

Covid-19 vaccination acceptance among students of the Higher Institute of Medical Techniques of Lubumbashi, Democratic Republic of Congo

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Abstract

Objective: To assess the acceptance and intention to receive the Covid-19 vaccine and the associated factors if it is offered to students, as they are directly exposed to the disease during the various internships.

Methods: This is a cross-sectional descriptive study, carried out within the Higher Institute of Medical Techniques in Lubumbashi from September 4 to 5, 2020. The sample was non-random for convenience, and included 439 students who gave their consent to participate in the survey. The main result was the students' willingness to accept a future vaccine against covid-19. Stepwise logistic regression was used to identify predictors of willingness to be vaccinated against Covid-19.

Results: Of a total of 439 respondents, 330 (75.2%) were female and 109 (24.8%) were male. The mean age was 26.5 ± 6.5 years. Only 25.3% of students said they would receive the covid-19 vaccine if it was available. After logistic regression, male students (AOR = 2.24 [1.40-3.58]; $p = 0.001$), those who regularly consult official sites (AOR = 0.24 [0.90-0, 68]; $p = 0.004$) and students with poor knowledge of Covid-19 (AOR = 1.73 [0.45-0.02]; $p = 0.000$) were significantly associated with the desire to be vaccinated.

Conclusion: For the COVID-19 vaccination acceptance by the population, the education of future health workers must be considered as a priority, because the attitude of the latter towards vaccines has proved to be a determining factor important to their own use of the vaccine, their intention to recommend the vaccine to their patients.

Keywords : COVID-19, Vaccine, Students, Acceptance, Lubumbashi.

Introduction

Coronavirus disease (Covid-19) is the most recent contagious respiratory infectious disease caused by a novel coronavirus (SARS-Cov-2) which has created a massive disaster around the world. Since late 2019, it has been observed in Wuhan, Hubei Province of China, until September 29, 2020, the world has recorded

33,206,004 confirmed cases of covid-19; including 999,239 deaths [1-4]. To date, African countries remain the least affected with 1,175,812 confirmed cases and 25,706 deaths [4,5]. In the Democratic Republic of Congo (DRC), the first case was reported on March 10th, 2020, and up to September 17th, 2020, our country has recorded 10,442 confirmed cases and one probable case of Covid-19, including 267 deaths and one probable

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Article reçu: 10-10-2020 Accepté: 05-12-2020

Publié: 26-12-2020



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Pour citer cet article: Ngoyi JM, Mbuyu LK, Kibwe DN, Kabamba LN, Umba EK, Tambwe PN, Musangu MS, Kahaki BI *et al.* Covid-19 vaccination acceptance among students of the Higher Institute of Medical Techniques of Lubumbashi, Democratic Republic of Congo. *Revue de l'Infirmier Congolais.* 2020; 4(2): 48-52.

case; and 9,840 cases of recovery [6]. The city of Lubumbashi, located in the province of Haut-Katanga, in the south-west of the DRC; registered her first case of Covid-19 on April 24th, 2020. As of September 9th, 2020, the province had 324 confirmed cases of Covid-19 including 15 deaths [7].

In order to stop the Covid-19 epidemic, herd immunity will have to be well established in the population, which is usually acquired by infection or vaccination which, moreover, is often cited as one of the means most effective in controlling infectious diseases. But success is questioned by individuals and groups who choose to delay or refuse vaccines [8,9].

The decline in public confidence in vaccines around the world is a source of concern and a major challenge for public health experts [10]. While there are a number of influencers, future health caregivers are an important group to consider.

The development of Covid-19 vaccines is a crucial challenge. Most of them are currently in "preclinical trials" [11], with a number already in phase 1 with promising results from animal studies. Clinical trials on genetically modified adenoviruses (common influenza virus) are currently in phase I / II, and require special attention to their safety. It is also interesting to note the special attention paid to the Bacillus Calmette and Guérin (BCG) vaccine and its potential immunogenicity against SARS Cov-2. Indeed, BCG is known for its non-specific immunogenic power and two clinical trials aim to date to establish the evidence in relation to its interest in the current pandemic context [12]. However, even with rapid development and experimentation, the estimated time to develop a new vaccine should be at least 1 to 1.5 years [13]. After its clinical development, another challenge is the distribution and acceptance of the vaccine in the general population.

The objective of this study was to assess the acceptance and intention to receive the Covid-19 vaccine and the associated factors if it is offered to students, as they are directly exposed to the disease. During the various internships.

