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Vaccination Between Acceptance And Refusal: The Case Of The Covid-19 Vaccine

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Abstract

Background : The COVID-19 vaccine was developed as a necessary last resort to address the pandemic. However, the availability of the vaccine raises concerns about the acceptance of administering the vaccine by the population.
Objective:The objective of this work is to determine the perception of university students regarding the covid-19 vaccine.
Methods: To achieve our objective a survey was conducted online between March and April 2021 in the different existing social networks of university students. The statistical analysis of the data was done by Chi-square test and correlation test.
Results: This study shows that 63% agree to be vaccinated and 62.2% believe that the vaccine is safe. However, 37% refuse to administer the vaccine and declare their concern and lack of confidence in the effectiveness of the vaccine against covid-19.
Conclusion: In the light of these results, we note that a significant part of the Moroccan student population refuses the vaccine and does not have confidence in the vaccine against covid-19, hence the need to launch awareness and health education programs to improve the knowledge of the student population before the vaccination program reaches them.

Keywords – COVID-19, perception, Vaccine acceptance, university students, Morroco.

I. INTRODUCTION

Since the declaration of covid-19, on March 10, as a global pandemic, several researchers from various institutions (military and pharmaceutical companies, Biotechnology, academic ...) have begun to develop a vaccine COVID-19 on an accelerated scale never seen before [1 ,2] . By the end of 2020, Based on the results and considering the safety profiles, two COVID-19 vaccines were approved among the 47 that were advanced to human clinical trials [3].

Morocco was among the first countries to adopt extraordinary measures to contain the virus and strictly regulate private, public and professional life by limiting the mobility of the population, adopting social distancing, closing schools, mandatory wearing of masks and screening of contacts, as recommended by the WHO [4]. Similarly, from January 28, 2021, the kingdom began to vaccinate health workers over 40 years, authorities, teachers over 45 years and people over 75 years. Although vaccination is not mandatory, Morocco is among the top ten countries that have successfully completed the Covid-19 vaccination challenge, the World Health Organization (WHO) congratulated it on Twitter on March 3. Up to now it is the country that has vaccinated the most in

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Africa. At the time of writing this article, the vaccination campaign has been extended to the age group between 60 and 64 years, while the vaccination of the first group of people with chronic diseases, including cancer, is ongoing.

Successful control of COVID-19 through vaccination will require population acceptance to receive the vaccine. However, adopting a COVID-19 vaccine scenario and the availability of the vaccine does not necessarily mean that people accept it, which threatens the success of this preventive control. According to WHO vaccination hesitancy is a delay in acceptance or refusal of vaccination despite the availability of vaccination services [5], this vaccine anxiety that is increasing worldwide has been identified as one of the top ten global health threats [6]. Also several previous studies confirm that vaccine hesitancy is increasing worldwide[7,8,9]. with varying spatial and temporal intensity [10,11] . Hence the importance of examining the community acceptance of vaccinations against the Vaccine in general [12], and that of COVID-19 in particular.

With this in mind, this study aims to determine the perception of university students towards the covid-19 vaccine, in order to determine the degree of acceptance of the vaccine by this category.

II. Materiel And Methods

2.1 Sample size

For a survey design based on a random sample, we can calculate the required sample size by applying the following formula [14].

$$n = \frac{Z^2 \text{ x } p(1-p)}{d^2}$$

This technique allows estimation of prevalence with a 95% confidence limit [13] :

With :

- n = required sample size
- Z value for 95% confidence limits, (standard value of 1.96)
- P = estimated prevalence (e.g. 0.3 for 30%), in case of lack of information like the case, it is recommended to take P=0.5)
- (P)(1-P) = deviation for a binary variable (binomial)
- d = the margin of error at 5% (standard value of 0.05).

$$n = \frac{1{,}96^2 \text{ x } 0{,}5(1-0{,}5)}{0{,}05^2} = 384$$

2.2 Conducting the survey

The objective of the survey is to determine the perception of university students on the vaccine especially since until the end of this survey, this category of the population has not yet reached the age group targeted by the vaccine covid-19. This is a descriptive cross-sectional survey conducted during the months of March and April, focused on the predisposition of university students to receive a vaccine against COVID-19 as soon as possible. The survey also contained questions on age, gender, education level.

The interview is conducted through a questionnaire made by Google forms and was disseminated in dozens of facebook and whatapp groups of students in different parts of the country.

