

Knowledge And Attitude Of Medical Students Toward Covid-19 Vaccination: A Cross Sectional Survey.

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Abstract

Introduction: The 2019 Coronavirus disease (COVID-19) caused loss of lives and livelihoods. Research in search of vaccine was intensive resulting in the development of vaccines barely nine months after discovery of the virus, raising a lot of concerns. This study aims to determine the knowledge and attitude of medical students toward COVID-19 vaccination.

Method: This was a cross-sectional study between 17th June and 30th July, 2021 among 150 medical students. A closed ended structured questionnaire developed using Google forms was sent to participants via an online platform (WhatsApp). Data received was analyzed using Statistical Package for Social Sciences (SPSS) version 27.0 and Microsoft Excel version 2013. Data was analyzed with descriptive statistics using frequency and percentages.

Results: AstraZeneca (42/150, 28%) and Pfizer (39/150, 26%) were the most common vaccines

the respondents knew about. One hundred and forty-one (94%) of the respondent had knowledge on the groups of people who were allowed to take the Covid-19 vaccination initially in Ghana. One hundred and thirty-nine (93%) disagreed that the COVID-19 Vaccine was a ploy to exterminate the African population and 123 (82%) believed that COVID-19 vaccines were safe and could help fight the pandemic. Respondents' major sources of information were official government and international health organization websites, 94 (62.6%).

Conclusion: The students had knowledge about COVID-19 vaccines and demonstrated positive attitudes toward COVID-19 vaccination. However, some agreed with the myths surrounding the COVID-19 vaccines. A follow up study on current knowledge and attitude about vaccines among medical students with a larger sample is recommended.

Key Words: COVID-19, acceptability, myths, vaccination

Introduction

A highly contagious virus known as the coronavirus infested both human and animals in 2019 causing loss of lives and livelihood. As of February 28, 2020, the cumulative number of reported deaths in China was 2,858.¹ It was declared as a global pandemic in March 2020 by the World Health Organ-

ization (WHO) as it had spread to more than 220 countries worldwide.²

A search of a vaccine to combat the pandemic was launched. However, due to the accelerated program some vaccines were launched and introduced into the market barely nine months after discovery of the virus and their long term efficacy and long-

term side effects were largely unknown.

In addition, strong anti-vaccine movements, with multiple pseudo-scientific conspiracy theories have flooded social media reports.³ It is for these reasons that vaccine hesitancy may become an important challenge in the immunization campaign against COVID-19.⁴ Clinical medical students, just like frontline healthcare providers are likely to be exposed to COVID-19 patients hence the importance of achieving high COVID-19 vaccination coverage rates in this group. As future healthcare providers, medical students will be entrusted with providing vaccine recommendations and counseling vaccine-hesitant patients.⁵

It was reported that large proportion of medical students were aware and had general knowledge about COVID-19.⁶ According to Khasawneh et al., the participation of medical students in providing care to patients, combined with the high transmissibility of diseases that cause pandemics, puts this subpopulation at higher risk for contracting as well as transmitting the disease.⁷ Also, although still in training, medical students are commonly consulted by their family and friends for health care advice. Therefore, assessing their knowledge and attitudes on vaccination will inform the role they play in vaccine promotion or otherwise as well as help address their biases in order to boost their confidence toward COVID-19 vaccine recommendations to their families and friends as well as vaccine hesitant patients they encounter at the various health centers during their clinical practice.

Methods

This was a cross-sectional descriptive study conducted among medical students at Family Health University College from level 100 to 600 from 13th May to 21st June 2021. The minimum sample size was 146 and this was calculated using Yamane formula 1967. ($n = (N) / (1 + N(\alpha)^2)$), where n: Sample size, N: Population size, α : Margin of Error at a Confidence interval of 95% and a p-value of 0.05. A structured questionnaire was developed using Google forms and sent to participants via an online platform (WhatsApp). The questionnaire

captured students' demographics, knowledge on COVID-19 and COVID-19 vaccines including adverse effects and attitudes toward the vaccines. Data collected was exported into SPSS version 26 after cleaning with Excel version 2016. Data was analyzed with descriptive statistics using frequency and proportion. Ethical approval was granted by the Community Health Dissertation Review Committee for the commencement of this research. The Protocol and Ethical committee responsible for protecting the interest of participants of research in Family Health Medical School.