Methodology

This is an analytical cross-sectional study, carried out among students of the Higher Institute of Medical Techniques of Lubumbashi (ISTM / Lubumbashi) from September 4th to 5th, 2020 in the city of Lubumbashi in the province of Haut-Katanga, in DRC. The sample was non-random for convenience, and included 439 students from all sections. Those who were absent on the day of the survey and those who did not agree to participate in our study were not included.

The following formula allowed us to calculate the size of our sample:

The following formula allowed us to calculate the size of our sample:

$$n = \frac{t^2 p(1-p)}{m^2}$$

n = sample size required

t2 = 95% confidence level (typical value of 1.96)

p = proportion of the population exposed (50%)

m = margin of error at 5% (typical value of 0.05).

The collection of information was carried to means of direct observation techniques, followed by administration of a questionnaire, in French, derived from the "Risk assessment of exposure in the context of Covid-19", and composed of two parts: demography and KAP.

Demographic variables included age, sex, educational background and information on the source of covid-19. The second part included 12 questions on knowledge related to covid-19 (clinical manifestations, disease transmission, approach to patient care), 3 other questions on attitudes towards Covid-19 (confidence to overcome the pandemic, willingness to be vaccinated against Covid-19), and the last 3 questions concerned practices (general preventive measures, hand washing and correct wearing of masks). Each correct answer is worth 1 point (0 point for an incorrect answer). Maximum score being equal to 12. We divided the threshold of 12 questions into 3 (with an interval of 4,4,4). Thus, score <4 = poor knowledge; if score is between 4-8 = good knowledge; if score between 9-12 = very good knowledge of Covid-19.

Regarding attitudes and practices, a participant with a score above the mean score was considered to have positive attitudes or conforming to good practices.

The main outcome variable was the students' willingness to accept a future vaccine against Covid-19. Registration of participants took place in the audiences. And each received an anonymous questionnaire sheet after being briefed on the objectives and activities of this study.

All students were informed of the study objectives and gave oral consent before participating. The study was approved by the ethics committee of the School of

Public Health (approval number No. UNILU / CEM / 226/2020), the University of Lubumbashi and the DRC.

Data were analyzed using SPSS 23.0 software. Categorical data related to demographic variables are presented as frequencies and proportions. Associations between independent variables and primary outcomes (acceptance and intention to receive a COVID-19 vaccine) were tested using the t test or chi-square, as appropriate. The level of significance was set at a p-value less than 0.05 (two-tailed).

Results

Out of a total of 439 respondents, 330 (75.2%) were female and 109 (24.8%) were male. The mean age was 26 ± 6.5 years. All participants have heard of COVID-19 before (100%), but only 31.0% of them had the opportunity to attend conferences / discussions on covid-19. The main sources of information most used were social networks (32.3%) and the media (20.0%). Only 25.3% of students said they would get vaccinated if the COVID-19 vaccine was available (Table 1).

After logistic regression, male students (AOR = 2.24 [1.401-3.58]; $p = 0.001$; those who regularly consult official sites (AOR = 0.25 [0.90-0.68]; $p = 0.004$) and students with poor knowledge about covid-19 were significantly associated with the desire to be vaccinated (Table 2).

Discussion

In that survey, only 25.3% of students said they would receive the covid-19 vaccine if it was available. The willingness of students to be vaccinated against the Covid-19 virus is very low compared to the study carried out in France which found that 77.6% (95% CI 76.2 - 79%) of the participants probably agreed to get vaccinated against Covid-19 [13]. This low acceptance in our study can be explained by the misdeeds of social networks. Since the first cases of covid-19, disinformation has spread through traditional media and social media, described by the World Health Organization as infodemic (i.e. excessive amounts of disinformation and rumors that make it difficult to identify reliable sources of information) [14]. For others, we go to the next step with suspicions of a global conspiracy to which recurring themes invite themselves within the conspiratorial community: 5G, global surveillance of the population, infringement of freedom, manipulation of children by the public authorities and the evil Bill Gates ready to do anything to advance his society, the extermination of the black race by this

vaccination. These principled objections to vaccination in general explain a rejection of the vaccine even before it exists; which can probably probably influence student decisions [15]. Acceptance or rejection of the Covid-19 vaccine would likely depend very much on individual trajectories during the pandemic. The experience of one or more relatives who died from the disease is likely to induce good vision of the vaccine. According to other authors, the lack of data relating to the absence of risk associated with the use of adjuvants in pandemic vaccines has often created mistrust of the public and health professionals vis-à-vis pandemic vaccines [21,22].

