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DIPLOMA PROGRAMMES



KNOWLEDGE, ATTITUDE AND ACCEPTANCE OF COVID-19 VACCINES

AMONG STUDENTS OF HOLY FAMILY NURSING AND MIDWIFERY

TRAINING COLLEGE, BEREKUM

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HOLY FAMILY NURSING AND MIDWIFERY TRAINING COLLEGE, BEREKUM



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2022

DECLARATION

We hereby declare that this submission is our own work towards the Diploma in General Nursing and that, to the best of our knowledge, it contains no material previously published by another person nor material which has been accepted for the award of diploma of the University, except where due acknowledgement has been made in the text.

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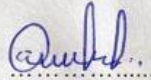
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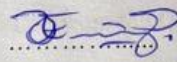
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ABSTRACT

The study assessed the knowledge, attitude and acceptance of COVID-19 vaccines among students of Holy Family NMTC, Berekum. Cross sectional design was adopted for the study. The sample population was obtained using convenience sampling technique. A total of 50 students were sampled for the study. The data for the study was collected by administering structured questionnaire to the participants. Data was analyzed using Microsoft excel software and presented in the form of tables or figures. The study found that all (100) the respondents agreed that they know about COVID-19 vaccines. Half (50%) of the respondents disagreed that everyone including children can receive COVID-19 vaccination. Majority (84%) of the respondents knew about Oxford-Astra Zeneca vaccine. Less than half of the respondents knew about Johnson and Johnson's Janssen (20%), Moderna (10%), Pfizer-BioNTech (8%), Sinovac (6%) and Sinophram (4%). Majority (88%) of the respondents indicated social media as their source of information on COVID-19 vaccine followed by Health care providers (74%), Internet (68%) and Family members (34%). Majority (94%) of the respondents had vaccinated against COVID-19 while only 6% had not vaccinated. The study recommended that an urgent call is needed from the Government of Ghana and other stakeholders to address concerns about the safety and adverse/side effects of COVID-19 vaccines, as this would increase vaccine uptake. The study concluded that respondents showed good knowledge in relation to COVID-19 vaccines. The most known vaccine was called Oxford-Astra Zeneca vaccine. Social media was the main source of information on COVID-19 vaccine. Respondents had a good attitude towards COVID-19 vaccination. Majority of respondents had vaccinated against COVID-19.

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ABBREVIATION

COVID-19	Coronavirus disease 2019
GoG	Government of Ghana
GHS	Ghana Health Service
SARSCOV-2	Severe Acute Respiratory Syndrome Coronavirus 2
WHO	World Health Organization

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CHAPTER ONE

INTRODUCTION

1.0 Background of the study

Coronavirus disease 2019 (COVID-19) is a new strain infection which is caused by severe acute respiratory syndrome coronavirus 2 (SARSCOV-2). In March 2020, the novel coronavirus disease was declared a global pandemic after its emergence in Wuhan, China, in November 2019. Globally, as of 17th June 2022, there have been 535,863,950 confirmed cases of COVID-19, including 6,314,972 deaths (World Health Organization, 2022). Of the variety of COVID-19 prevention measures, vaccination is the most effective preventive method against severe disease and death (Lurie, et al., 2020).

Vaccination is an effective way of combating infectious diseases (Manning, et al., 2021). As of 26 March 2021, 83 vaccines were in the clinical development stage while 184 were at the pre-clinical development stage (World Health Organization, 2021). Globally, several vaccines have been deemed safe and effective for human use, including Pfizer, Oxford/AstraZeneca, Moderna, Janssen, Sputnik V, Sinovac, and Sinopharm (Cohen, 2021). Due to the inadequate supply of COVID-19 vaccines globally, governments have prioritised high-risk groups to receive the initial supply of vaccines. These high-risk groups include health care workers, older persons especially those with chronic co-morbid conditions, and those in essential services (Kaur & Gupta, 2020). Health care workers are at a high risk of contracting the COVID-19 disease due to their direct or indirect contact with bodily secretions, COVID-19 patients/clients, visitors, and other health care workers who may have been exposed to COVID-19 (Chou, et al., 2020). The availability of COVID-19 vaccines may not translate into its uptake. Although governments will provide the vaccines, their uptake is voluntary (Dal-Re, Stephens, & Sreeharan, 2021). Indeed, several studies have demonstrated

that not all health care workers are ready to accept COVID-19 vaccines when made available in their country (Verger, et al., 2021). For example, a study conducted in the Democratic Republic of Congo found that approximately 28% of health care workers were willing to receive the COVID-19 vaccine if available (Nzaji, et al., 2020). Reasons for hesitancy to accept COVID-19 vaccines have been identified to include concerns over vaccine safety and side effects and speed of vaccine development/approval (Wang, Wong, & Ho, 2020). Some studies on COVID-19 vaccine knowledge have shown that college students across different countries and regions have different levels of vaccine knowledge, ranging from 20.8% to 65% (Manning, et al., 2021). However, most COVID-19 vaccines studies focus on vaccination willingness and ignore the influence of knowledge on vaccine acceptance. Sources of health information are also critical to vaccine acceptance (Qiao, et al., 2020). For college students in the digital age exposed to multiple sources of information (e.g., healthcare organizations, mass media, and social media), the information source of COVID-19 vaccines and the trust placed in those sources may influence students' acceptance of vaccines. Vaccine acceptance was positively associated with scientists as information sources but negatively associated with pharmaceutical companies as sources, (Qiao, et al., 2020). There are also differences in vaccine willingness among students in different majors. A study found no significant difference in vaccination willingness between Italian medical students and nonmedical students. Additionally, medical students had the same high vaccination willingness as non-medical students (Barello, et al., 2020). Understanding psychological factors, demographic factors, political predictors and vaccine skepticism are important in ensuring or facilitating vaccine acceptance. A research conducted in Denmark indicated that covid-19 vaccine patronage is 83% and in France and Hungary is 47%. Lack of concern about COVID-19, conspiratorial thinking, poor trust in scientist and authorities are contributory factors to poor acceptance of covid-19 vaccine (Lindholt, et al., 2021).

A study done in the United Arab Emirates reported vaccine safety (17%), side effects (35%), and multiple injections (28%) as critical factors in vaccine hesitancy (Alsuwaidi, et al., 2020). In contrast, high efficacy, endorsement from credible health institutions like the World Health Organization and Centre for Disease Control, and history of vaccination influenced the acceptance of vaccines (Alsuwaidi, et al., 2020). In a nutshell, the attributes of vaccine choice vary according to place, time, demographics, trust in established institutions, and even the behavioral nature of the community. More recent evidence suggests that accessibility of vaccination across the globe is becoming a challenge due to complex human behavior which changes over time and space; therefore, there robust and sustained efforts are needed to address the situation (Habersaat & Jackson, 2020).

