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Uptake Of Covid-19 Vaccine Among Nurses In A Sub-County Hospital In Nyamira County, Kenya

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ABSTRACT

Equitable access to safe and effective vaccines is critical to ending the COVID-19 pandemic. However, nearly one-third of healthcare workers were unvaccinated against COVID-19 by mid-September 2021. This study sought to determine the uptake of COVID-19 vaccine among nurses in Nyamira County, Kenya. Saturated sampling design was employed. Using a cross-sectional design, data was collected in July 2021 using a structured self-administered questionnaire. SPSS version 22 was used to code, enter, analyse, organize, present and store data. Descriptive statistics were used to summarize the findings. Inferential analysis using Chi-Square and Logistic Regression were performed. Data was presented using tables. The results showed an uptake of 51.6 % for at least one dose of COVID 19 vaccine, while 48.4 % were hesitant in receiving the vaccine. Chi-Square analysis of the demographic characteristics showed positive associations with uptake of the vaccine. However, from the regression analyses, gender (p=.223, 95 % CI, SE .795, OR 1.250), level of nursing education (p=.132, 95 % CI, SE .491, OR 1.141), years of experience (p=.228, 95 % CI, SE .453, OR 1.256), and knowledge (.583, CI 95%, SE .758, OR 1.792) were all positively associated with uptake of COVID-19 vaccine, while age showed negative association (p=-.033, 95 % CI, SE .381, OR .968). The study concluded that there was hesitancy in the uptake of COVID-19 vaccine. It is, therefore, recommended that measures to increase nurses' uptake of the COVId-19 vaccine, such as education on the vaccine among other strategies, be instituted.

Keywords: COVID-19 uptake, nurses, Kenya.

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INTRODUCTION

According to World Health Organization (WHO)[1], equitable access to safe and effective vaccines is critical to ending the COVID-19 pandemic. Other than provision of clean water, no other intervention, not even antibiotics, has had phenomenal success on morbidity and mortality reduction, and population growth like vaccines. The global Organization upholds that vaccination is a key component of primary health care and an indisputable human right. It's also one of the best health investments money can buy. The WHO further adds that vaccines underpin global health security.

The first mass vaccination programme against COVID-19 started in early December 2020. At least 24 different vaccines have been developed. The WHO is working tirelessly with partners to develop, manufacture and deploy safe and effective vaccines[1,2]. However, despite the important role the COVID-19 vaccine plays in ending the pandemic, a CDC analysis showed that nearly one-third of healthcare workers were unvaccinated against COVID-19 by mid-September 2021[3].

Corona virus disease 2019 (COVID-19) emerged in Hubei Province, Wuhan, China in December 2019. On January 30 2020, WHO declared COVID-19 a public health emergency of international concern and a global pandemic on March 11, 2020[4]. The first case in Africa was reported in Egypt on 14 February, 2020. Cases have since been reported in all the African Union Member States. The first case in Kenya was reported on March 12, 2020[5]. To date, the pandemic has caused a lot of havoc throughout the world and continues to be a dynamic and evolving pandemic.

Hesitancy against the COVID-19 vaccine among health care workers (HCWs) has spread throughout the world. This hesitancy jeopardizes collective immunity. Data from recent surveys from various sources show that the willingness to be vaccinated with the novel COVID-19 vaccine ranges between 30-90 percent. The data show that the acceptability is low in some cases, and much lower in specific socio-demographic groups. The reasons given for the vaccine hesitancy are many, ranging from concerns about the safety of the vaccine given the fast speed with which the vaccines have been developed; distrust in the government; some HCWs feel they do not need the vaccine because they believe they have already had COVID-19; or simply they do not believe in the vaccine[6-20].

Globally, health care workers are among the first groups of people to have access to the COVID-19 vaccine. Prioritization has been given to health care workers for a number of reasons, such as: health care workers have an elevated risk of exposure, infection, and disease; protecting health care workers will prevent the loss of a critical workforce; health

care workers are a trusted source of vaccine information and play a key role in promoting vaccine acceptance and uptake[16].

Kenya received the first batch of about 1.02 million AstraZeneca COVID vaccines under the COVAX facility on March 2, 2021. However, the country has not been left behind in this vaccine uptake dilemma. According to the African Population and Health Research Center, Kenya is grappling with two major challenges: access to sufficient COVID-19 vaccine doses in light of the global shortage; and vaccine hesitancy. To improve the rollout, the government of Kenya has to address both simultaneously. It also needs to act urgently on both fronts to avoid its healthcare system becoming even more overwhelmed and to save lives[11]. The results of a poll carried out in Kenya among health care workers revealed that 28 per cent are not willing to take the vaccine[13].

Generally, nurses are a special group among health care workers because they have a vital role in primary health care and public health. This is because they are the gate keepers of primary health care, of which immunization is a key element. Nurses are the fore front health care workers as well as fore front immunization staff globally[2]. Therefore, their acceptance or rejection of COVID-19 vaccines can influence the general population's uptake of COVID-19 vaccines. Ultimately, their uptake of COVID-19, knowledge of the vaccine, and attitude towards the vaccination are key assets for all health care institutions in particular, and generally all countries all over the world. This study, therefore, sought to determine the uptake of COVID-19 vaccines among nurses. The specific objectives of the study were to examine the relationship of the demographics of the nurses and their uptake of COVID-19 vaccine, as well as to find out their level of knowledge of the vaccine.

