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**Influences on COVID-19 Vaccine Hesitancy Among Frontline Workers:  
A Case Study of Teachers in Two Diverse Regions in Uganda**

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**ABSTRACT**

COVID-19 is a global pandemic that has disrupted the education system, school calendar and many students have lost a year or two of school. Many teachers in Uganda who are not on government payroll have not had a stable income for over a year. This has created anxiety among both the students and the teachers who are eager to have their schools reopened and are willing to do anything to return to work and school. However, when the teachers were asked to get vaccinated many were reluctant to do so. This paper is a case study of the influences on teachers' response to mandatory COVID-19 vaccination. Using W.H.O's immunization survey questions (WHO, 2013), a parallel sampling design was used to compare two regions and the respondents were selected using volunteer/convenience sampling. It was discovered that individual and group influences, contextual influences and vaccine specific issues play a major role in determining community responsiveness to new vaccines.

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**ARTICLE INFO**

*Article history:*

Received 15 May 2021

Received in revised form

19 Jun 2021

Accepted 27 Jun 2021

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*Keywords:* COVID- 19  
vaccines, Teachers- frontline  
workers, influences, vaccine  
hesitancy

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**I. INTRODUCTION**

A COVID-19 vaccine is a vaccine intended to provide acquired immunity against severe acute respiratory syndrome corona virus 2 (SARA-CoV-2), the virus which causes corona virus disease 2019. (CDC, Key things to know, 2021). According to the CDC there are three main types of COVID-19 vaccines that are authorised and recommended or undergoing large- scale phase 3 clinical trials. Among the recommended vaccines are the mRNA vaccines which contain materials from the virus that

causes COVID-19 and when injected in the body gives instructions to our cells to make a harmless protein. After the protein is made, it destroys the genetic material from the protein. (CDC, how the vaccine works, 2021). The other vaccine is the protein subunit vaccines which contain harmless pieces (proteins) of the virus that causes COVID-19 instead of the entire germ. When you are vaccinated with it the body fights it and builds antibodies to protect you against COVID-19. The third vaccine is the vector vaccines (viral vector) which contain modified versions of a different virus from the one that causes COVID-19 and inside of which is placed material from the virus that causes COVID-19. This instructs our bodies to duplicate and create more such cells to fight COVID-19 by tying it up like the cell you are injected with. (CDC, how the vaccine works, 2021).

To be fully vaccinated some vaccines like Pfizer-BioNTech and Moderna require two shots while the Johnson& Johnson's Janssen COVI-19 vaccine requires only one shot to be fully vaccinated. In the USA by May 2021 only the three vaccines above were authorised and recommended for use. In the United Kingdom, by May 2021 only four vaccines were recommended for use namely: Pfizer-BioNTech ,Moderna, Janssen and Oxford/AstraZeneca vaccines. (NHS, 2021)

The CDC acknowledged that they were still learning how well vaccines prevent an individual from spreading COVID-19, how long COVID-19 vaccine protects the individual how many people need to be vaccinated to achieve population immunity, and how effective the vaccine is against new variants of severe acute respiratory syndrome corona virus 2 (SARA-CoV-2). (CDC, Key things to know, 2021)

Influences are things that incite, instigate, induce, sway or bias someone regarding something. The influences were grouped into: contextual influences, individual and group influences and vaccine specific aspects as suggested by the WHO survey questionnaire guide. (WHO, 2013). A vaccine survey questionnaire developed by the polio global eradication initiative was used because of its recommendation of being suitable for analysing determinants of vaccine hesitancy. It was also selected on the basis of the questions having their origin in peer reviewed literature review (WHO, 2013). The sample was selected from primary and secondary school teachers. Vaccine hesitancy refers to delay in acceptance or refusal of vaccines despite their being available. (Butler, 2015)

In Uganda, COVID-19 vaccination was launched on the 10<sup>th</sup> of March 2021 at Mulago Regional Referral Hospital by Dr. Munir Safieldin the UNICEF Representative in Uganda. He started his speech by saying that Covax vaccines were safe and they save lives a slogan which was adopted by other speakers after him, (Buwembo, 2021) because most Ugandans were apprehensive of taking a vaccine that is still undergoing clinical trials. At first it was offered to only health care providers, then it was extended to the army, and teachers were added to the list in March. However in a report by Monitor Publications, by April 13<sup>th</sup>, out of the 3000 doses sent to Amuru, only 45 had been administered and this was the same situation in most of the districts in Uganda. (Abet, 2021)

