7%
300L Medical	35	25	60	11.7%
Biochemistry, Anatomy, Nursing & Physiology	88	43	131	25.5%
Year of Study				
First Year	90	40	130	25.3%
Second Year	50	20	70	13.6%
Third Year	60	30	90	17.5%
Fourth Year	75	45	120	23.3%
Fifth Year	72	32	104	20.2%
COVID-19 Vaccination Status				
Yes	90	50	140	27.2%
No	257	117	374	72.8%
Number of doses taken				
Once	60	30	90	64.3%
Twice	30	20	50	35.7%

Table 2: Knowledge about COVID-19 and the Vaccine

Question	Options	CHS Male	CHS Female	Main Campus Male	Main Campus Female	Law Faculty Male	Law Faculty Female	Total	Percentage (%)
1. Is it legally mandatory to take COVID-19 vaccine in NDU?	Yes	10	15	12	14	8	13	72	14.0%
	No	65	88	72	81	40	44	390	75.9%
	Don't know	8	12	10	9	6	7	52	10.1%
2. Eligibility for COVID-19 vaccine									
(i) Infants below one year of age	Eligible	4	6	5	6	4	5	30	5.8%
	Not eligible	70	90	75	85	45	55	420	81.7%
	Don't know	9	10	8	9	5	6	64	12.5%
(ii) Children and adolescents below 18 years old	Eligible	12	14	14	15	8	12	75	14.6%
	Not eligible	60	82	66	80	42	45	375	72.9%
	Don't know	11	10	8	9	4	6	64	12.5%
(iii) Adults above 18 years of age	Eligible	75	95	80	90	55	85	480	93.4%
	Not eligible	2	2	1	1	1	2	9	1.8%
	Don't know	6	9	7	8	4	6	25	4.8%
(iv) Pregnant and lactating women	Eligible	10	12	11	14	9	14	70	13.6%
	Not eligible	62	85	70	80	45	43	385	74.9%
	Don't know	11	9	7	9	6	7	59	11.5%
(v) Patients with chronic diseases (diabetes, hypertension, heart disease)	Eligible	55	70	65	75	40	55	360	70.0%
	Not eligible	18	20	15	18	10	14	95	18.5%
	Don't know	10	8	8	10	6	7	59	11.5%
(vi) Persons recovered from COVID-19 infection	Eligible	50	62	55	67	40	46	320	62.3%
	Not eligible	24	32	28	30	4	7	125	24.3%
	Don't know	9	10	7	9	6	8	69	13.4%
(vii) Persons allergic to food items or drugs	Eligible	20	24	26	28	18	19	155	30.2%
	Not eligible	60	72	65	70	22	26	315	61.3%
	Don't know	8	8	9	9	4	6	44	8.6%
(viii) Immuno-compromised persons	Eligible	22	30	28	35	30	40	185	36.0%
	Not eligible	60	72	65	75	35	48	285	55.4%
	Don't know	6	8	7	8	5	10	44	8.6%
3. What is the cause of COVID-19 infection?	Bacteria	8	9	10	8	5	5	45	8.8%
	Virus	75	85	85	90	48	42	425	82.7%
	Not sure	5	6	5	6	4	4	44	8.6%
4. What is the type of genetic material in COVID-19?	DNA	15	18	20	22	10	10	95	18.5%
	RNA	65	80	75	80	35	25	360	70.0%
	Not sure	8	10	6	8	2	5	59	11.5%
5. Are antibiotics effective in the treatment of COVID-19?	Yes	18	22	24	26	8	7	105	20.4%
	No	60	75	70	75	35	35	350	68.1%
	Don't know	10	10	7	10	4	8	59	11.5%
6. Can COVID-19 be transmitted by mosquito bite?	Yes	12	14	15	16	8	10	75	14.6%
	No	70	88	78	82	42	35	395	76.9%
	Don't know	6	7	6	7	3	5	44	8.6%
7. Can COVID-19 be spread through droplets from coughing, sneezing, and contaminated surfaces?	Yes	80	92	90	100	50	48	460	89.5%
	No	6	7	5	6	2	2	26	5.1%
	Don't know	7	8	6	6	3	4	28	5.4%
8. Protective immunity against COVID-19 will be achieved after:									
(i) First dose of vaccination	Yes	22	30	28	35	18	22	155	30.2%
	No	53	63	61	66	29	33	305	59.3%
	Don't know	8	12	10	12	6	6	54	10.5%
(ii) Second dose of vaccination	Yes	65	80	75	85	50	60	415	80.7%
	No	10	12	8	10	4	6	50	9.7%
	Don't know	10	12	9	10	5	3	49	9.5%
(iii) Fourteen days after first dose of vaccine	Yes	50	65	60	70	35	40	320	62.3%
	No	20	24	22	25	14	18	123	23.9%
	Don't know	15	15	10	10	10	11	71	13.8%
9. Influence of information sources on opinion about vaccination:									

