Article title: Assessing the public perceptions around covid-19 vaccine within the University of Eldoret community using WhatsApp focus groups.

Authors: Simon Dena[1]

Affiliations: Biological Sciences/ University of Eldoret[1]

Orcid ids: 0000-0003-2085-7805[1]

Contact e-mail: smwaringa68@gmail.com

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Assessing the public perceptions around covid-19 vaccine within the University of Eldoret community using WhatsApp focus groups.

Simon M. Dena.
BSc Biotechnology and Biosafety
University of Eldoret, Kenya
Smwaringa68@gmail.com

Abstract

Infection caused by viruses can only be eradicated through the formulation of a vaccine that primes the body to fight the virus. No recent study exists on the attitudes and perceptions of students on the COVID-19 vaccine. Without information on prevailing COVID-19 vaccine, set objectives towards the realization of a healthy nation will be unmet. The current research employed exploratory survey design. The study mostly used a stratified random sampling. Different age groups were sampled. Online questionnaires were administered through Whatsapp social media platform. Data analysis was done using Statistical Package for Social Sciences (SPSS) version 20 and excel 2013 spreadsheet. Data was analysed using descriptive statistics. Majority of respondents were male (63.0%) and females (37.0%). The total number of respondents who were willing to the take up the Covid-19 Vaccine were 84 of which 33 were females (16.5%) and males were 51(25.5%). In vaccine knowledge 110 (56.0%) of responses were positive which indicated most respondents knew about the vaccine centre while 85 (44.0%) of the respondents did not know about Vaccine centres. Respondents who answered the online questionnaire demonstrated their knowledge on vaccine. Both male and females who total 160 (80%) knew the importance of a vaccine while 23 (11.5%) clearly acknowledge they had no idea on the role a vaccine plays, 12 (6%) were uncertain about the issue of vaccines. The 5 respondents (2.5%), did not answer the question on knowledge of vaccine. A large significant population fully trusted the pharmaceutical in vaccine production. Only 173 (86.5%) had not been vaccinated while 23 (11.5%) had been vaccinated. The responses showed that 44(22.0%) respondents had indeed been influenced by their religious leaders not to be vaccinated, 77(38.5%) maintained that their religious leaders entirely let them make a decision of whether to take the Vaccine or deal away with it. 40 (23.0%) respondents agreed to conspiracies revolving around Covid 19. Research recommends developing of social-media platforms that would ensure education on vaccination and immunization within the population. Educating both genders with emphasis on females to impact them with necessary knowledge on vaccines.

Keywords: Public perception, covid-19, vaccine (AstraZeneca)

Introduction

COVID-19 is a contagious disease caused by SARS-CoV-2. The disease was first discovered in 2019 in the city of Wuhan (Hui et al., 2020), and has consequently span throughout the world, causing the 2019–2020 COVID-19 pandemic. In March 2020, the rate of deaths per number of diagnosed cases from Covid-19 was 4.4%; however, it ranged from 0.2% to 15% (Lee, 2014), according to age group and other health-related
complications. The virus is unique among human coronaviruses which has a capacity of high transmissibility (Leung, 2021), substantial severe deaths in some high-risk individuals, and the ability to cause huge disruption in the nation. Variant viruses are generated from RNA viruses, a characteristic that enables the virus escape neutralizing effect of the host’s Antibodies (Ryu, 2016). Cann, (2001) defined a Variant as a virus whose phenotype differs from the original wild-type strain but the genetic basis for the difference is not known, Coronavirus can readily mutate when exposed to selective pressure. New and highly transmissible variants of the virus were identified such as the South African, 501Y.V2 variants (Cele, et al., 2021). Pfizer BioNtech a US-based company announced its first Vaccine candidate against Covid-19, which was approved by FDA on 10th of December 2020. (Tanne, 2020). The primary purpose of vaccination is to get rid of viral infection to achieve herd immunity within a given population (Wang et al., 2021). Herd Immunity can be defined as a conditions in which adequate number of individuals within a population is unsusceptible to an infectious disease (through vaccination and/or prior illness) to make its transmission from person to person improbable. To attain herd immunity against COVID-19, a considerable proportion of human population would need to be vaccinated, lowering the overall amount of virus able to be transmitted in the entire population (WHO, 2020). The vast majority of persons, including those in Kenya remain susceptible to the virus. Seroprevalence research argue that in most countries (Vignuzzi & López, 2019; WHO, 2020), less than 10% of the entire population have been infected with COVID-19. University students can play an active role in protecting and improving immediate research on key issues concerning health. Engaging them not only creates a direct impact on behaviour and attitudes, but possibly influences their peers, families, relatives and friends. This study is fuelled by the sudden rise in Kenyans refusing to go for the AstraZeneca Vaccine.