Teachers are a group of elites who are most of the time used as benchmarks for acceptable behaviour and practices. According to the Roycroff dictionary, (Dictionary R. , 2020) a teacher is a person either male or female who instils into the head of another person, either voluntarily or for pay, the sum and substance of his or her ignorance and one who makes two ideas grow where only one grew before. A teacher is also defined as a person with the accurate and specific ability, intuition, education, experience, skills, knowledge, and qualification to teach a specific subject or number of subjects. First medical personnel were vaccinated under government order to show the public that the vaccine is safe. Adding teachers to the list of mandatory vaccination was intended to enlarge the base of vaccine propagators all across the country wherever a teacher can reach. Out of the 260,717 teachers in the country, only 8,517 had been vaccinated by 13<sup>th</sup> April (Abet, 2021). The Permanent Secretary , Ministry of Education and Sports, Mr Alex Kakooza in a letter written on 23<sup>rd</sup> April to all stakeholders noted the

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Peer review under responsibility of Emil Kaburuan.

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low uptake of the vaccine by teachers, vaccine hesitancy and issued a directive to all teachers to get vaccinated before school reopening in July this year. (Abet, 2021). It was discovered that 98% of the teachers who took the vaccine did so out of fear of losing their jobs.

Research done by (D. Warwrzuta, M. Jaworski, J. Gotlib, M. Panczyk, 2021) looked at influence of negative comments on Facebook on vaccine hesitancy, (M.W.Agyekum, G.F. Afrifa-Anana, F. Kyei-Arthur, B. Addo, 2021) examined the acceptability of COVID-19 vaccine among health workers in Ghana, (J. Griffith, H. Marani, H. Monkman, 2020) analysed COVID-19 vaccine hesitancy in Canada. This study conducted a wider survey of various influences like contextual, individual and group influences, and vaccine specific issues on teachers' hesitancy to mandatory COVID-19 vaccination for all teachers.

## II. METHODS

An in depth case study was conducted to draw out the biases hidden in the minds and hearts of the teachers. Qualitative research methods were used because influences are personal, diverse and vary from person to person. A sample size of 132 respondents was selected out of a population of 200 teachers from two regions using Krejcie and Morgan's recommendation for determining sample size for research purposes (Robert V. Krejcie and Darryle W. Morgan, 1970). Questionnaires were reinforced with interviews and observations of behaviour to collect data. Each teacher was allocated time to discuss their fears and beliefs. The two regions were chosen on the basis of diversity of physical features and diversity of location from each other. The number of respondents was 66 from each region to make a total of 132 respondents as per table 1 below.

## III. FINDINGS

### Demographics of the Respondents

Table 1: Gender of respondents n=132

Category	Region A	Region B
Males	35	27
Females	31	39

Region A respondents included more male teachers than females, while region B had more female teachers than their male counterparts. This study population was selected on the basis of volunteer/convenience sampling.

Table 2: Age Bracket of Respondents n = 132

Category	Region A	Region B
Males 20 – 30years	None	None
Males 31 - 40 years	03	04
Males 41 - 50 years	20	16
Males 51 and above	12	07
Total	35	27
Females 20 – 30years	None	None
Females 31 - 40 years	02	05
Females 41 - 50 years	23	27
Females 51 and above	06	07
Total	31	39

As per table 2 above, there were more teachers in the 41- 50 year age bracket in the selected sample.

Table 3: Qualification n = 132

Category	Region A	Region B
Diploma	15	14
Degree	51	52

In table 3 above, there were fewer diploma holders because lower classes had not yet been allowed to resume school (the time the sample was selected) after the first lock down. Schools were closed due to the COVID-19 outbreak. The respondents were all from schools with candidate classes which had been allowed to reopen to complete the school year.

## Responses to the Survey

The responses were divided into contextual influences, individual and group influences, and vaccine specific issues according to the survey guide by (WHO, 2013).

### 1. Contextual influences

These were influences arising from historic, socio- cultural, environmental, health system/ institutional, economic or political factors.