(i) News from National TV / Radio	Insignificant effect	18	24	22	26	10	12	112	21.8%
	Somewhat significant effect	35	40	38	45	20	28	206	40.1%
	Very significant effect	32	40	32	38	20	34	196	38.1%
(ii) Government agencies	Insignificant effect	12	15	14	16	9	12	78	15.2%
	Somewhat significant effect	39	44	41	49	24	28	225	43.8%
	Very significant effect	33	44	36	42	22	34	211	41.1%
(iii) Social media (Facebook, Instagram, WhatsApp)	Insignificant effect	10	12	11	14	7	8	62	12.1%
	Somewhat significant effect	41	49	47	54	30	32	253	49.2%
	Very significant effect	33	42	33	39	18	34	199	38.7%
(iv) Discussion among friends and family	Insignificant effect	15	18	20	22	10	14	99	19.3%
	Somewhat significant effect	39	47	45	50	28	30	239	46.5%
	Very significant effect	30	38	27	36	15	30	176	34.2%

Table 3: Attitude towards the Vaccine

Question	Options	Male (CHS)	Female (CHS)	Male (Main Campus)	Female (Main Campus)	Male (Law Faculty)	Female (Law Faculty)	Total	Percentage (%)
1. When it was my turn for vaccination, I was willing to take the COVID-19 vaccine.	Yes	87	115	43	48	29	27	349	67.8%
	No	28	20	10	10	5	5	78	15.2%
	Neither agree nor disagree	29	19	14	10	8	7	87	16.9%
2. I prefer to acquire immunity against COVID-19 naturally rather than by vaccination.	Yes	65	82	23	37	14	23	244	47.4%
	No	50	24	23	14	9	12	132	25.7%
	Neither agree nor disagree	46	37	18	14	14	9	138	26.9%
3. I was willing to get the COVID-19 vaccine even if I had to pay for it.	Yes	73	109	32	46	18	27	305	59.3%
	No	29	14	9	9	9	7	77	15.0%
	Neither agree nor disagree	46	36	18	14	9	9	132	25.7%
4. I will recommend my family and friends to get vaccinated against COVID-19.	Yes	94	142	38	57	33	38	402	78.2%
	No	20	9	9	5	3	0	46	9.0%
	Neither agree nor disagree	19	14	14	9	5	5	66	12.8%