A study in Nigeria found that almost one-third, 30% of the respondents had good knowledge of COVID-19 and 375 (93.8%) had poor knowledge regarding COVID-19 vaccine. One-fifth (20.8%) of respondents had a positive attitude towards COVID-19 vaccine and 90 (22.5%) respondents did not know where to get the vaccine. The study concluded that knowledge of COVID-19 vaccines was poor among the respondents, with most of them displaying a negative attitude to the vaccine. Knowledge of locations for obtaining vaccines was reported as a factor that would influence vaccine uptake (Obarisiagbon & Mokogwu, 2022).

The Government of Ghana (GoG) has publicly articulated its decision to initiate the procurement of the Oxford/AstraZeneca and Sputnik V COVID-19 vaccines for use in the country. Health care workers have been identified as the first recipients of the vaccine. Since the announcement was made for the purchase of COVID-19 vaccines in Ghana, there has been a mixed response as to whether or not to accept or refuse vaccination by several people in the country, including health care workers.

In Ghana, as of 17 June 2022, there have been 164,164 confirmed cases of COVID-19 with 1,448 deaths (Ghana Health Service, 2022). Governments globally have imposed several

measures and protocols to help halt the spread of COVID-19 such as travel bans, wearing of nose masks, lockdowns, social distance, and frequent washing of hands with soap and water, among others. Health care workers are a reliable source of information on vaccination to patients (Deem, 2018); therefore their acceptance or otherwise of COVID-19 vaccines may influence the uptake of COVID-19 among the general population. People commonly rely on health care workers information and actions to guide their decision. Against this backdrop, this study sought to assess the knowledge, attitude and acceptance of COVID-19 vaccines among students of Holy Family NMTC, Berekum.

1.1 Problem statement

Vaccination is a critical tool in the battle against COVID-19, and a public health necessity in combating the pandemic. Challenges in getting the public to accept the vaccine may be due to vaccine hesitancy which may be caused by poor knowledge, poor attitude, and safety concerns (Obarisiagbon & Mokogwu, 2022).

Accordingly, studies conducted in different countries of the world, the most determinate of intention to use COVID-19 vaccine are age, parity, occupational status, gender, marital status, educational status, income, perceived risk of COVID-19 infection, a healthcare worker, attitude towards, knowledge of COVID-19, being sick with COVID-19, the pre-existence of chronic disease (Lin, Hu, & Zhao, 2020; Bhartiya, et al., 2021).

Waning public confidence in vaccines due to rumors and conspiracy theories is a major challenge for public health experts and policymakers worldwide (Kumar et al., 2021).

To achieve the necessary herd immunity to control viral transmission and stop the pandemic, vaccinating more than 82% of the population is crucial and requires strong acceptance and low hesitation levels throughout the population (Sanche, et al., 2020). Therefore, identifying factors associated with vaccine acceptance and hesitancy is needed to implement policy changes (Wong, et al., 2021).

1.2 General objective

To assess the knowledge, attitude and acceptance of COVID-19 vaccines among students of Holy Family NMTC, Berekum

1.3 Specific objective

1. To explore the knowledge of COVID-19 vaccines among students of Holy Family NMTC, Berekum
2. To assess the attitude towards COVID-19 vaccination among students of Holy Family NMTC, Berekum
3. To find out the acceptance of COVID-19 vaccines among students of Holy Family NMTC, Berekum

1.4 Operational definition of terms

Knowledge: defined as the condition of knowing something with familiarity gained through experience or association.

Attitude: refers to a manner of acting, feeling, or thinking that shows one's regarding an issue.

Acceptance: defined as the action of consenting to receive or undertake something offered.

Vaccination: is a simple, safe, and effective way of protecting people against harmful diseases through the administration of a vaccine.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter contains a review of relevant literature related to the research topic. The sources of information include books, journals, and online articles, research reports.

2.1 Overview

COVID-19, caused by SARS-CoV-2, is characterized by its highly infectious nature and general susceptibility (WHO, 2021). As a result, the spread of COVID-19 has been rampant and prevention of the disease has proven extremely difficult, with no specific prevention measures (Chan, et al., 2020). Vaccination to the population is the most effective way to get rid of the COVID-19 pandemic, which currently has no effective treatment (Kaya, et al., 2021). A proven strategy for saving lives from vaccine-preventable diseases is the timely vaccination of the people. With varying perceptions and beliefs being developed about Covid-19 vaccines, there is a likely negative effect on vaccine acceptance or otherwise (Abdul-Manan, et al., 2022). In countries with low and high income, vaccine trust is an increasingly significant public health concern, with declines in confidence contributing to well documented cases of disease outbreaks, delays to global eradication of polio, other immunization targets, and divisive political discourse (Biswas, et al., 2021). Safe and effective vaccine together with better treatment remains one of the strategic exist of the coronavirus disease 2019 (COVID-19) pandemic. As in many other countries worldwide, the government of Ghana has expressed its commitment to procuring globally approved and accepted vaccines (Lampsey, et al., 2021).

2.2 Knowledge of COVID-19 Vaccines

An institution-based cross-sectional study was conducted among 626 study participants in Gondar city, Ethiopia. A multistage sampling technique was used to recruit the study participants. A pretested self-administered questionnaire was used to collect the data. In this study, (46.8%) of study participants had good knowledge about COVID-19 vaccine. Five hundred thirty-six (85.6%) study participants have ever heard about COVID-19 vaccine. Nearly two-thirds (64.9%) of participants didn't know COVID-19 vaccine effectiveness. Also, approximately one-third (34.2%) of participants did not know current availability of COVID-19 vaccines. Over half (51.9%) of the respondents knew that COVID-19 vaccine increase immunity (Aklil & Temesgan, 2022).

A cross-sectional e-survey was conducted among public university students in Bangladesh. The questionnaire was formatted following the available literature. The language of the questionnaire was English since it is the medium of instruction at university level education in Bangladesh. Data were analyzed using statistics and data (STATA) version 15 software; besides, Microsoft Excel 2019 was also employed to clean, edit, and code the data. The study found that approximately 58.4% of participants reported that they were aware of the name of the app/website that required to register for the vaccine. More than half of the participants were cognizant of mandatory vaccination for all public university students. Almost seven out of ten participants were updated about the vaccines that had been approved for emergency use, while the majority (85.1%) of the participants accurately responded to the number of vaccine doses required for each person. About two-thirds of the participants accurately mentioned the schedule when Bangladesh Government started mass vaccination. The majority (89.1%) of participants knew about the country from where the Bangladesh government received the first vaccine consignment. More than half of the participants

correctly reported the number of countries or institutes that got approval for vaccine production (Hossain, et al., 2021).