- Communication and media environment:** 98% of the 132 respondents had access to Whatsapp, Facebook, and other modern sources of news and information. The 98% in this category owned smart phones, had email accounts and read news on the phone more often than they picked up a physical newspaper. They relied upon Google to crosscheck things they were not sure about. They admitted that they had seen messages on social media telling them that the COVID-19 vaccine was intended to turn them into genetically modified beings (Ruby, 2021) and that whoever took the vaccine would die within two years. This created anxiety among the teachers who were already anxious about a new disease that killed by suffocation within two weeks of contacting that disease. (Yeadon, 2021) .
- Historical influences:** The respondents were asked whether they had any previous events that had affected the teacher or their children that would prevent them from taking the vaccine. 30% of both female and male respondents shared experiences where they or their children had had negative reactions to vaccines especially the ones that were given after the first two years of a child's life. Some respondents said that their siblings had died as a result of being administered certain vaccines and that had made them apprehensive of taking any more vaccines. 44% had experienced mild reactions where their children had become prone to sicknesses they previously had resisted, their immunity had decreased. 26% of the respondents did not have any previous negative experiences with vaccines.
- Religion/ culture/ gender/ socio-economic:** All the respondents said they knew some families that did not take vaccines due to their traditional beliefs. When asked if they thought it endangered their families 98% said that they had never seen any major sicknesses or untreated diseases (using herbs) among the members of that those families.
- Politics / policies (mandates):** In response to whether the respondents trusted their government to make right choices for them in terms of vaccines, 98% declined to comment. The 2% said they sometimes did not trust the government to make correct choices for them in health related issues.
- Geographic barriers:** 85% of the respondents did not mind waiting at the vaccination points to receive a vaccine because they had done so previously when taking their babies for immunisation. According to them, they normally waited in the long queues at the vaccination points. 15% of the male respondents complained and felt inconvenienced by the distance to the nearest centres where COVID-19 mandatory vaccination was conducted.

- **Pharmaceutical industry:** 98% of the teachers who had seen the video about pharmaceutical companies wanting to make money instead of using Chloroquine which was an old time treatment believed the vaccine was a ploy. When asked if before COVID-19 they had trusted the pharmaceutical companies 80% responded positively. (Ruby, 2021) . 20% said they had more trust in local herbs because of their pure form having no chemical additives. .

## 2. Individual and group influences

These were influences arising from personal perceptions of the vaccine or influences of the social/peer environment.

- **Experience with past vaccination:** In response to whether they knew anyone who had had a serious reaction to a vaccine 80% said they had seen many people getting serious reactions to the COVID-19 vaccine and that had scared them from taking it. 20% of the respondents said they had buried neighbours, friends and relatives who had died as a result of taking the COVID-19 vaccine. When the 20% were pressed to explain 15% said the people who died had been very healthy but after vaccination their health had deteriorated steadily until when they died weeks or a month later. The 5% of the 20% who had witnessed death situations said their relatives had collapsed just after vaccination and died. However, they could not confirm whether or not their relatives had underlying diseases.
- **Beliefs, attitudes about health and prevention:** In response to whether they thought vaccines strengthen the immune system, all respondents were in agreement. Some qualified it by adding that especially those vaccines against the seven killer diseases. When asked if they thought it was possible to have too many vaccines they all responded affirmatively. The female participants added that classic examples of too many vaccines are the extra vaccines which were added on the immunisation card five years ago. Children are currently immunised against diseases like diarrhea which was not on the immunisation card previously. Some of the respondents felt vaccination against COVID19 was unnecessary and in the same category as vaccination against diarrhea.
- **Knowledge/ awareness:** When asked whether they understood how vaccines work, only the science teachers responded in the affirmative. The larger number of respondents 60% did not know how vaccines work and asked to be educated about them. In response to whether they knew which vaccine of the two on the Ugandan scene was suitable for them all the respondents said they had seen negative information about both vaccines on international media. This had contributed to their reluctance to take the vaccine.
- **Health system and providers- trust and personal experience:** In response to whether they believed that their health care provider had their best interest at heart all teachers responded in the affirmative. In response as to whether they trusted the vaccine advice from their health care providers, 75% responded in the affirmative while the 35% said they always got another opinion on vaccines especially those which are recently added on the vaccination cards. When asked if they trusted their health providers to tell them the risks and benefits of vaccines 90% said that they felt that the health care providers were also ignorant of some of the risks. 10% said they did not trust them. In response to whether they were satisfied with the responses from their health workers to their questions about immunisation all 132 responded with 'sometimes'.
- **Risk /benefit (perceived/ heuristic):** In response to which vaccines the respondents thought were important for their families and themselves, all the 132 respondents said the vaccines for the seven

killer diseases those administered between 0-2 years. When asked if they were concerned about any risk with vaccines 98% responded in the affirmative. When asked to explain the risk they talked about genetic alteration and its effect on the human beings years to come. When asked if they believed that vaccines were safe for themselves and their communities, all the respondents said that some of the vaccines were safe but not all. Some respondents gave examples of vaccines which were administered 5 years ago to all children below 12 years and children started falling sick that had been healthy prior to that vaccination exercise.

- **Immunisation as a social norm vs. not needed/ harmful:** In response to whether they thought it was important for everyone to get the recommended vaccines for themselves and their children, all 132 respondents thought it was important. All the 132 teachers said they felt social pressure from the school administration to take the COVID-19 vaccine. The respondents said that the people getting vaccinated were those in the mandatory category but those who have not been forced to get vaccinated have stayed away because of the negative media reports.