Materials and Methods

Study sites
This research was conducted at University of Eldoret, in Uasin Gishu County. The university is situated 9 km from Eldoret town along the Eldoret-Ziwa road from Eldoret town and approximately 319 km from Nairobi along the Nairobi- Uganda highway. It lies between latitude 0 30’ and 25’ 23’’ and longitude 0 33’ 21’’.
Research Design

The research employed exploratory survey design where a Whatsapp media platform was used to gather data.

Target Population

The target population comprised of students studying in various Schools in the University of Eldoret main campus. The Schools included are: School of Environmental
Studies School of Science, School of Education, School of Engineering School of Business and Management Sciences, School of Natural Resource Management School of Human Resource Development and school of Agriculture and Biotechnology. The study focused on the University students residing in-campus or off-campus. In total, the project was expected to engage around 200 participants.

**Sampling and Sampling Techniques**
The study mostly used a stratified sampling method to group responses from the participants based on different factors such as age, gender. Simple random sampling technique was employed to choose respondents within University. At least different age groups were sampled as well in pursuit of information. Online questionnaires were administered through WhatsApp.

**Sample Size**
The sample size (n) used was 200 respondents who were randomly assigned the questionnaire from the population (N). The sample size constituted students within University of Eldoret.

**Methods of Data Collection**
This study used qualitative analysis of data. The method of data collection purely relied on the administration of online questionnaire via WhatsApp media. Through this method, the study looked forward to acquiring background information from respondents as well as their views and knowledge on the topic of query. This was well in line with observing the Ministry of Health COVID-19 protocols.

**Data Analysis**
This involved organization, interpretation and presentation of collected data. Data analysis was done using Statistical Package for Social Sciences (SPSS) version 20.0 and excel 2013 spreadsheet. Data was analysed using descriptive statistics. The significance difference was tested using chi square contingency tables.

**RESULTS**

**Demographic characteristic of respondents**
There were 200 online questionnaires distributed within the University population and recorded in an excel sheet. Majority of respondents were males (63.0%). those aged between 18 and 24 years comprised the majority (73.5%). First year and fourth year students (52.0%) were the majority who participated in this research study. In terms of
school in which the students came from, majority were from the school of education (32.5%) and science (30.5%) as illustrated in Table 1.

Table 1: Demographic characteristic of Respondents

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Frequencies (f)</th>
<th>Frequencies (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex/Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>74</td>
<td>37.0</td>
</tr>
<tr>
<td>Male</td>
<td>126</td>
<td>63.0</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100.0</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-24</td>
<td>147</td>
<td>73.5</td>
</tr>
<tr>
<td>25-34</td>
<td>21</td>
<td>10.5</td>
</tr>
<tr>
<td>35-44</td>
<td>10</td>
<td>5.0</td>
</tr>
<tr>
<td>45-54</td>
<td>12</td>
<td>6.0</td>
</tr>
<tr>
<td>55-64</td>
<td>5</td>
<td>2.5</td>
</tr>
<tr>
<td>65+</td>
<td>5</td>
<td>2.5</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100.0</td>
</tr>
<tr>
<td>Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year One</td>
<td>52</td>
<td>26.0</td>
</tr>
<tr>
<td>Year Two</td>
<td>43</td>
<td>21.5</td>
</tr>
<tr>
<td>Year Three</td>
<td>16</td>
<td>8.0</td>
</tr>
<tr>
<td>Year Four</td>
<td>52</td>
<td>26.0</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>7</td>
<td>3.5</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100.0</td>
</tr>
<tr>
<td>School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agriculture &amp; biotechnology</td>
<td>16</td>
<td>8.0</td>
</tr>
<tr>
<td>Business</td>
<td>12</td>
<td>5.8</td>
</tr>
<tr>
<td>Economics</td>
<td>7</td>
<td>3.5</td>
</tr>
<tr>
<td>Education</td>
<td>65</td>
<td>32.5</td>
</tr>
<tr>
<td>Engineering</td>
<td>19</td>
<td>9.3</td>
</tr>
<tr>
<td>Environment</td>
<td>7</td>
<td>3.5</td>
</tr>
<tr>
<td>Human resource</td>
<td>14</td>
<td>7.0</td>
</tr>
<tr>
<td>Science</td>
<td>61</td>
<td>30.5</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Respondent’s estimate for the vaccine uptake