An exploratory and anonymous population-based e-survey was conducted in Bangladesh. The survey was conducted using a semi-structured and self-reported questionnaire. The study revealed that 89.9% knew about the COVID-19 vaccine, 52.2% knew about the effectiveness of the vaccine. 64.9% said it is dangerous to use overdose of the vaccine, 37.0% said the vaccine does because allergic reactions while 59% did not know, 63.9% did not know whether the vaccine increase autoimmune disease. The study found that participants' source of knowledge about the COVID-19 vaccine, which is mainly from mass media (53.0%), social media (45.0%), the internet (38.7%), Newspaper (15.4%), family members/relatives (8.0%) and friends/neighbors (7.5%). In conclusion, the findings reflect inadequate knowledge but more positive attitudes towards COVID-19 vaccine among the general population in Bangladesh. In order to improve knowledge, immediate health education programs need to be initiated before mass vaccination are scheduled (Islam, et al., 2021).

An institution-based cross-sectional study was employed among 404 Health workers (HCWs) in Dessie City, northeastern Ethiopia. Data were collected, checked, coded, into Statistical Package of Social Sciences (SPSS) Version 25.0 for cleaning and analysis. The study showed that the overall good knowledge rate of the HCWs about COVID-19 and its vaccine was 62.5%. Of those who had good knowledge of COVID-19 and its vaccine, (69.79%) were planning to be vaccinated as soon as a vaccine becomes available. majority (86.7%) responded that COVID-19 is a serious disease and (83.9%) stated that it could result in many health complications. One hundred fifty (38.3%) HCWs considered the differences in the effectiveness among the Pfizer, Moderna, and Astra Zeneca COVID19 vaccines to be large. More than three-quarters (77.6%) of the HCWs considered the major mode of COVID-19 transmission to be touching contaminated surfaces and touching one's eyes, nose, and mouth,

followed by shaking hands, hugging, and kissing (70.4%) and inhaling the virus (69.9%) (Adane et al., 2022).

A descriptive study was conducted in Bangladesh among University students to assess their knowledge on COVID-19 vaccines. Empirical analysis was performed by using both qualitative and quantitative approaches and data has been collected from both primary and secondary sources. A purposive sampling technique was used to perform the analysis. The sample for this analysis is N=322 participants. The study found that 62.1% of the respondents indicated they don't know whether the COVID-19 vaccines are effective, 65.8% did not know the COVID-19 vaccine can create long term physical problems and 65.8% knew that the vaccine has the potential to cause some side effects (Biswas, et al., 2021).

A cross-sectional study was carried out by Rahman et al. (2021) in Bangladesh. A total of 850 adult people participated. A rapid self-administered online survey was conducted to assess knowledge regarding COVID-19 vaccination among Bangladesh's adult population (18 years and older) with internet access. The study found that 66% of respondents said COVID-19 vaccines are effective to prevent COVID-19 infection. Other positive responses provided were; need to maintain the health regulations after being vaccination (88.82%), vaccine will also help keep from getting seriously ill from covid-19 (70.94%), people being vaccinated can start to do normal activities (72.47%), vaccine has the potential for some side effects (87.18%), side effects due to the vaccination, normally go away in a few days (74.35%) and the vaccine can create long-term physical problems (61.06%).

A cross-sectional research study conducted in Ghana employed an online survey strategy that used quantitative questions to gather data. Google Forms (Google, Mountain View, CA) was used to host the research instrument online. The study revealed that almost all, except two (1.9%), were aware of intention of the government of Ghana to embark on COVID-19

vaccination. Regarding the types of vaccines (65.7%) knew about Oxford-Astra Zeneca followed by Pfizer-BioNTech (59.3%), Sputnik V (26.9%), Moderna (24.1%), Sinovac (19.4%), Novavax (NVX-CoV2373) (14.8%), Sinopharm (7.4%) and Johnson and Johnson's Janssen (1.9%) (Botwe, et al., 2022).

A Ghanaian study found that (25%) of respondents had good knowledge, 69% had moderate knowledge and 6% had poor knowledge on COVID-19 vaccine. More than 90% of participants practice the general preventive measures. Their source of information on COVID 19 were radio/television (81.9%), social media (83.7%), seminars/workshops (14.3%), newspapers (36.5%). More than 90% indicated that there is no effective vaccine, but treatment exists. Majority of the healthcare trainees had necessary information and proactive practice towards COVID-19 (Adu, et al., 2020).

2.3 Attitude Towards COVID-19 Vaccination

A cross-sectional survey was conducted on students in Mainland China This study adopted the stratified sampling method, snowball sampling method, and cluster sampling method to select college students. The study revealed that students had less positive attitudes toward vaccination (69.8%). Results indicated that, (77%) cared about vaccine-related information, (74.8%) thought the vaccine is effective, (73%) thought that COVID-19 vaccines available on the market are safe, (76.6%) believed that they can get prevention from COVID-19 by vaccination, (62.4%) thought that the current pandemic is serious and (46.2%) thought that they are at high risk of contracting COVID-19 (Jiang, et al., 2022).

A cross-sectional e-survey was conducted among public university students in Bangladesh. The questionnaire was formatted following the available literature. Data were analyzed using STATA version 15 software; besides, Microsoft Excel 2019 was also employed to clean, edit, and code the data. The findings showed that about 35% of them were unsure about whether

their families would allow them to get vaccinated. A somewhat share of members (2.7%) strongly disagreed that the COVID-19 vaccine can bring them back to classrooms, while 32% reported being uncertain about the matter. A large portion (37.8%) was found to be doubtful regarding the statement that they might be affected by COVID-19 if they do not receive a COVID-19 vaccine. In contrast, almost the same pie (18.9% and 15.8% individually) of participants strongly agreed and agreed with this statement. Even being university students, a negligible portion (16%) strongly agreed with the statement “COVID-19 vaccine must be mandatory for all students before university reopens,” and only 44% was agreed with this. A critical sum (31.1%) of individuals emphatically differ that they can easily have a COVID-19 vaccine, and 28.2% disagree on the exact statement. More than a moiety of the participants expressed uncertainty about their being affected by COVID-19 if the university reopens without providing a vaccine. A large share of the participants concurred and emphatically accorded (43.1% and 26.7%, respectively) that they would regret if they become infected by coronavirus even after getting the vaccine. The least portion of the participants (approximately 11%) somewhat disagreed with that matter. An observable portion of the respondents (38.7%) firmly admitted their concern since the vaccine is too new, while only 15% of respondents differed, followed by 18.7% who remained skeptical (Hossain, et al., 2021).

A web-based, cross-sectional study was conducted using convenience sampling in Libya. Acceptance of the COVID-19 vaccine is an essential determinant of vaccine uptake and the likelihood of controlling the COVID-19 pandemic. (16.3%) participants agreed, and (20.7%) strongly agreed, with “having concerns about serious vaccine-related complications.” Mask-wearing adherence was reported by (68.1%) of the participants. Most participants (93.1%) believed that the vaccine should be provided for free, while (48.2%) were willing to buy it. Regarding vaccine acceptance and efficacy, (79.6%) reported their willingness to take the

vaccine with an efficacy of 90% or more, (60.6%) with an efficacy of 70% or more, and only (41.2%) with an efficacy of 50%. Acceptance of the COVID-19 vaccine is an essential determinant of vaccine uptake and the likelihood of controlling the COVID-19 pandemic (Elhadi, et al., 2021).