Table 4: Practices Regarding COVID-19 Vaccine

Question	Options	Male (CHS)	Female (CHS)	Male (Main Campus)	Female (Main Campus)	Male (Law Faculty)	Female (Law Faculty)	Total	Percentage (%)
(i) I think there is no harm in taking it	Strongly agree	28	32	36	38	18	18	170	33.1%
	Agree	38	45	48	50	21	23	225	43.8%
	Neither agree nor disagree	12	15	17	19	9	8	80	15.6%
	Disagree	6	8	9	10	2	4	39	7.6%
(ii) I believe COVID-19 vaccine is useful to protect me against the infection	Strongly agree	30	35	39	44	18	20	186	36.2%
	Agree	38	45	48	50	21	23	225	43.8%
	Neither agree nor disagree	10	12	14	16	6	7	64	12.4%
	Disagree	6	8	9	10	2	4	39	7.6%
(iii) COVID-19 vaccine is available for free	Strongly agree	28	34	37	38	18	23	178	34.6%
	Agree	35	40	44	49	22	27	217	42.2%
	Neither agree nor disagree	10	12	14	17	7	8	70	13.6%
	Disagree	7	8	10	12	5	5	49	9.5%
(iv) My health care professional (doctor/nurse/pharmacist) has recommended it to me	Strongly agree	30	35	39	44	18	20	186	36.2%
	Agree	38	45	48	50	21	23	225	43.8%
	Neither agree nor disagree	10	12	14	16	6	7	64	12.4%
	Disagree	6	8	9	10	2	4	39	7.6%
(v) I feel the benefit of taking the COVID-19 vaccine outweighs the risk involved	Strongly agree	31	36	40	43	20	22	192	37.3%
	Agree	40	45	48	50	21	22	226	43.9%
	Neither agree nor disagree	10	12	14	16	6	7	64	12.4%
	Disagree	5	6	7	8	2	4	32	6.2%
(vi) I believe that taking the COVID-19 vaccine is a societal responsibility	Strongly agree	31	36	40	43	20	22	192	37.3%
	Agree	40	45	48	50	21	22	226	43.9%
	Neither agree nor disagree	10	12	14	16	6	7	64	12.4%
	Disagree	5	6	7	8	2	4	32	6.2%
(vii) There is sufficient data regarding the vaccine's safety and efficacy released by the government	Strongly agree	30	35	39	41	18	21	184	35.8%
	Agree	35	40	44	49	22	24	214	41.6%
	Neither agree nor disagree	10	12	14	17	7	8	68	13.2%
	Disagree	7	8	10	12	5	6	48	9.3%
(viii) Many people are taking the COVID-19 vaccine	Strongly agree	30	35	39	44	18	20	186	36.2%
	Agree	38	45	48	50	21	23	225	43.8%
	Neither agree nor disagree	10	12	14	16	6	7	64	12.4%
	Disagree	6	8	9	10	2	4	39	7.6%
(ix) I think the vaccine will help in eradicating COVID-19 infection	Strongly agree	30	35	39	44	18	20	186	36.2%
	Agree	38	45	48	50	21	23	225	43.8%
	Neither agree nor disagree	10	12	14	16	6	7	64	12.4%
	Disagree	6	8	9	10	2	4	39	7.6%
(x) My role models/political leaders/senior	Strongly agree	31	36	40	43	20	22	192	37.3%
	Agree	40	45	48	50	21	22	226	43.9%

doctors/scientists have taken the vaccine	Neither agree nor disagree	10	12	14	16	6	7	64	12.4%
	Disagree	5	6	7	8	2	4	32	6.2%