Ratio of Male to Female Willingness for Covid-19 Vaccine uptake

An average of 69.25% of the respondents were not willing to take up Covid 19 vaccine while 21.0 % were willing and 10.0% were not sure of its safety with a significant difference ($\chi^2 = 58.9133$ with d.f.=2, p<0.0001). There were 33 (16.5%) females and 51 (25.5%) males who expressed willingness to take up Covid-19 vaccine. There was no statistical significant difference ($\chi^2 = 2.466$, df= 2, p= 0.2914) in Ratio of Male to Female Willingness responses to take Covid-19 Vaccine as portrayed in Figure 1.
Immunization Centre Awareness
The online questionnaire administered to respondents was also aimed to assess their knowledge of Vaccine centres that were Vaccinating individuals against Covid-19. The 110 (56.0%) respondents were positive which indicated most respondents knew about the vaccine centre while 85 (44.0%) of the respondents did not know about Vaccine centres with no statistical significant difference ($\chi^2 = 1.44$, d.f.=1, p=0.2301).

Vaccine Knowledge from the respondents
Majority of the respondents who answered the online questionnaire demonstrated their knowledge on vaccine. Both male and females who total 160 (80%) knew the importance of a vaccine while 23 (12.0%) clearly acknowledge they had no idea the role a vaccine plays, 12 (6.0%) were uncertain about the issue of vaccines. The 5(2.5%), respondents did not answer the question on knowledge of vaccine. There was a statistical significant difference in responses regarding knowledge of vaccines from the respondents ($\chi^2 = 209.2$, d.f.=2, p< 0.0001).

![Figure 4.1: Male to Female Willingness to take Covid-19 Vaccine](image-url)
Public trust in Government’s Choice of Vaccine

The Respondents were presented with a multiple choice answer to assess their level of trust in the choice of Vaccine (AstraZeneca) the government had chosen for vaccination. 41.0% trusted that the government had made the right choice of Covid-19 Vaccine (AstraZeneca) in the market, 39.0% were not sure whether the government had made the right choice while 20.0% distrusted the choice of Vaccine. There was a statistical significant difference in responses regarding Public trust in Government’s Choice of Vaccine from the respondents ($\chi^2 = 8.06$, d.f.=2, p=0.0178).

Public trust in Pharmaceutical Industries

The respondents were presented with a different set of questions within the same online questionnaire to assess their level of trust in pharmaceutical industry concerning Covid-19 Vaccine production. The 113 (59.0%) respondents fully trusted the pharmaceutical in vaccine production, 79 (41.0%) did not trust the industries. There was no statistical significant difference in responses regarding Public trust in Pharmaceutical Industries from the respondents ($\chi^2 = 3.24$, d.f.=1, p=0.07190).

Reasons/Conspiracy against Covid-19 Vaccine Uptake

The respondents were given an opportunity to express any conspiracy theory they may have heard about the Covid-19 Vaccine and whether they believed in them. These conspiracies were: prominent leaders in innovations and technology want to kill Africans, the vaccine might turn people into Zombies, the virus was human engineered, different Covid-19 mutations required different vaccines, the vaccine can cause infertility, COVID-19 affects the whites more than Africans, the vaccine causes health problems, the vaccine is associated with devil worship, Some vaccines are fake they don't offer prevention against the disease, There is no Covid-19 rather than business, Africans are the primary tests subject for the vaccine, the virus is Man-made from china. Covid-19 is a 5g radiation rays, it is linked with population control agencies. The vaccine contains other diseases and makes the virus stronger. The virus doesn't exist it's a way of government looting funds. The virus was created to reduce population, it’s a biological weapon, Blood clotting is a key factor to one dying. It’s a Curse. It makes women barren. It is biblical related to numeric number 666. About 40 (23.0%) respondents agreed to these conspiracies, 95(54.0%) disagreed, 43(24.0%) were uncertain with a statistical significant difference ($\chi^2 =32.236$, d.f.=2, p<0.0001).
Influence of Vaccine Uptake by Religious Leaders

The Respondents were assessed to determine whether religious leaders influence their decision on Covid-19 uptake. The responses showed that 44(36.0%) respondents had indeed been influenced by their religious leaders not to be vaccinated, 77(64.0%) maintained that religious leaders entirely let them make their decision of whether to take the Vaccine or deal away with it. There was a statistical significant difference in responses regarding to Influence of Vaccine Uptake by Religious Leaders from the respondents ($\chi^2 = 7.8$, d.f.=1, p=0.0051).

Safety concerns towards Covid-19 Vaccine

The study tried to gauge the concerns the respondents had towards the safety of Covid-19 Vaccine. Their responses were weighed on a scale of 1-5, those who indicated that they didn’t know were 31 (16.2%), while those who were strongly concerned were 58 (30.4%) as portrayed in Figure 2. There was a statistical significant difference in responses regarding Safety concerns towards Covid-19 Vaccine from the respondents ($\chi^2 = 10.25$, d.f.=4, p=0.0364).