An institution-based cross-sectional study was employed among 404 HCWs in Dessie City, northeastern Ethiopia. The overall positive attitude rate about the COVID-19 vaccine was 52.3%. Two-fifth's (40.6%) of the HCWs were confident that the Ministry of Health can control COVID-19 in Ethiopia but 55.4% of them expressed a general mistrust/uncertainty about the effectiveness of COVID-19 vaccines, 56.4% feared the COVID-19 vaccines, 34.9% refused to get vaccinated because only God/Allah can prevent COVID-19, 70.4% indicated that all HCWs be vaccinated to protect the public (Adane et al., 2022).

A cross-sectional study design was conducted at south west Ethiopia. The study found that over half 51.1% of respondents indicated that the newly discovered second COVID19 vaccine dose is safe, 94.4% said they will encourage my family, friends and relatives to get vaccinated against COVID-19 again, 83.4% said they will take second COVID-19 vaccine dose without any hesitation, 49.1% said it is not possible to reduce the prevalence of COVID-19 without a second vaccine dose (Ahmed, et al., 2021).

A self-reporting e-survey and questionnaire-based survey from vaccination centers of different cities of Pakistan among 502 participants were conducted. The respondents had a positive attitude towards the vaccine. 47.4% are sure about the vaccine's efficacy, 48.6% said getting vaccinated was their own decision, and 79.9% also recommended others to get vaccinated. The study concluded that the Pakistani population has a positive attitude but inadequate knowledge towards COVID-19 vaccines. Immediate awareness and vaccination

education programs should be conducted by the authorities to complete the mass vaccination schedule (Beg, et al., 2022).

A cross sectional study was conducted in Ghana. The study found that about 70.44% (329) of the 467 participants reported that they were willing to get vaccinated; 138 (29.55%) participants were not willing to get vaccinated. Among the healthcare workers (197), 72.58% (143) were willing while 27.41% were not willing which is similar to the response from people not working in the healthcare sector where 68.8% were willing and 31.1% were unwilling for vaccination; poor, 277 (59.31%) felt it should be free for all, and only 29 (6.20%) felt it should not be free. Only 63.1% showed willingness toward getting their child vaccinated against COVID-19. At the same time, 171 (36.61%) believed that all frontline workers should get vaccinated first (Kishore et al., 2021).

2.4 Acceptance of COVID-19 Vaccines

A cross-sectional survey was conducted on students from three universities in Mainland China. This study adopted the stratified sampling method, snowball sampling method, and cluster sampling method to select college students from three universities. Statistical analysis was performed using SPSS Statistics for Windows. The study revealed that students' willingness to receive the COVID-19 vaccine was high (86%). The leading reasons for students' willingness to get vaccinated were "support national strategies" (89%), "belief in the vaccine" (57.5%) and "organizing group vaccinations at school" (55%). The top three reasons for students' unwillingness/hesitation to receive vaccines were "worrying about side effects" (50.8%), "uncertainty about vaccines" (42.3%), and "wish to observe the vaccination effect on other people" (38.1%) (Jiang, et al., 2022).

A cross-sectional survey was conducted online among medical student in Turkey. The online questionnaire collected sociodemographic characteristics, attitudes, risk perception and

beliefs about the COVID-19 pandemic and vaccine. Vaccine hesitancy, rejection and acceptance were determined by self-report of medical students. Students declared that 60.1% of them to be willing to vaccinated, 14.2% refused and 25.7% were not sure. Covid-19 willingness to be vaccinated was higher in those who ever tested for COVID-19, those who had covid-19 infection history in the family, those who had COVID-19 and COVID-19 vaccine education. The study concluded that although the majority of the study population willingness to be vaccinated, one-third of medical students are hesitant about vaccination. Education, positive attitude and beliefs are related to higher willingness to vaccination (Kaya, et al., 2021).

A cross-sectional e-survey was conducted among public university students in Bangladesh. The questionnaire was formatted following the available literature. Data were analyzed using STATA version 15 software; besides, Microsoft Excel 2019 was also employed to clean, edit, and code the data. The findings showed that despite the fact that almost three-quarters of the respondents stated that they intended to receive the vaccine, still a considerable portion of them had hesitancy about it, while 5.7% of them were directly notified to refuse the vaccine. the most prevalent reason to refuse the COVID-19 vaccine was that the students were dubious about the vaccine's safety and efficacy (33.6%) and the potential side effects of the vaccine (6.7%). Besides, 11.4% of respondents reported not having sufficient information about the quality of the currently available vaccine was the prime reason for hesitancy. Surprisingly, some of the respondents (3.9%) claimed that they do not require any vaccine to combat the COVID-19 (Hossain, et al., 2021).

A population-based cross-sectional online survey was conducted among a sample of 1,725 Bangladesh adults (age 18 years and older). The study aimed to investigate the factors that influence willingness to receive the vaccine. The findings showed that 85% of respondents were willing to receive the vaccine. Respondents with 1–2 children, perceived risk of being

infected, perceived impact on daily life, history of co-morbidities, price of the vaccine, physician's recommendation to receive vaccine, vaccines supplied by government were found to be motivating factors for willingness to receive the vaccine (Kamal, et al., 2021).

A cross-sectional study was conducted among health care workers in Ghana using both convenient and snowballing sampling techniques. The aim was to determine the acceptability of COVID-19 vaccines among health care workers in Ghana. The study found that out of the 234 health care workers who participated in the study, about two-fifths (39.3%) of them indicated acceptance of COVID-19 vaccines if available while more than half (60.7%) indicated non-acceptance of COVID-19 vaccines if available. The majority (64.5%) of health care workers were unwilling to accept the COVID-19 vaccines due to concern about the safety of the vaccines. Also, about 16% and 5% of them were unwilling to accept the COVID-19 vaccines due to concern after adverse effects of the vaccine, and acquiring COVID-19 through the vaccination, respectively. The study concluded that self-reported low intention of health care workers in Ghana to accept COVID-19 vaccines necessitates an urgent call from the Government of Ghana and other stakeholders to address health care workers' concerns about the safety and adverse side effects of COVID-19 vaccines, as this would increase vaccine uptake (Agyemang, et al., 2021).

A study in Ghana indicated that about 39.3% of health care professionals intended to receive the Covid-19 vaccines. Close relation being diagnosed of covid-19, sex, health worker category and trust in government policy towards controlling covid-19 are some of the predicting factors of covid-19 vaccine acceptance (Agyekum, et al., 2021).