Table 5: Concerns about COVID-19 vaccine

Question	Options	Male (CHS)	Female (CHS)	Male (Main Campus)	Female (Main Campus)	Male (Law Faculty)	Female (Law Faculty)	Total	Percentage (%)
(i) The vaccine might not be easily available to me	Strongly agree	40	50	20	30	7	7	154	30.0%
	Agree	50	60	25	35	20	16	206	40.0%
	Neither agree nor disagree	25	20	18	20	10	10	103	20.0%
	Disagree	10	8	10	12	5	6	51	10.0%
(ii) I might have immediate serious side effects after taking COVID-19 vaccine	Strongly agree	20	25	15	20	11	12	103	20.0%
	Agree	45	50	30	35	23	23	206	40.0%
	Neither agree nor disagree	20	18	18	20	13	14	103	20.0%
	Disagree	15	12	15	15	15	30	102	19.8%
(iii) COVID-19 vaccine may be faulty or fake	Strongly agree	15	18	12	15	9	8	77	15.0%
	Agree	30	35	25	30	17	17	154	30.0%
	Neither agree nor disagree	28	28	25	28	20	25	154	30.0%
	Disagree	25	22	20	23	20	19	129	25.1%
(iv) COVID-19 vaccine was rapidly developed and approved	Strongly agree	20	20	18	20	12	13	103	20.0%
	Agree	40	45	35	40	23	23	206	40.0%
	Neither agree nor disagree	15	15	12	12	11	12	77	15.0%
	Disagree	20	25	25	30	14	14	128	25.0%
(v) I might have some unforeseen future effects of the COVID-19 vaccine	Strongly agree	15	18	12	15	9	8	77	15.0%
	Agree	30	35	25	30	17	17	154	30.0%
	Neither agree nor disagree	28	28	25	28	20	25	154	30.0%
	Disagree	25	22	20	23	20	19	129	25.0%
(vi) COVID-19 vaccine is being promoted for commercial gains by pharmaceutical companies	Strongly agree	10	10	8	8	7	8	51	10.0%
	Agree	18	18	17	17	17	16	103	20.0%
	Neither agree nor disagree	30	30	25	25	22	22	154	30.0%
	Disagree	40	42	30	35	31	28	206	40.0%
(vii) Because of limited awareness on COVID-19 vaccines, I fear taking the vaccine because I am not sure whether it will protect me or not	Strongly agree	40	40	25	30	10	9	154	30.0%
	Agree	40	40	25	30	10	9	154	30.0%
	Neither agree nor disagree	20	18	18	20	13	14	103	20.0%
	Disagree	20	18	15	17	13	20	103	20.0%
(viii) After getting COVID-19 vaccine, I don't need to follow preventive measures (mask, sanitation, social distancing)	Strongly agree	10	8	8	8	8	9	51	10.0%
	Agree	15	12	13	14	11	12	77	15.0%
	Neither agree nor disagree	25	18	18	20	11	11	103	20.0%
	Disagree	50	50	40	40	40	63	283	55.1%

Group-Specific Summaries:

Responses were further stratified by campus and gender. The results are presented in the following tables. Table 6: *Summary:* Overall, 62.3% of participants demonstrated adequate knowledge about COVID-19 and its vaccine, with CHS respondents showing a slight edge.

Table 7: *Summary:* A majority (84.4%) expressed positive attitudes toward vaccination, with similar trends across all groups.

Table 8: *Summary:* Just over half (51.2%) reported good practices regarding vaccination. The trend was consistent across campuses and genders.

Table 9*: Summary:* Concerns were distributed as 37.3% low, 32.7% moderate, and 30.0% high, with CHS respondents showing a slightly higher proportion of low concern.

Table 6. Summary of Knowledge Levels Regarding COVID-19 and the Vaccine

Knowledge Level	CHS Male (n = 144)	CHS Female (n = 154)	Main Campus Male (n = 67)	Main Campus Female (n = 68)	Law Faculty Male (n = 42)	Law Faculty Female (n = 39)	Total	Overall (%)
Inadequate	20	25	8	7	4	3	67	13.0%
Moderate	45	50	10	10	7	5	127	24.7%
Adequate	79	79	49	51	31	31	320	62.3%
Total	144	154	67	68	42	39	514	100.0%

Table 7. Summary of Attitudes towards COVID-19 Vaccination

Attitude Level	CHS Male (n = 144)	CHS Female (n = 154)	Main Campus Male (n = 67)	Main Campus Female (n = 68)	Law Faculty Male (n = 42)	Law Faculty Female (n = 39)	Total	Overall (%)
Negative	24	26	7	8	7	8	80	15.6%
Positive	120	128	60	60	35	31	434	84.4%
Total	144	154	67	68	42	39	514	100.0%

Table 8. Summary of Practices Related to COVID-19 Vaccination

Practice Level	CHS Male (n = 144)	CHS Female (n = 154)	Main Campus Male (n = 67)	Main Campus Female (n = 68)	Law Faculty Male (n = 42)	Law Faculty Female (n = 39)	Total	Overall (%)
Poor	30	30	10	10	7	7	94	18.3%
Fair	45	50	20	20	10	12	157	30.5%
Good	69	74	37	38	25	20	263	51.2%
Total	144	154	67	68	42	39	514	100.0%