Results

One hundred and fifty medical students responded to the questionnaire. There were 56 (37.3%) males and 94 (62.7%) females, of 18 years old and above. Figure 1 shows the distribution on knowledge of types of vaccines among participants. Majority (143) of the participants knew the type of Covid-19 vaccines. However, 7 of respondents wrongly reported Artesunate (3) paracetamol (2) and Novamether (2) as types of COVID-19 vaccines.

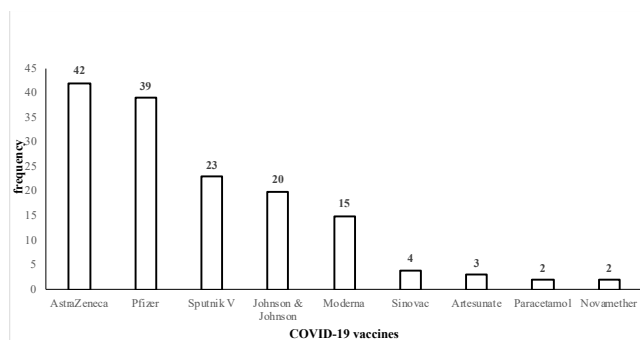


Figure 1 Distribution on knowledge of vaccine types

On knowledge of the main clinical signs and symptoms of COVID-19, 137 (91.3%) of the students could rightly select one: fever and difficulty in breathing were both selected by 24.7% each, loss of taste /smell was selected by 24.2% and headache by 18.1%. Vomiting, palpitation and heartburns were wrongly selected by 4.5%, 3.4% and 0.7% respectively. The year COVID-19 was declared pandemic (2020) was correctly identified by 67.3% whilst 31.3% wrongly selected 2019 and 1920 was selected by 1.3%.

There were varied sources of information concerning the pandemic and 35% of respondent reported official government sites and the media of Ministry of Health and Ghana Health service as their main source, 27.6% from international organization like WHO and CDC sites. However, other main sources were social media (16.3%), family and friends (15.7%) and journal being the least (5.4%).

Table 1 Participants perceptions and beliefs towards COVID-19 vaccine

Perception and beliefs towards vaccine	Yes n (%)	No n (%)
Believe COVID-19 Exists.	145 (96.7)	5 (3.3)
Believe the COVID-19 vaccine was established as a 5G network.	8 (5.3)	142 (94.7)
Believe the COVID-19 vaccine can alter your DNA.	33 (22)	117 (78)
Believe the COVID-19 vaccine can give you the mark of the beast (666)	5 (3.3)	145 (96.7)
Believe the COVID-19 Vaccine is a ploy to exterminate the African Continent	11 (7.3)	139 (92.7)
Taken the COVID-19 Vaccine	96 (64)	54 (36)
Think the COVID-19 Vaccine is necessary	127 (84.7)	23 (15.3)
Believe you have natural immunity to COVID-19 so does not need the Vaccine	29 (19.3)	121 (80.7)
Believe that the COVID-19 Vaccine will infect you with the corona virus	23 (15.3)	127 (84.7)
Believe the COVID-19 vaccine is safe and can help in the fight of the pandemic	123 (82)	27 (18)

Abbreviations: n,frequency; %,percentage

The first batch arrived in Ghana in February, 2021. This was correctly reported by 99/ (66%) respondents, whilst 42 (28%), 6(4%) and 3 (2%) wrongly reported March, 2020, December, 2020 and January, 2020 respectively as the arrival dates. In the initial stages of the vaccination, selected groups were first targeted for vaccination excluding pregnant women and children below 18 years. This was correctly reported by 141(94.2%) respondents (Table 2)

At the time of the study (17th June-30th July, 2021), the vaccines available to the public were AstraZeneca and Sputnik V and these were correctly reported by 117/150(78%) of the respondents, AstraZeneca was familiar to 67.3% and Sputnik V to 11% of the participants. Pfizer and Johnson and Johnson were mentioned among 18.6% and 3.3% respectively

although they were not yet not available to the Ghanaian public.

Fever, erythema at injection sites and headache were identified by 95.3% of respondent as the main adverse effects (Table 2).