CHAPTER THREE

MATERIALS AND METHODS

3.0 Introduction

This chapter details, the study area and study population, study design, sampling techniques, data collection method and instrument, data analysis techniques, ethical consideration, and the limitations of the study.

3.1 Study area

The research was conducted in the Holy Family Nursing and Midwifery Training College, Berekum in the Bono Region. The Nursing and Midwifery Training College, Berekum is located at New Biadan. The school shares boundary with the Holy Family Hospital, Berekum and Freeman Methodist School. The school was established in the year 1957. The major inhabitants of the college campus are nursing and midwifery trainees. The teaching staffs include the principal of the college, administrator, academic coordinators and tutors. The non-teaching staffs includes, drivers, security men, cooks and cleaners. The settlement type of the school building is a nucleated one with building mainly built with blocks and roofed with aluminum sheets. The school has an administration block, a class room block made up of nine (9) lecture halls, tutor offices, a conference hall, an auditorium, a supermarket, a hairdressing salon, a dining hall and a kitchen. There is a well-furnished computer laboratory, two skills laboratories for nursing and midwifery students as well as a well-furnished library in the school. There are two security post, car park and a fore court.

3.2 The study population

The target population were students of the Holy Family Nursing and Midwifery Training College, Berekum.

3.3 Study design

Cross sectional design was adopted for the study. Cross sectional study design is a type of observational design (do not involve the overt manipulation or management of variables) which deals with the study of the characteristics of research participants now. Cross sectional study design is not costly to perform, does not require a lot of time, captures a specific point in time and the data can be used for various types of research.

3.4 Sampling technique and Size

The sample population was obtained using convenience sampling technique. Convenience sampling technique is a type of nonprobability sampling which involves the sample being drawn from that part of the population which is close to hand and readily available to take part in the study. This method was chosen because is it extremely speedy, easy, readily available and cost-effective sampling method. A total of 50 participants were selected for this study.

3.5 Data collection methods and instruments

A structured questionnaire was designed after series of literature review. The questionnaire was drafted in English and sectioned into sociodemographic characteristics, knowledge about COVID-19 vaccine, attitude towards COVID-19 vaccine and acceptance to COVID-19 vaccine. This was transcribed unto google forms (web-based questionnaire).

3.6 Data analysis techniques

Data was analyzed using Microsoft excel software and presented in the form of tables or figures.

3.7 Ethical consideration

This study was approved by Holy Family Nursing and Midwifery Training College, Berekum. Informed consent was obtained from each student online. Informed consent included research purposes, voluntary participation, anonymity, confidentiality, and an informed consent option. Only students who agreed to participate would proceed to complete the questionnaire. Students were permitted to withdraw from the survey at any time.

3.8 Limitation of the study

Some respondents were reluctant to give accurate information even though they were educated on the need to provide valid information on the questionnaire with regards to the study. The period for the research also coincided with lectures which reduced the concentration to the work.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

4.0 Introduction

This chapter deals with analysis of data collected from the field of study and the results obtained from the analysis. It provides a descriptive summary of the demographic data of students, causes of stress and impact of stress on academic performance. The results of the research are presented under various headings using various graphical presentations notably pie chart, bar graphs etc.

4.1 Demographic Data of Respondents

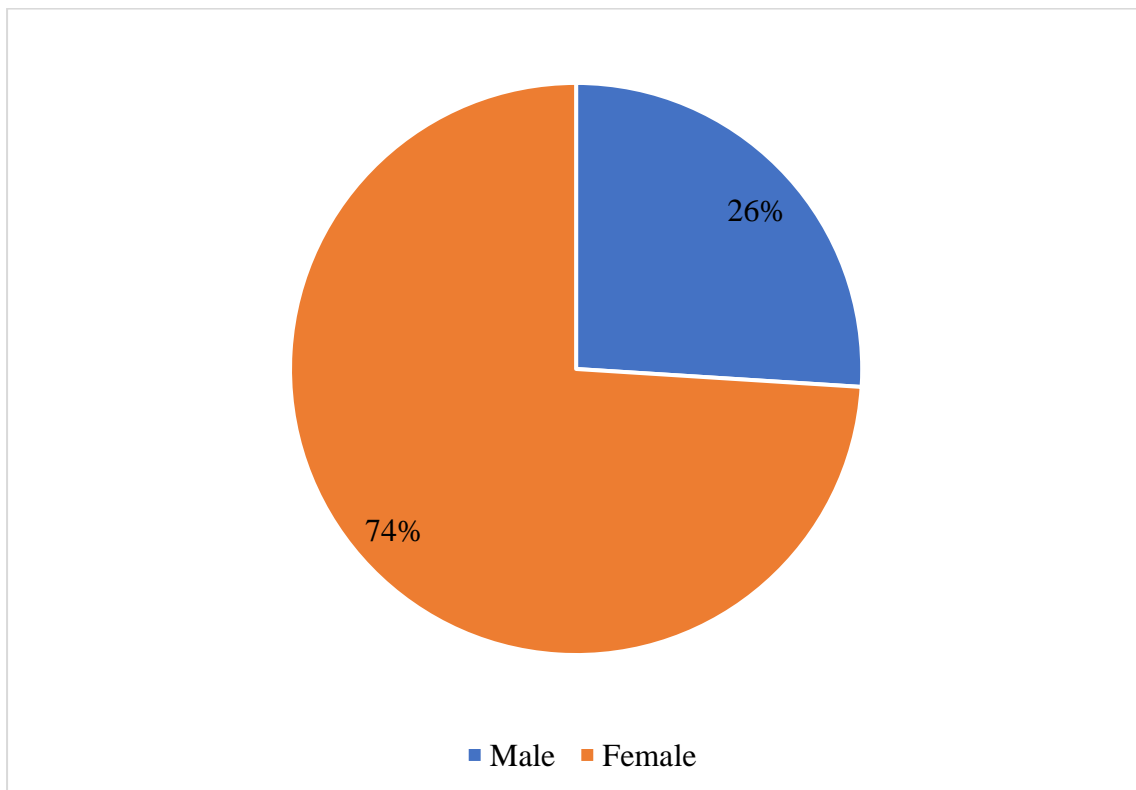


Figure 4. 1: Gender of respondents

From figure 4.1, majority (74%) of the respondents were females.

Table 4. 1: Age of Students

Age	Frequency	Percentage
18-22	21	42
23-27	25	50
28 years and above	4	8

From table 4.1, half (50%) of the students were aged 23-27 years. followed by 18-22 years (42%) and 28 years and above (8%).

Table 4. 2: Marital status of students

Variable	Frequency	Percentage
Married	9	18
Single	41	82
Divorce	0	0

From table 4.2, majority (82%) of the students were single, few (18%) were married.