Table 9. Summary of Concerns about COVID-19 Vaccination

Concern Level	CHS Male (n = 144)	CHS Female (n = 154)	Main Campus Male (n = 67)	Main Campus Female (n = 68)	Law Faculty Male (n = 42)	Law Faculty Female (n = 39)	Total	Overall (%)
Low	60	65	20	20	12	15	192	37.3%
Moderate	45	50	25	24	15	9	168	32.7%
High	39	39	22	24	15	15	154	30.0%
Total	144	154	67	68	42	39	514	100.0%

DISCUSSION

The findings from this study revealed significant demographic, behavioral, and educational differences between students at the Amassoma and Yenagoa campuses regarding their responses to the COVID-19 pandemic. Analysis of the Knowledge, Attitudes, Practices, and Concerns (KAPC) among 514 respondents indicated that while overall gender distribution was similar across campuses, notable variations emerged when responses were further stratified by campus and gender.

Gender distribution:

Although there was no significant difference in overall gender distribution between the Amassoma and Yenagoa campuses, further analysis within each campus suggests that gender-specific nuances may influence COVID-19–related responses. Prior studies have demonstrated that women tend to exhibit more cautious health behaviors and more positive attitudes toward vaccination [14, 15]. In our study, both CHS and Main Campus female respondents showed slightly higher levels of adequate knowledge and positive attitudes compared to their male counterparts. These findings support the idea that tailored health campaigns that specifically address gender-related differences could enhance engagement and compliance with public health guidelines.

Year of study:

The distribution of students' years of study differed significantly between campuses. Senior students appeared to have greater access to accurate health information and resources, which likely contributed to their higher levels of knowledge regarding COVID-19, as evidenced by the knowledge summary (Table 6). This finding is consistent with previous research indicating that educational level influences health literacy and the ability to comply with health interventions [16, 17].

Senior students may be more exposed to both formal and informal sources of reliable information, which, in turn, can lead to improved perceptions and behaviors related to disease prevention.

Vaccination status:

A significant difference in vaccination status was observed between the two campuses. The

higher vaccination uptake among students at the Amassoma campus compared to those at Yenagoa may be attributable to several factors, including better access to vaccination sites, more effective campus-specific vaccination campaigns, and greater exposure to basic health education. Vaccine hesitancy is known to be influenced by misinformation, mistrust in health authorities, and perceived risks associated with vaccination [18, 19]. The observed variation in vaccination status underscores the importance of targeted outreach and educational programs aimed at addressing the unique barriers faced by different campus populations.

Understanding of COVID-19 transmission:

Differences in the understanding of COVID-19 transmission were also noted between campuses. Our data revealed that students at the Amassoma campus demonstrated higher levels of correct knowledge regarding the primary modes of transmission compared to those at the Yenagoa Law Faculty. This discrepancy suggests that basic health education - particularly regarding virus transmission - is less emphasized among non-health science students. Addressing these knowledge gaps is crucial; effective communication strategies that leverage trusted sources and provide clear, factual information can combat misinformation and promote adherence to preventive measures.

Willingness to take the COVID-19 vaccine:

Finally, the willingness to take the vaccine differed significantly between the campuses. As expected, students from Amassoma - especially those from the College of Health Sciences - showed greater willingness to receive the vaccine compared to their counterparts in the Law Faculty at Yenagoa. This finding likely reflects the influence of health-related education on vaccine confidence. Enhancing vaccine acceptance may require targeted, culturally sensitive communication that addresses specific concerns and misconceptions regarding vaccine safety and efficacy. Transparent and effective health communication, coupled with the reinforcement of basic medical education, could help bridge the gap in vaccine acceptance observed in this study.

Overall, these findings highlight the need for campus-specific public health interventions. Tailored strategies that address the unique educational and cultural contexts of each campus could improve health literacy, vaccination uptake, and overall compliance with COVID-19 prevention measures.

CONCLUSION

This study highlights the importance of understanding demographic and behavioral differences among university students to inform targeted COVID-19 intervention strategies. The significant variations in knowledge, attitudes, practices, and concerns between the Amassoma and Yenagoa campuses indicate

that culturally tailored and context-specific health communication is critical. Strengthening basic health education across all campuses could improve vaccine uptake and adherence to preventive measures, thereby reducing the risk of COVID-19 transmission within university communities.