2.3 Statistical analysis

The descriptive results are presented in the form of percentages and numbers using Excel spreadsheet (Excel 2010), then presented in graphical form.The Chi-square test was used to test the association between the variables. Values of $p < 0.05$ were considered significant. The calculation of chi² (X^2) and of the p-value is carried out using the software R. To study the existence of a linear relationship between two quantities considered, we use the correlation coefficient . We have calculated the correlation index by the following formula:

$$r = \frac{\sum (X - \overline{X}).(Y - \overline{Y})}{\sqrt{\sum (X - \overline{X})^2} \times \sqrt{\sum (Y - \overline{Y})^2}}$$

III. Results

3.1 General information about the respondents :

The following table summarizes the main characteristics of the respondents

TABLE I. CHARACTERISTICS OF THE RESPONDENTS

Characteristics	**number**	**Percentage**
Sex of the respondents		
Female	253	66%
Male	144	37,5%
Age		
18-20 Year	117	30,5%
21-24 Year	181	47,1%
25-30 Year	42	11%
More than 30 year	44	11,4%
Level of education of the respondents		
1 st year university	63	16,4%
2 nd yeat university	72	18,8%
Licence	175	45,6%
Master	53	13,8%
Doctorate	21	5,5%
Discipline of study		
Pure Sciences	275	71,7%
Letter	33	8,6%
Humanities	18	4,7%
Economic Sciences	31	8,1%
Others	22	6,5%

66% of the students who agreed to answer the questionnaire were women, compared to 37.5% of men. The respondents with an age range of 18-24 recorded a higher proportion of participation (77.6%).

The majority of the respondents are in the Bachelor's degree program (45.6%) followed by those in the first or second year of university with 16.4% and 8.6% respectively. However, Master's and PhD students represent only 19.3%.

Concerning the discipline of study, 71.7% study pure sciences, (i.e. biology, physical mathematics) against only 28.3% for other disciplines.

3.2 Predisposition to vaccinate

The vaccination questions that assess respondents' predisposition to be vaccinated against Covid-19 are shown in the following Figure 1

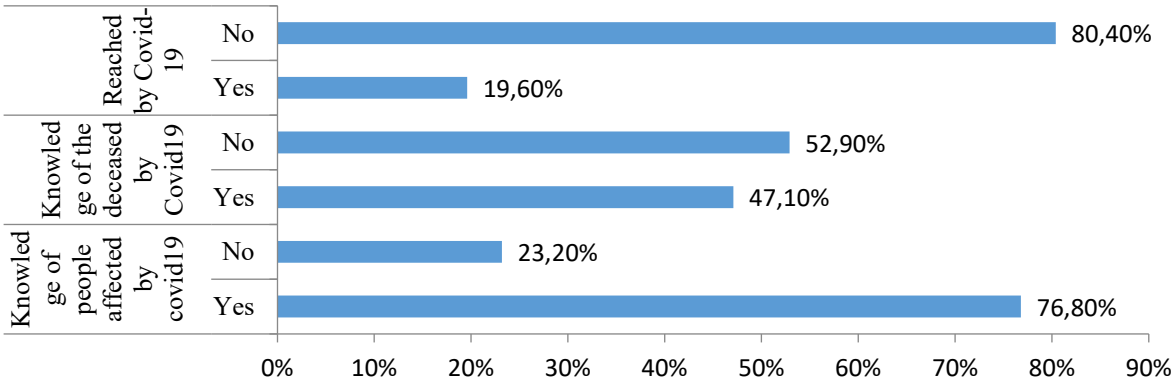

Fig. 1. Proportion of respondents who know people who have been affected or deceased by covid-19 and respondents who have been affected by this disease

The majority of the respondents know people who have already been infected with covid (76.8%) or who have died from this virus (47.1%). On the other hand, the majority of them declare that they are not infected with this virus (80.4%.)

Only 37.8% of the respondents believe that the vaccine is dangerous to health compared to 62.2% who believe the opposite, 63%, or 242, students indicate that they are sure they want to be vaccinated against COVID-19 and only 37% of the respondents stated that they are sure they do not want to receive the vaccine against COVID-19 (Figure 2)