In terms of gender, our results were similar to those of other studies [15-17]. We observed that men agreed to be vaccinated compared to women. This may be due to an increased perception of disease risk in men compared to women. However, the people at risk for Covid-19 infection will agree to the vaccination.

Table 1. Socio-demographic characteristics of students (N = 439)

Variable	Number	Percentage
Sex		
Male	109	24.8
Female	330	75.2
Age		
	Mean \pm SD	26.5\pm6.5
<25 years	216	49.2
25-40 years	205	46.7
>40 years	18	4.1
Faculty		
Biomedical management and techniques	101	23.0
Midwife	128	29.2
Nursing	210	47.8
Participation in conferences / discussions on Covid-19		
Yes	136	31.0
No	303	69.0
Sources of information		
Media	90	20.0
Social networks	142	32.3
Official website	16	3.6
Family and friend	41	9.3
Knowledge of Covid-19		
Good	402	91.6
Poor	37	8.4
If a Covid-19 vaccine was available, I would have it		
Yes	111	25.3
No	328	74.7
Practices on Covid-19		
Good	162	36.9
Poor	277	63.1

Table 2. Univariate association of variables affecting the intention to accept the Covid-19 vaccine among students

Variable	Acceptance and intention to receive the Covid-19 vaccine		OR [95% CI]	P
	Yes	No		
Sex				
Male	41(37.6)	68 (62.4)	2.239[1.401-3.579]	0.001
Female	70(21.2)	260 (78.8)		
Faculty				
Biomedical management and techniques	35(34.7)	66 (65.3)	0.000	
Midwife	16(12.5)	112 (87,5)		
Nurse	60(28.6)	150 (71,4)		
Age				
<25 years	61 (28.2)	155 (71.8)	0.000	
25 - 40 years	46(22.4)	159 (77.6)		
> 40 years	4(22.2)	14 (77.4)		
Participation in conferences / discussions on Covid-19				
Yes	38(27.9)	98(72.1)	1.222 [0.773-1.931]	0.391
No	73(24.1)	230(75.9)		
Sources of information (Site web WHO)				
Yes	9(56.2)	7(43.8)	0.247[0,90-0.680]	0.004
No	102(24.1)	321(75.9)		
Knowledge of Covid-19				
Good	102(23.2)	300(68.3)	1.732[0.450-0.015]	0.000
Poor	9(2.05)	28(6.37)		

The perception of risk is an integral part of the decision-making process. Data collected from Chinese death rates reveal that there is a gender gap in the causal rate; 64% of men (death rate of 4.7%) against 36% of women (death rate of 2.8%) [18,19]. Biswas *et al.* [20], in their study of plasma samples from 331 covid-19 positive patients, found that samples from women contained more antibodies that could impact their immune response compared to samples from men. Comparing different generations who have given their opinion, more young adults with age under 40 years who have shown the most opposed to the principle of vaccination against the virus; results similar to those found in France in a YouGouv poll for HffPost in July 2020 [25]. This could be explained by the fact that the young population uses social media a lot (where a lot of intoxication messages circulate); and the idea that this disease affects older people with co-morbidities more [23,24]. Covid-19 is an unprecedented global health challenge that can only be revealed through unprecedented cooperation between governments, researchers, manufacturers and multilateral partners. Students are an important source of information for the general public, and they can influence public decisions on whether or not to accept the vaccine. In this case, it is important to address concerns and raise awareness to improve the chances of a better acceptance of a Covid-

19 vaccine to avoid the risk of a massive rejection of the Covid-19 vaccine in the population. General when it becomes available.

Conclusion

If the Congolese have generally accepted the containment due to the SARS-Cov-2 epidemic and continue to apply barrier gestures, only mass vaccination can make it possible to contain this epidemic. This is why it is essential for health authorities to anticipate the intentions of Congolese in terms of vaccination against covid-19. In our study, only 25.3% of the students accepted the Covid-19 vaccine. He is available. For the acceptance of vaccination against COVID-19 among other audiences, the education of future health workers must be considered as a priority, because the attitude of the latter towards vaccines has been shown to be an important determinant of their own use of the vaccine, their intention to recommend the vaccine to their patients. Developing appropriate strategies to address these concerns in order to further reduce vaccine hesitancy will be key to success.

Competing interests: The authors declare that they have no competing interests.

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