MATERIALS AND METHOD

The study was conducted in a sub-county Hospital in Nyamira County, Kenya. The study population was all the nurses in the study site. The study employed saturated sampling method whereby the entire population of 36 nurses working in the different departments of the hospital were targeted to participate in the survey. The inclusion criteria were all the nurses working in Masaba North Sub-County Hospital during the data collection period and willingness to participate in the study. The exclusion criterion was unwillingness to participate in the study.

A cross-sectional study design was employed, using the quantitative approach to data collection. Data was collected using a structured self-administered questionnaire which contained 3 sections: (i) socio-demographics; (ii) uptake of COVID-19 vaccine; and (iii) knowledge about the vaccine. In order to ensure validity and reliability of the questionnaire, it was pretested on a sample of 4 nurses working in a different sub-county hospital. Following

ethical approval in June 2021, data was then collected in July 2021. The Statistical Package for Social Sciences (SPSS), version 22, was used to code, enter, analyse, organize, present and store data from the study. Descriptive statistics such as frequencies, percentages, and means were used to summarize the findings from the study. Inferential statistics using logistic regression was performed to see if gender, age, level of nursing education, years of experience in nursing, and knowledge on COVID-19 had any association with uptake of Covid-19 vaccine. Data was presented using tables.

The study was approved by the Medical Superintendent of the Sub-county Hospital. Participants were informed of the nature and purpose of the study and were allowed to ask questions for clarification. Benefits and risks of the study were also explained to the participants. All the respondents signed an informed consent form and were informed of their right to withdraw from the study whenever they wished since participation was voluntary. Measures to ensure confidentiality and anonymity were implemented by not writing names while filling in the questionnaires. Filled questionnaires were kept in a lockable drawer accessible to only the researchers. Codes were used for numbering. To mitigate infliction of psychological harm on subjects, questions were clearly stated. Research results were reported accurately and honestly and the study findings communicated to all the interested parties.

However, there are limitations to this study. The main ones are: (i) it was conducted in a single health facility, therefore, it constitutes a local experience; (ii) it was conducted amongst only one cadre of health care workers (nurses) thus cannot be generalized to health care workers; and (iii) a small population size was used which limits generalization of the findings.

RESULTS AND DISCUSSION

Demographic characteristics

Out of a total targeted population of 36 nurses, 31 nurses (86.1 %) participated in the study. Majority (71 %) were females while 29 % were males. The demographic characteristics of the respondents are shown in table 1 below.

Table 1: Demographic characteristics of the respondents (n=31)

Characteristics	Frequency	Percentage
Gender of the respondents		
Male	9	29
Female	22	71
Age of the respondents		
18-30 years	3	9.7
31-40 years	15	48.4
41-50 years	6	19.3
51-60 years	7	22.6
Level of nursing education		
Certificate	6	19.4

Diploma	17	54.8
Degree	7	22.6
Masters	1	3.2
PhD	0	0
Years of nursing experience		
0-10	5	16.1
11-20	15	48.4
21-30	9	29.0
Above 30	2	6.5

Uptake of COVID-19 vaccine

Out of the 31 respondents, 16 respondents (51.6 %) had received at least one dose of the COVID-19 vaccine, while 15 (48.4 %) had not receive any dose. Out of the 16 who received the vaccine, the majority were females (68.75 %), while males accounted for 31.25 %.

Chi-Square test was done on the demographic characteristics (independent variables) and uptake of the vaccine (dependent variable). The results showed that there was a positive relationship between the independent and dependent variables as shown in table 2 below.

Table 2: Chi-Square analysis of the demographic characteristics against uptake of COVID-19 vaccine.

Independent variable	Pearson Chi-Square @ 95% Confidence interval (CI)
Gender of the respondents	.779
Age of the respondents	.634
Level of nursing education	.760
Years of experience	.410

Binary logistic regression was then done on the demographic characteristics to test how each was actually associated with uptake of the COVID-19 vaccine. Gender, level of nursing education and years of experience were all positively associated with uptake with the vaccine. Only age was negatively associated (-.033) with uptake of COVID-19 vaccine. Table 3 below shows the regression results.

Table 3: Logistic regression of the demographics against uptake of COVID-19 vaccine.

Independent variable	p-value @ 95% CI	Standard error (SE)	Odds ratio (OR)
Gender of the respondents	.223	.795	1.250
Age of the respondents	-.033	.381	.968
Level of nursing education	.132	.491	1.141
Years of experience	.228	.453	1.256

Knowledge on COVID-19 vaccine

The respondents were requested to classify their knowledge as high, medium or low according to their own subjective assessment. The majority of the respondents (74.2 %) classified their knowledge as average, 19.4 % had low knowledge, while only 6.4 % had high knowledge. Chi-Square test showed that knowledge of COVID-19 vaccine had a positive relationship (.598) with uptake of the vaccine. When regression analysis was done, it showed

that knowledge actually had a positive association with uptake of the vaccine (.583, CI 95%, SE .758, OR 1.792).

