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Acceptance of the coronavirus disease-2019 vaccine among medical students in Uganda

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Abstract

Background: COVID-19 is still a major global threat for which vaccination remains the ultimate solution. Uganda reported 40,751 cases and 335 deaths as of 9 April 2021 and started its vaccination program among priority groups like health workers, teachers, those with chronic diseases among others in early March 2021. Unanimous uptake of the COVID-19 vaccine is required to subsequently avert its spread; therefore, we assessed COVID-19 vaccine acceptability, hesitancy, and associated factors among medical students in Uganda.

Methods: This study employed an online descriptive cross-sectional survey among medical students across 10 medical schools in Uganda. A structured questionnaire via Google Form was conveniently sent to eligible participants via WhatsApp. Each medical school had a coordinator who consistently shared the data tool in the WhatsApp groups. Chi-square or Fisher's exact test, and logistic regression were used to assess the association between vaccine acceptability with demographics, COVID-19 risk perception, and vaccine hesitancy.

Results: We surveyed 600 medical students, 377 (62.8%) were male. COVID-19 vaccine acceptability was 37.3% and vaccine hesitancy 30.7%. Factors associated with vaccine acceptability were being male (adjusted odds ratio (aOR) = 1.9, 95% CI 1.3–2.9, $p=0.001$) and being single (aOR= 2.1, 95% CI 1.1–3.9, $p=0.022$). Very high (aOR= 3.5, 95% CI 1.7–6.9, $p<0.001$) or moderate (aOR =2.2, 95% CI 1.2–4.1, $p=0.008$) perceived risk of getting COVID-19 in the future, receiving any vaccine in the past 5 years (aOR= 1.6, 95% CI 1.1–2.5, $p=0.017$), and COVID-19 vaccine hesitancy (aOR 0.6, 95% CI 0.4–0.9, $p=0.036$).

Conclusions: This study revealed low levels of acceptance towards the COVID-19 vaccine among medical students, low self-perceived risks of COVID-19, and many had relied on social media that provided them with negative information. This poses an evident risk on the battle towards COVID-19 in the future especially when these future health professions are expected to be influencing decisions of the general public towards the same.

Keywords: COVID-19, Vaccine acceptance, Vaccine hesitancy, Medical students

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Introduction

The coronavirus disease-2019 (COVID-19) pandemic, caused by the novel severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) continues to create mayhem across the globe. COVID-19 has affected livelihoods and has imposed strains on the health care systems [1]. Over135 million people have been infected with SARS-CoV-2 resulting in over 2.9 million deaths worldwide [2]. The African continent has continuously recorded fewer cases of COVID-19 with about 4.3 million cases and 115,321 deaths [2]. Uganda reported 40,751 cases with 335 deaths as of 9 April 2021 [3].

Various chemotherapeutic and biologic therapies, like hydroxychloroquine, remdesivir, convalescent plasma, and tocilizumab, have been tried to treat COVID-19 patients [4–6] with no conclusive specific curative effect. Different preventive public health measures like lockdowns, hand washing, respiratory hygiene, and social distancing have been employed with little success [7]. Much worse even, attempts to loosen these precautionary behaviors have culminated in the surge of cases in many countries [7]. Leaving room for only an effective vaccine as a long-lasting solution in such a crisis [8, 9].

Several vaccine candidates have been developed to date with some approved and others still undergoing clinical trials. Notably, the New York-based Pfizer-BioNTech, ModernaInc company, and the AstraZeneca/ University of Oxford Vaccines have been approved for emergency use and already rolled out in some countries including Uganda [10]. Although much progress has been made with vaccine development, uncertainty about the public acceptance of COVID-19 vaccination is still an important challenge [9]. The World Health Organization (WHO) asserts that vaccine hesitancy is one of the top ten threats to global health and this is exacerbated by the emerging conspiracies surrounding COVID-19 and its vaccines [11].

Medical students are regarded as an insightful population that is open-minded, educated, and medically informed. They also represent the future health professionals, who are supposed to respond quickly to public health issues [12]. Surprisingly, a study done in the USA reported that nearly one-quarter of the medical students were hesitant to be vaccinated as soon as an approved COVID-19 vaccine becomes available, despite self-perception of elevated risk of exposure to SARS-CoV-2 infection [13]. Furthermore, another study done in Israel reported a high rate of COVID-19 vaccine skepticism among medical staff implying that vaccination compliance, even among medically informed individuals, is not automatic [14].

The Ugandan government through the COVAX facility received its first 864,000 doses of the AstraZeneca

Table 1 Demographic characteristics of participants

Demographics	Frequency	%
Age		
≤24	367	61.2
>24	233	38.8
Sex		
Male	377	62.8
Female	223	37.2
Marital status		
Single	521	87.1
Married	74	12.4
Separated	3	0.5
Religion		
Anglican	184	30.7
Roman Catholic	166	27.7
Muslim	102	17.0
Pentecostal	90	15.0
Other	35	5.8
SDA	21	3.5
Orthodox	2	0.3
University of Study		
Busitema University	122	20.4
Kampala international University	102	17.1
Makerere University	89	14.9
Kabale University	71	11.9
Islamic University in Uganda	62	10.4
Mbarara University of Science and Technology	55	9.2
Gulu University	43	7.2
King Caesar University	20	3.3
Soroti University	20	3.3
Uganda Christian University	14	2.3
Year of study		
Year 1	91	15.2
Year 2	81	13.5
Year 3	131	21.8
Year 4	157	26.2
Year 5	140	23.3
Academic program		
Bachelor of Biomedical laboratory technology	4	0.7
Bachelor of Biomedical sciences	10	1.7
Bachelors of Anaesthesia	16	2.7
Bachelors of Dental Surgery	11	1.8
Bachelors of Medicine and Surgery	488	81.3
Bachelors of Nursing	58	9.7
Bachelors of Pharmacy	13	2.2

SDA Seventh Day Adventists

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