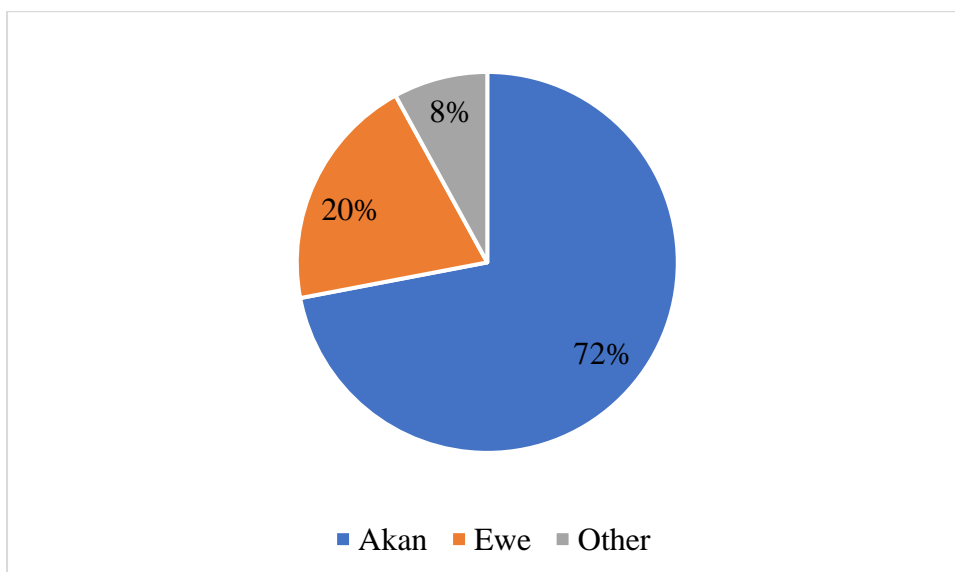


Figure 4. 2: Ethnicity of respondents

As shown in figure 4.2, majority (72%) of respondents were Akan’s followed by Ewe (20%) and others (8%).

Table 4. 3: Religious background of students

Religion	Frequency	Percentage
Christian	38	76
Islam	11	22
Traditionalist	1	2

From table 4.3, majority (76%) of the students were Christians followed by Islamic region (22%) and traditionalist (2%).

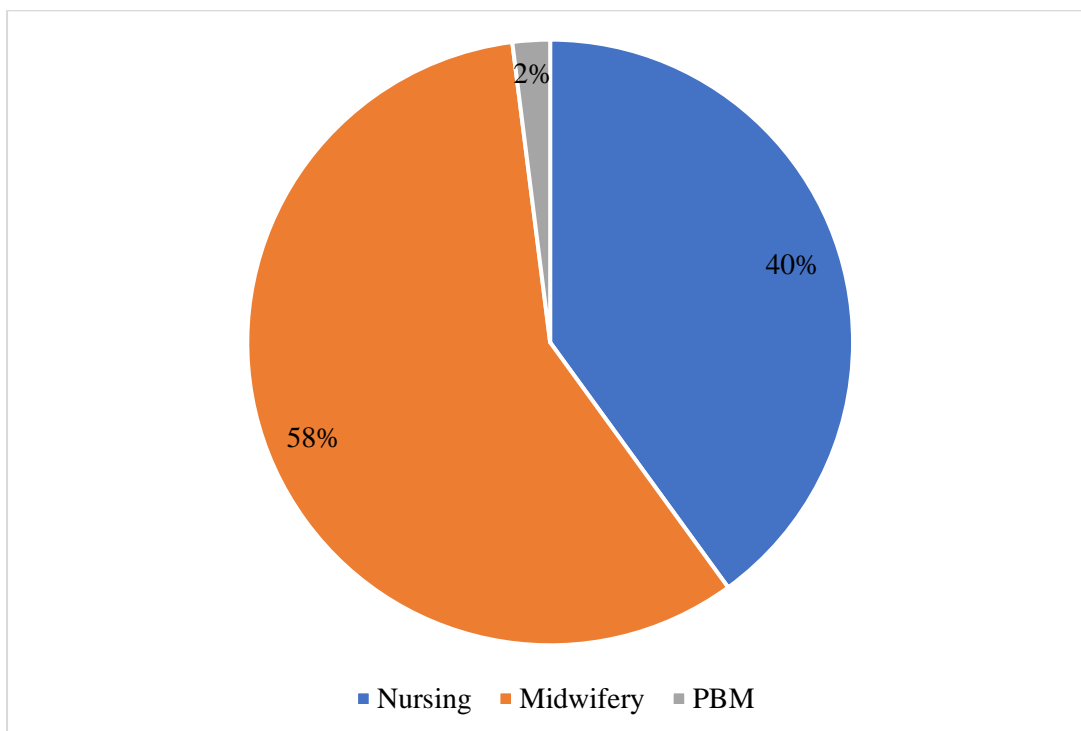


Figure 4. 3: Program studied by respondents

As shown in figure 4.3, most (58%) of respondents were midwifery students followed by nursing students (40%) and PBM (2%).

4.2 Knowledge of COVID-19 Vaccines

Table 4. 4: Respondents knowledge of COVID-19 vaccines

Statement		Agree	Disagree	Don't know
I know about the COVID-19 vaccine?	n	50	0	0
	%	100	0	0
Everyone including children can receive COVID-19 vaccination	n	11	25	14
	%	22	50	28
COVID-19 vaccines do not have side effects	n	15	32	3
	%	30	64	6

Table 4.4 shows the knowledge of respondents on COVID-19 vaccines, all (100) the respondents agreed that they know about COVID-19 vaccines. Half (50%) of the respondents disagreed that everyone including children can receive COVID-19 vaccination, few (28%) of them didn't know and only (22%) of them agreed. Most (64%) of the respondents disagreed that COVID-19 vaccines do not have side effects followed few (30%) of them who agreed and 6% who didn't know.

Table 4. 5: Type of vaccine respondents know about

Variable	Frequency	Percentage
Pfizer-BioNTech	4	8
Oxford-Astra Zeneca	42	84
Sputnik V	0	0
Moderna	5	10
Sinovac	3	6
Novavax (NVX-CoV2373)	0	0

Sinopharm	2	4
Johnson and Johnson's Janssen	10	20
None	1	2
Other	0	0

As shown in table 4.5, majority (84%) of the respondents knew about Oxford-Astra Zeneca vaccine. Less than half of the respondents knew about Johnson and Johnson's Janssen (20%), Moderna (10%), Pfizer-BioNTech (8%), Sinovac (6%) and Sinophram (4%). Only (2%) of the respondent did not know about any of the vaccines. None of the respondents knew about Sputnik V and Novavax (NVX-CoV2373).