Table 2 Distribution on knowledge of adverse events

Adverse events	Frequency(N)	Percentage %
Fever	54	36
Headache	50	33.3
Redness at Injection Site	39	26
Seizures/ Convulsions	3	2
Alteration of DNA	3	2
Speaking Gibberish	1	0.7
Total	150	100

Abbreviations: n,frequency; %,percentage

Discussion

Results from this study showed that Family Health Medical students were knowledgeable about COVID-19 vaccination and COVID-19 in general. All respondents (100%) had heard about Covid-19 vaccination and 91.3% knew the main signs and symptoms of COVID-19. This is in concordance with a study by Nemat et al. where a large proportion of medical students demonstrated general awareness and knowledge on COVID-19 with 88.6% of the respondents being aware of its common symptoms such as fever, cough, and shortness of breath.⁶ Similar findings were also reported in a study by Khasawneh et al.⁷

Respondents level of knowledge may be attributed to their major sources of information. Some respondents (62.6%) utilized both official government websites and websites of international health organization. Only 16.3% of the respondents relied on social media as their main source of information. This is in contrast to a study which found students to be more reliant on social media when seeking information on COVID-19 and COVID-19 vaccination instead of sourcing information from official sites such as the WHO, CDC websites.⁸ Medical search engines such as PubMed were less commonly utilized by respondents.

AstraZeneca and Pfizer were the most common COVID-19 vaccines known by family health medical students, 28% and 26% respectively. The main adverse effects of the vaccines reported by the participants (95%) were headache, fever, and redness at injection site. According to WHO, vaccines just like all medicines can cause adverse reactions. Most of these, such as pain at the injection site, tiredness or headache are mild and short term effects of the COVID-19 vaccine. Injection site reactions and systemic adverse effects, such as headache/lethargy, joint pain, and fever remain the most commonly reported adverse events as previously reported in a study conducted with 607 individuals at the Family Health Hospital.⁹

This study established that majority of respondents showed positive attitudes toward COVID-19 vaccination. Over 84%, of the respondents believed COVID-19 vaccines were necessary while 82%, believed that the vaccines were safe and could help in the fight against the pandemic. However, some of the respondents held false beliefs about the COVID-19 vaccine. Some (5.3%) believed it was established as a 5G network, others (22%) believed the vaccine could alter their DNA and 3.3% believed it could give them the mark of the beast (666) and 15.3% believed the vaccine would infect them with the coronavirus.

Such false beliefs were also found in a study by Naeem et al., where participants were misinformed about COVID vaccines causing genetic effects and some believed there were Nano chips implantation through the COVID-19 vaccinations.¹⁰ Such findings can be attributed to participants' poor knowledge on vaccination. Therefore, this study highly recommends that in the phase of new vaccines, educators should take the pain to learn about these vaccines and disseminate accurate information to their students. Also WHO has warned that the world is fighting another kind of epidemic called "infodemic" that rapidly spreads fake news, misleading information, and false scientific claims. According to Siegrist et al., lessons learned from past outbreaks of SARS, H1N1, and Ebola illustrated the essential role of health

information in disease prevention and vaccine acceptance.¹¹

Over eighty percent (80.7%) of respondents believed they did not have natural immunity to COVID-19, hence the need for the vaccine. This is in agreement with a study by Saied et al, which showed 90.5% of participants believed mass vaccination is important to overcome the COVID-19 pandemic and getting vaccinated is the best preventive measure.¹² Some (15.3%) of our respondents had concerns over the acquisition of COVID-19 from the vaccine itself, yet most respondents were not against vaccination in general. This confirms a report that medical students have high level of acceptance towards COVID-19 vaccination although they are aware of its adverse effects and had concerns about the adverse effects.¹³

In conclusion, the study revealed medical students had good knowledge of COVID-19 and vaccination against Covid-19. There were positive attitudes toward the vaccination even though one third of the respondents (36%) had still not vaccinated. This low coverage at the time of the study is not clearly understood. There were long waiting times for the initial vaccination and it can only be speculated that student may not have had enough time to wait in long queues to be vaccinated. It could also be speculated that some students may have hesitated due to fears of severe adverse reaction. There is a need for prospective study follow up on current uptake and the reason for the initial low uptake as there has been ongoing education and increased awareness on the merits of vaccination. Continual research on COVID-19 infection, management, vaccination and prevention is key to manage future outbreaks.

Conflict of Interest

The authors declare that they have no competing interest.

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