DISCUSSION

Despite the fact that the COVID-19 vaccine is the best tool we have to fight this virus, the results of the current research showed an actual uptake of the COVID-19 vaccine to be only 51.6 % for at least one dose, revealing a hesitancy of 48.4 %. This is not surprising because the results of a poll carried out in Kenya among health care workers revealed that 28 per cent are not willing to take the vaccine[13].

There is a wealth of published data on COVID-19 vaccine hesitancy worldwide. One study[7] which conducted a cross-sectional survey during February 2021 among nursing staff working in a large medical center in central United States showed that the majority (83.3 %) had received at least one dose of the vaccine. However, while the study indicated a higher vaccine uptake during an active vaccine rollout, there remained sustained hesitancy and unwillingness to the vaccine at 11.2 % and 5.1 % respectively. Another study[8] which conducted assessment of 35 published research evidence on COVID-19 vaccine hesitancy among HCWs, found that the prevalence of COVID-19 vaccination hesitancy worldwide ranged from 4.3 to 72 %. Other studies[6,12,14,17,19,20] found a hesitancy rate of 60.7 %, 29 %, 72.3 %, 49.48 %, 64 % and 32 % respectively. The analysis of one study[18] showed a significant rate of vaccine hesitancy among Arabic-speaking HCWs residing in and outside of Arab countries (25.8% and 32.8%, respectively). Surprisingly, many studies have shown that, compared with other HCWs, nurses were less likely to accept vaccination[6,9,12,14]. Desperate times call for desperate measures. Thus, to increase COVID-19 vaccine uptake, the Head of Public Service in Kenya directed public servants to be vaccinated before August 23, 2021[21].

The current study showed that gender was positively associated with uptake of COVID-19 vaccine (p=.223, 95 % CI, SE .795, OR 1.250). Other studies concur with this result. One study[6] found that gender had a p-value of .013, proving to be a predictor of the acceptability of the COVID-19 vaccine. However, another study[10] found a significantly lower uptake associated with gender. Many studies found that individuals who were males were more likely to accept COVID-19 vaccines[8,9,14,17-19].

In this study, age was negatively associated with uptake of COVID-19 vaccine (p=-.033, 95 % CI, SE .381, OR .968). One study[10] found a significantly lower uptake associated with age. Another study[18] found that the age of 30–59 was associated with higher vaccine hesitancy. In contrast, two studies[8,19] found that vaccine acceptance increased with increasing age. Another study[9] found that age over 50 was significantly associated with vaccine acceptance.

The level of education was positively associated with uptake of COVID-19 vaccine (p=.132, 95 % CI, SE .491, OR 1.141). Other studies found similar results. Two studies[19,20] found that vaccine acceptance increased with education, while another study[8] evidently revealed that individuals who were doctoral degree holders were more likely to accept COVID-19 vaccines.

The years of experience, too, was positively associated with uptake of COVID-19 vaccine (p=.228, 95 % CI, SE .453, OR 1.256). One study[7] revealed similar results; it revealed that having greater than 10 years' work experience (OR 3.0, 95% CI) was significantly associated with vaccine uptake.

The results of this study showed that knowledge on COVID-19 had a positive association with uptake of the vaccine (.583, CI 95%, SE .758, OR 1.792). This results concur with information from three sources[11-13] about HCWs in Kenya, which showed that lack of knowledge and fear that there isn't enough information about the safety of the vaccines had made them jittery, hence causing hesitancy. Another study[7] found that the hesitant group in their study reported having inadequate information to make an informed decision about whether to receive the vaccine (45.2 %) and about vaccine expectations (32.3 %). One study[18] found that not knowing the vaccine type authorized in the participant's country was associated with higher vaccine hesitancy.

To mitigate against hesitancy and increase uptake of COVID-19 vaccine, one study[22] emphasizes on encouraging uptake through effective health communication. One study[12] shows that passing the correct information in a simple, transparent and accessible format is likely to increase vaccine confidence. Rogo[21] observes that, with consistent public education, vaccine hesitancy is the lesser challenge. However, he adds that vaccine quantity, capacity, and bureaucracy are the main problems, requiring immediate attention. Further, in order to increase uptake of the COVID-19 vaccine, studies[9,23,24] have warned that there should not be fake news and misinformation about COVID-19 disease as well as the vaccines.

All in all, we are optimistic that COVID-19 vaccine uptake has since increased as more information on the vaccines is being availed and more people have taken it without any serious adverse events.

CONCLUSION

The study concluded that there was hesitancy in the uptake of COVID-19 vaccine; that gender, level of nursing education, years of experience in nursing, and knowledge on COVID-19 are significant predictors of the uptake of the COVID-19 vaccine; and that a knowledge gap concerning the vaccine exists.

RECOMMENDATION

It is, therefore, recommended that measures to increase nurses' uptake of the COVID-19 vaccine, such as education on the vaccine among other strategies, be instituted.

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