Table 4. 6: Respondents source of information

Variable	Frequency	Percentage
Social media	44	88
Internet	34	68
Health care providers	37	74
Family members	17	34
Others	0	0

Table 4.6 shows that majority (88%) of the respondents indicated social media as their source of information on COVID-19 vaccine followed by Health care providers (74%), Internet (68%) and Family members (34%).

4.3 Attitude Towards COVID-19 Vaccination

Table 4. 7: Respondents attitude towards COVID-19 vaccination

Statement		Agree	Disagree	Don't know
My family will allow me to get vaccinated	n	48	2	0
	%	96	4	0
I might be infected with COVID-19 if I do not get vaccinated	n	46	2	2
	%	92	4	4
COVID-19 vaccine must be mandatory for all students before the opening up schools	n	42	6	2
	%	84	12	4
Discovered COVID-19 vaccine is safe	n	40	8	2
	%	80	16	4
COVID-19 cannot be controlled without vaccination	n	26	24	0
	%	52	48	0
Would you encourage your family/friends/relatives to get vaccinated?	n	47	2	1
	%	94	4	2

Table 4.7 depicts the attitude of respondents towards COVID-19 vaccination, almost all (96%) the respondents agreed that their family would allow them to get vaccinated, majority (94%) of the respondents agreed they would encourage their family/friends/relatives to get vaccinated, majority (92%) of the respondents indicated that they might be infected with COVID-19 if they do not get vaccinated, majority (84%) of the respondents agreed that COVID-19 vaccine must be mandatory for all students before the opening up schools,

majority (80%) of the respondents agreed that COVID-19 vaccine is safe. Over half (52%) of the respondents agreed that COVID-19 cannot be controlled without vaccination whiles 48% of them disagreed.

4.4 Acceptance of COVID-19 Vaccines

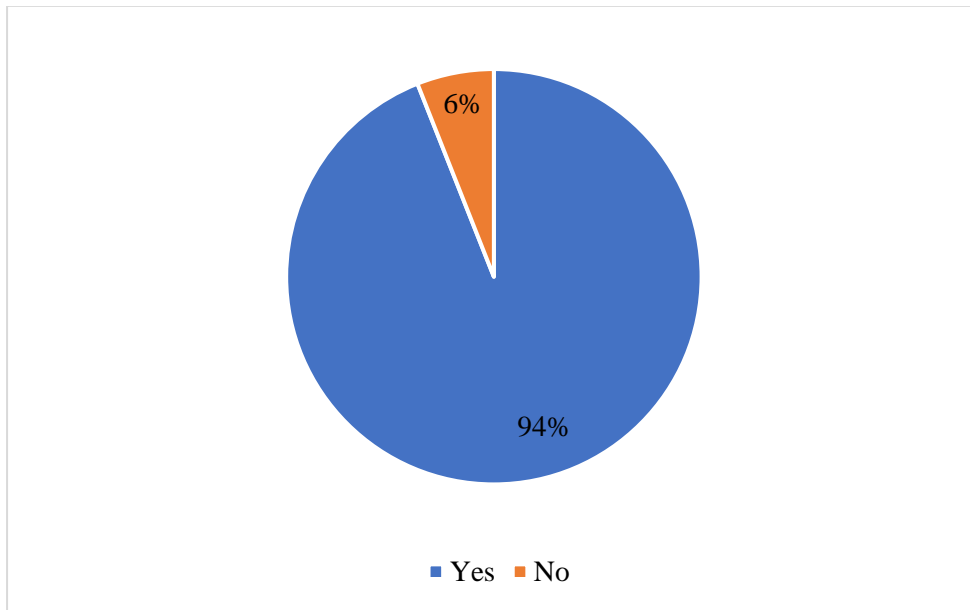


Figure 4. 4: Respondents acceptance of COVID-19 Vaccines

Majority (94%) of the respondents had vaccinated against COVID-19 whiles only 6% had not vaccinated. Those who had not vaccinated also had the intention of getting vaccinated.

Table 4. 8: Factors influencing acceptance of vaccine

Variable	Frequency	Percentage
Waiting for better clinical and human test results	13	26
Believe in physiological immunity	14	28
Due to potential side effect	35	70
Do not need any vaccine	7	14
Anxious about the vaccine's safety and efficacy	25	50
Others	2	4

Table 4.7 shows the factors influencing acceptance of COVID-19 vaccine, most (70%) of the respondents indicated potential side effects of drug influences the acceptance of COVID-19 vaccine. Half (50%) of them cited anxiety about the vaccine's safety and efficacy as a factor which influences the acceptance of COVID-19 vaccine. The following factors were also indicated by respondents; Believe in physiological immunity (28%), Waiting for better clinical and human test results (26%), Do not need any vaccine (14%) and others (2%).

CHAPTER FIVE

DISCUSSION OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter provides an in-depth look at the major findings that emerged out of the research study, comparison of the analyzed data with findings from other literatures, conclusion and recommendations.

5.1 Discussions

The discussions are based on the specific objectives of this study.

5.1.1 Knowledge of COVID-19 Vaccines

All (100) the respondents agreed that they know about COVID-19 vaccines. This finding is in line with a study conducted by Aklil and Temesgan (2022), they found that (85.6%) study participants have ever heard about COVID-19 vaccine.

Most (64%) of the respondents disagreed that COVID-19 vaccines do not have side effects. Correspondingly, Biswas et al. (2020) reported that 65.8% of respondents knew that the vaccine has the potential to cause some side effects. Additionally, Rahman et al. (2021) found that majority (87.18%) of respondents cited that the vaccine has the potential for some side effects.

Majority (84%) of the respondents knew about Oxford-Astra Zeneca vaccine. Less than half of the respondents knew about Johnson and Johnson's Janssen (20%), Moderna (10%), Pfizer-BioNTech (8%), Sinovac (6%) and Sinophram (4%). Similarly, Botwe et al. (2022) found that most (65.7%) respondents knew about Oxford-Astra Zeneca followed by Pfizer-

BioNTech (59.3%), Sputnik V (26.9%), Moderna (24.1%), Sinovac (19.4%), Novavax (NVX-CoV2373) (14.8%), Sinopharm (7.4%) and Johnson and Johnson's Janssen (1.9%).

Majority (88%) of the respondents indicated social media as their source of information on COVID-19 vaccine followed by Health care providers (74%), Internet (68%) and Family members (34%). Similarly, Islam et al. (2021) found that participants' source of knowledge about the COVID-19 vaccine, which is mainly from social media (53.0%), the internet (45.0%), mass media (38.7%), Newspaper (15.4%), family members/relatives (8.0%) and friends/neighbors (7.5%).

5.1.2 Attitude Towards COVID-19 Vaccination

Almost all (96%) the respondents agreed that their family would allow them to get vaccinated. This finding is in line with a study by Hossain et al. (2021) which found that 65% of them were sure about whether their families would allow them to get vaccinated.