![Figure 2: Safety Concerns towards Covid-19 Vaccine](image-url)
Vaccination Statues of Respondents
In terms of vaccination status, all respondents agreed that they conspiracies did not influence their choice in accepting or rejecting use of Covid 19 vaccine. The findings revealed only 23 (11.5%) respondents had been vaccinated while 173 (86.5%) had not been vaccinated, there was a statistical significant difference ($\chi^2 = 57.76$, d.f.=1 P< 0.0001).

DISCUSSION

Respondent’s estimate for the vaccine uptake
The research established no significant difference between male and female respondents. Reducing COVID-19 burden for populations require equitable and effective risk-based allocations of scarce preventive resources, including vaccinations. Tailored absolute risk estimates in future time frames by incorporating information on pandemic dynamics at the community level.

Vaccine Knowledge from the respondents
There was no statistically significant difference in responses regarding Immunization Centre Awareness, Vaccine Knowledge, Public trust in Government’s Choice of Vaccine, Public trust in Pharmaceutical Industries, but a significant difference in Vaccination Statues of Respondents, Influence of Vaccine Uptake by Religious Leaders and Safety concerns towards Covid-19 Vaccine. Generally, the students in our research showed positive perception towards vaccination. The respondents had significantly more positive scores in Vaccine Knowledge. This can be explained by the fact that respondents had established more analytical approaches to information regarding Covid-19. Overall the students had average knowledge points relative to what would be expected for the general respondent population. The knowledge scores of male and female respondents did not significantly differ.

Reasons/Conspiracy against Covid-19 Vaccine Uptake
The respondents were given an opportunity to express any conspiracy theory they may have heard about the Covid-19 Vaccine and whether they believed in them. Students gave various conspiracies which would determine the uptake of vaccine aging Covid-19. In line with Ruiz, et al., (2021), having in mind the consequence that hostile anti-vaccine propaganda and little understanding, critical way of thinking can lead to development of dismissive perception towards vaccination. In regards to Ajzens’
Theory of Planned Behaviour one could presume that more pragmatic views, leads to improved awareness, and more accountable vaccination programs (Zaimeche, Al-Hassani, & Salem, 2006; Wu et al., 2021).

These findings concur with those of Romer et al., (2020) that vaccine acceptance within population remains, and fear of vaccines has grown drastically in the last few years in countries that are developed. In several groups, this dismay has led to increased events of vaccine hesitancy, because belief in COVID-19 related conspiracy theories have predicted resistance to both preventive behaviours and future vaccination against emerging virus. Despite the numerous evidence supporting the welfare and advantages of vaccines (Zhong, et al., 2003; Plotkin, & Plotkin, 2011; Romer et al., 2020), this dismay has proven futile to knowledge movements, a phenomenon well-tackled by psychological research (Sjöberg, et al., 2004) which illustrated that perception is irrational, a result of both facts and how those facts are perceived. Given the inherently psychological, intuitive thought of risk perception, and the dangers posed to public health these attitudes give rise to, and in line with well-elaborated lawful standards endorse government initiative to safe-guard the common good, community has the authority to initiate rules, policies, and possible decision of foundations that discourage vaccine hesitancy. The respondent’s estimate willing to take up Covid-19 vaccine were females 31(16.5%) and males 51 (25.5%).

In conclusion, study examined Covid-19 awareness, attitude and participation of university students towards the vaccine. Respondents had an excellent knowledge about the ongoing Covid-19 pandemic while giving out their responses. Respondent’s demonstrated vaccine knowledge which could be attributed to sources of information from different platforms such as: newspapers, radios, television and social media apps such as twitter and Facebook which affects the outcomes of one’s decision towards vaccine uptake. Majority of respondents had not been vaccinated against Covid-19 while others did not want to disclose their vaccination statues. There were a lot of conspiracies surrounding Covid-19 vaccine uptake amongst respondents. These conspiracy affects the decisions of whether to take or reject the vaccine. Religious leaders influence their followers to certain degree as far as vaccine uptake is concerned. This research study recommends developing of social-media platforms that would ensure education on vaccination and immunization within the population and also
incorporation of these topics in learning curricula. Educating both genders with emphasis on females to impact them with necessary knowledge on vaccines to further shape their belief and trust. Sharing of information and research findings on hesitancy of vaccine between two or more learning institutions. Recent evidence-informed research need to be evaluated before sharing with other groups. Creating opportunities in which information about vaccine hesitancy would be shared regularly. Integration of immunization programs and intervention services within learning institutions and the community. This would help to address complacency and reduce cases of vaccine hesitancy.

References