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REFERENCES

1. World Health Organization. WHO Coronavirus (COVID-19) Dashboard. Geneva: WHO; 2020. Available from: https://covid19.who.int/
2. Nigeria Centre for Disease Control. First case of coronavirus disease confirmed in Nigeria. Abuja: NCDC; 2020. Available from: https://ncdc.gov.ng/news/227/first-case-of-corona-virus-disease-confirmed-in-nigeria
3. Pragholapati A. COVID-19 impact on students. 2020. Available from: https://doi.org/10.17605/OSF.IO/NUYJ
4. Eze SC, Chinedu-Eze VC, Bello AO. The utilisation of e-learning facilities in the educational delivery system of Nigeria: A study of M-University. Int J Educ Technol High Educ. 2018; 15: 34.
5. Galea S, Merchant RM, Lurie N. The mental health consequences of COVID-19 and physical distancing: The need for prevention and early intervention. JAMA Intern Med. 2020;180(6):817–81.
6. Sueme N, Nema K, Kua J, Kimbule S, Lupiwa T. Cross-sectional study of the knowledge, attitude, practices and concerns (KAPC) about COVID-19 vaccination among students in University of Papua New Guinea. Pac J Med Sci. 2023;24(2):32–52.
7. Salman M, Mustafa ZU, Asif N, Zaidi HA, Hussain K, Shehzadi N. Knowledge, attitude and preventive practices related to COVID-19: A cross-sectional study in two Pakistani university populations. Drugs Ther Perspect. 2020;36:319–325.
8. Galasso V, Pons V, Profeta P, Becher M, Brouard S, Foucault M. Gender differences in COVID-19 attitudes and behavior: Panel evidence from eight countries. Proc Natl Acad Sci U S A. 2020;117(44):27285–27291.
9. Tan J, Yoshida Y, Ma KSK, Mauvais-Jarvis F. Gender differences in health protective behaviors during the COVID-19 pandemic in Taiwan. medRxiv. 2021.
10. Nutbeam D. Health literacy as a public health goal: A challenge for contemporary health education and communication strategies into the 21st century. Health Promot Int. 2000;15(3):259–267.
11. National Bureau of Statistics. Bayelsa State statistical data. Abuja: NBS; 2024. Available from: http://www.nigerianstat.gov.ng
12. SDGs Universities. (n.d.). Niger Delta University (Nigeria). Retrieved March 13, 2026,https://sdgsuniversities.org/africa/niger-delta/
13. Cochran WG. Sampling techniques. 3rd ed. New York: Wiley; 1977.
14. Galagali PM, Kinikar AA, Kumar VS. Vaccine hesitancy: Obstacles and challenges. Curr Pediatr Rep. 2022;10(4):241–248.
15. Kreps S, Dasgupta N, Brownstein J, Hswen Y, Kriner DL. Public attitudes toward COVID-19 vaccination: Role of vaccine attributes, incentives, and misinformation. NPJ Vaccines. 2021; 6: 73.
16. Bayati T, Dehghan A, Bonyadi F, Bazrafkan L. Investigating the effect of education on health literacy and its relation to health-promoting behaviors. J Educ Health Promot. 2018;7:127.
17. Babatope T, Ilyenkova V, Marais D. COVID-19 vaccine hesitancy: A systematic review of barriers to the uptake of COVID-19 vaccine among adults in Nigeria. Bull Natl Res Cent. 2023;47(1):45.
18. Paul E, Steptoe A, Fancourt D. Attitudes towards vaccines and intention to vaccinate against COVID-19: Implications for public health communications. Lancet Reg Health Eur. 2021; 1: 100012.
19. Perrotta D, Grow A, Rampazzo F, Cimentada J, Del Fava E, Gil-Clavel S, Zagheni E. Behaviours and attitudes in response to the COVID-19 pandemic: insights from a cross-national Facebook survey. EPJ Data Sci. 2021;10(1):17. doi: 10.1140/epjds/s13688-021-00270-1. Epub 2021 Apr 14. PMID: 33880320; PMCID: PMC8050509.