Majority (94%) of the respondents agreed they would encourage their family/friends/relatives to get vaccinated. Equally, Ahmed et al. (2021) found that 94.4% of respondents said they will encourage my family, friends and relatives to get vaccinated against COVID-19 again.

Majority (92%) of the respondents indicated that they might be infected with COVID-19 if they do not get vaccinated. Similarly, Jiang, et al. (2022) found that most (76.6%) respondents believed that they can get prevention from COVID-19 by vaccination.

Majority (84%) of the respondents agreed that COVID-19 vaccine must be mandatory for all students before the opening up schools. Contrastingly, Hossain et al. (2021) found that a negligible portion (16%) strongly agreed with the statement "COVID-19 vaccine must be mandatory for all students before university reopens," and only 44% was agreed with this.

Majority (80%) of the respondents agreed that COVID-19 vaccine is safe. Similarly, Elhadi et al. (2021) found that regarding vaccine acceptance and efficacy, (79.6%) reported their willingness to take the vaccine with an efficacy of 90% or more, (60.6%) with an efficacy of 70% or more, and only (41.2%) with an efficacy of 50%.

5.1.3 Acceptance of COVID-19 Vaccines

Majority (94%) of the respondents had vaccinated against COVID-19 while only 6% had not vaccinated. Those who had not vaccinated also had the intention of getting vaccinated.

Similarly, Elhadi et al. (2021) found that regarding vaccine acceptance and efficacy, (79.6%) reported their willingness to take the vaccine with an efficacy of 90% or more, (60.6%) with an efficacy of 70% or more, and only (41.2%) with an efficacy of 50%. Additionally,

Agyemang et al. (2021) found that about 16% and 5% of them were unwilling to accept the COVID-19 vaccines due to concern after adverse effects of the vaccine.

Most (70%) of the respondents indicated potential side effects of drug influences the acceptance of COVID-19 vaccine. Half (50%) of them cited anxiety about the vaccine's safety and efficacy. Similarly, Jiang, et al. (2022) found that the top three reasons for students' unwillingness/hesitation to receive vaccines were "worrying about side effects" (50.8%), "uncertainty about vaccines" (42.3%), and "wish to observe the vaccination effect on other people" (38.1%).

5.2 Conclusion

The respondents showed good knowledge in relation to COVID-19 vaccines. The most known vaccine was called Oxford-Astra Zeneca vaccine. Social media was the main source of information on COVID-19 vaccine. Respondents had a good attitude towards COVID-19 vaccination. Majority of respondents had vaccinated against COVID-19. Potential side effects

of vaccines and anxiety about vaccine's safety and efficacy were the leading factors influencing acceptance of COVID-19 vaccine.

5.3 Recommendations

1. An urgent call is needed from the Government of Ghana and other stakeholders to address concerns about the safety and adverse/side effects of COVID-19 vaccines, as this would increase vaccine uptake.

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APPENDICES

QUESTIONNAIRE

Dear Respondent,

We are students of HFNMTTC-Berekum conducting a research on “Knowledge, Attitude and Acceptance of Covid-19 Vaccines Among Students of Holy Family Nursing and Midwifery, Training College, Berekum”. Kindly answer the under listed questions by ticking (✓) the appropriate box or write in the spaces provided. Any information provided is confidential. Your opinion is neither considered right nor wrong. You can choose to withdraw your participation at any time. It will take you approximately 20 minutes to answer the questionnaire

Thank you.

PLEASE TICK [✓] THE APPROPRIATE BOX WHERE APPLICABLE.

SECTION A: DEMOGRAPHIC DATA

1. Gender: (a) Male (b) Female
2. Age: (a) 18 – 22 years (b) 23 – 27 years (c) 28years and above
3. Marital status: (a) Married (b) Single (c) Divorced
4. Ethnicity: (a) Akan (b) Ewe (c) others specify
5. Religious background: (a) Christianity (b) Islam (c) Traditionalist
6. Program: (a) RGN (b) RM (c) PBM

SECTION B: KNOWLEDGE OF COVID-19 VACCINES

7. I know about the COVID-19 vaccine?
 - a. Agree b. Disagree c. Don't know
8. Everyone including children can receive COVID-19 vaccination.
 - a. Agree b. Disagree c. Don't know
9. COVID-19 vaccines do not have side effects.
 - a. Agree b. Disagree c. Don't know

10. Indicate the vaccine type (s) you know off; *multiple selection allowed*;

- a. Pfizer-BioNTech
- b. Oxford-Astra Zeneca
- c. Sputnik V
- d. Moderna
- e. Sinovac
- f. Novavax (NVX-CoV2373)
- g. Sinopharm
- h. Johnson and Johnson's Janssen
- i. None
- j. Other specify;

11. Source of information on COVID-19 vaccine; *multiple selection allowed*;

- a. Social media
- b. Internet
- c. Health care providers
- d. Family members
- e. Others specify;

SECTION C: ATTITUDE TOWARDS COVID-19 VACCINATION

12. My family will allow me to get vaccinated

- a. Agree b. Disagree c. Not sure

13. I might be infected with COVID-19 if I do not get vaccinated

- a. Agree b. Disagree c. Not sure

14. COVID-19 vaccine must be mandatory for all students before the opening up schools

- a. Agree b. Disagree c. Not sure

15. Discovered COVID-19 vaccine is safe

a. Agree b. Disagree c. Not sure

16. COVID-19 cannot be controlled without vaccination

a. Agree b. Disagree c. Not sure

17. Would you encourage your family/friends/relatives to get vaccinated?

a. Agree b. Disagree c. Not sure

SECTION D: ACCEPTANCE OF COVID-19 VACCINES

18. Have you been vaccinated against COVID-19?

a. Yes b. No

19. If no, do you have any intention of receiving the vaccine?

a. Yes b. No

20. In your opinion, which of the following factors do you think is influencing your acceptance of the vaccine;

a. Waiting for better clinical and human test results

b. Believe in physiological immunity

c. Due to potential side effect

d. Do not need any vaccine

e. Anxious about the vaccine's safety and efficacy

f. Others specify:

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October 26, 2022

Date

Ernestina Mensah
Holy Family NMTC
Post Office Box 21
Berekum

Dear Ms. Mensah

PERMISSION TO CONDUCT RESEARCH

With reference to your Memorandum dated October 26, 2022, I write to notify you that the students listed below have been granted permission to conduct their research in the College on the topic "Knowledge, Attitude, and Acceptance of COVID-19 Vaccines among Students of the Holy Family Nursing and Midwifery Training College, Berekum".

1. Yeboah Anita
2. Adutwumwaa Mabel
3. Awuah Gertrude

Thank you.

Yours faithfully

Martha Kyeremaa
Academic Coordinator for Midwifery

For: Principal

ACADEMIC COORDINATOR - MIDWIFERY
HOLY FAMILY NURSING & MIDWIFERY
TRAINING COLLEGE, BERKUM