### 3. Vaccine / vaccination specific issues

These were questions and responses directly related to vaccines or vaccination. These included:

- **Risk / benefit (scientific evidence):** The first question required the respondents to answer whether there was adequate safety information. 92% of the respondents felt there was not adequate safety information based on the fact that the vaccine was still in trial stages. 08% of the respondents felt they had received enough safety information on television and the Ministry of Health. The second question was whether there was adequate tracking of adverse effects in the respondent's country. 97% of the respondents did not think that there was any tracking of adverse effects in their country because they had seen COVID-19 cases that died at home being buried without any follow up from the Ministry of Health officials. 3% said it was impossible to have any follow up in their country because of logistical challenges. All the 132 respondents were not confident in their country's ability to track adverse reactions or side effects from immunisation.

- **Introduction of a new vaccine or new formulation:** The respondents were asked whether they would like to be the first to get a new vaccine. 99% of the respondents did not want to be the first ones to get a new vaccine. 01% respondents were not sure whether they wanted to be the first to get the new vaccine. The second question was whether the respondents preferred to wait and see what other people do. All the 132 respondents said they preferred to wait and see how other people respond to the vaccine before they take it. The third question was whether the respondents thought the newer vaccines were as safe as the older ones. 70% of the respondents were not sure whether the newer vaccines were as safe as the older vaccines because they had witnessed many side effects in the newer vaccines. (They were used to the side effects in the older vaccines which they had learnt to treat) 30% of the respondents felt the newer vaccines were just as safe as the older vaccines but felt the COVID-19 vaccine had not yet passed all the trials to be administered to humans. When asked the first thing they would want to know when a new vaccine is introduced all the 132 respondents said they wanted to know its effectiveness.

- **Mode of administration:** The first question required the respondents to choose the mode of administration they preferred whether injection, oral or as a nasal spray. 80% of the respondents preferred oral administration because it was easy and quick to administer. 15% of the respondents preferred injections because the vaccine was placed directly in the body instead of going through the digestive system which might delay the treatment. 05% felt a nasal spray was a cool way to administer a vaccine though they were worried about getting the required dose.

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- **Design of vaccination program/mode of delivery:** The respondents were asked whether it was easy to access immunisation. All the 132 respondents replied positively that the vaccines were in a location near them. The second question was whether the process of immunisation was welcoming. The female participants said vaccination for children was usually not welcoming as the nurses shouted at the mothers to undress and hold their children. However the COVID-19 vaccination the process was very welcoming maybe because of the low turn up of volunteers.
- **Reliability and or source of vaccine supplies:** The respondents were asked if they were confident that the doctor's office would have the vaccines when they need them. All the 132 respondents said vaccine availability was not guaranteed and some children often missed vaccine doses because of scarcity at the time when they needed them.
- **Costs:** The respondents were asked whether the cost of a vaccine would prevent them from getting it for themselves and their children. All the 132 respondents said it would and some mentioned situations where they had not given their children the new vaccines because they were too expensive.
- **Role of healthcare professionals:** The respondents were asked whether healthcare professional had recommended that they receive a vaccine. All the 132 respondents agreed that to take their children for vaccination it was because the healthcare professional had recommended that they take the children for vaccination on the stipulated dates. Even the teachers who had willingly gone for the COVID-19 vaccination before it was made mandatory said they had done so after recommendation by a healthcare professional.

#### IV. Recommendations and Conclusion

##### Recommendations

All who received COVID-19 vaccination were made to sign a consent form which exonerated the drug manufacturer in case of any adverse effects arising out of taking the vaccine. That consent form should be withdrawn because it brings fear and unease among the recipients who had never signed consent forms for previously taken vaccines.

A vaccine is intended to benefit the recipient. Therefore the advantages and disadvantages should be laid down for the recipient and then it is left up to him or her to make a decision for or against taking it. Any attempt at forcing citizens to take the vaccine creates more distrust for the enforcement agency, the government and the new vaccine.

##### Conclusion

There were many reasons why people shied away from taking the vaccine. Chief among these was the lack of statistical data to confirm its efficacy. The COVID-19 vaccine had another disadvantage that it did not prevent the vaccinated from contracting the disease. Coupled with this was the conflicting information which came in every day on social media, from medical practitioners and vaccine manufacturers. These reasons made the vaccine appear unbeneficial to the inquisitive teachers.

Vaccines are a personal issue that no one should be compelled to take or threatened by loss of job. Until the issues raised by the teachers are addressed, many Ugandans will continue to shy away from taking the COVID-19 vaccine.

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