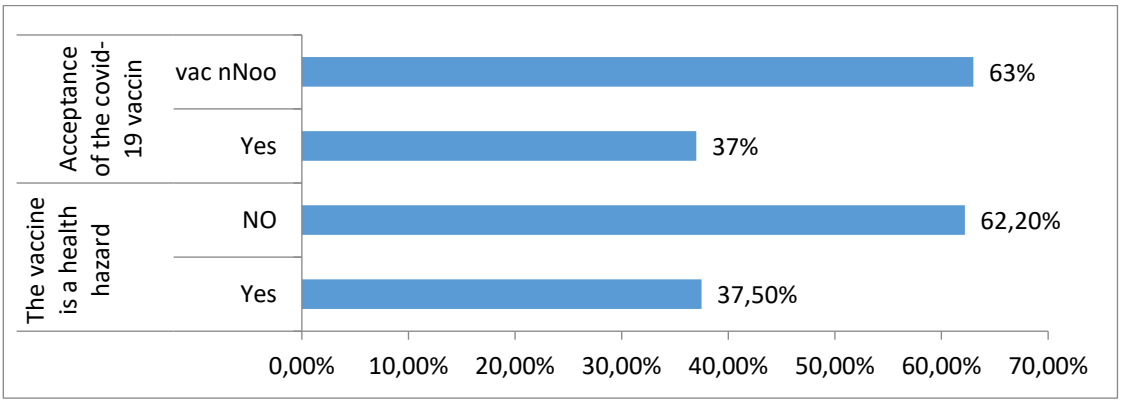

Fig.2. Respondents' perceptions of covid-19 vaccine administration

The main reasons cited by respondents (Figure 3) for refusing the COVID-19 vaccine were lack of confidence in the covid 19 vaccine (52,2%),and their fears of side effects (38,15%) or contracting the virus with the vaccine (12,7%)

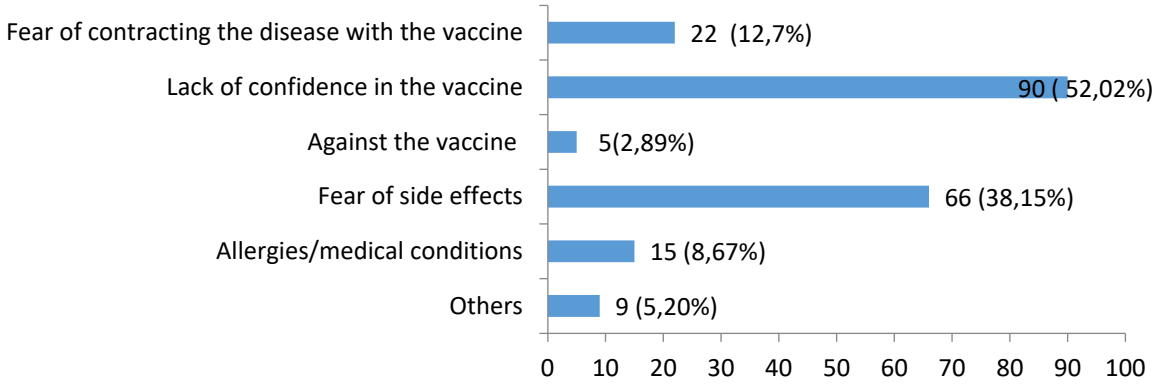

Fig.3. The main reasons for refusing the covid-19 vaccine

Statistical analysis showed a non-significant correlation between the sex of the participants and the acceptance to administer the COVID-19 vaccine (65.2% for females versus 63.11% for males, p = 0.1). However, Statistical analysis showed a strong positive correlation between knowledge of covid 19 surveys and vaccine acceptance (R = 1). Similarly, those who think the covid 19 vaccines is dangerous to health are those who refuse to be vaccinated (R = 0.9).

IV. Diccussion

To combat the pandemic covid 19, several vaccines have been presented. Some clinical trials have been published with positive results, which has led a number of countries to approve specific vaccines for implementation in vaccination programs Although vaccines are recognized as one of the most effective strategies, many people around the world believe that vaccines are dangerous or ineffective. This lowers vaccine coverage rates around the world and threatens public health [15].

In Morocco, the vaccination campaign began on 28 January 2021, but the presence of the vaccine does not necessarily mean that people will accept to be vaccinated against COVID-19 as soon as it is available. It is in this perspective that the present research aims to determine the probability of accepting to be vaccinated by university students. To our knowledge, this is one of the first online surveys to assess the willingness to administer the vaccine in Morocco. It was conducted at a time when COVID-19 vaccines were in use and extends to the age of 64 years

According to experts, between 80-90% of the population needs to be vaccinated against COVID19 to contain the pandemic. Nevertheless, some surveys conducted indicate widespread hesitancy towards COVID-19 vaccines, [16,17 , 18, 19], While, a study in Malaysia and two in China [20,21 , 22] found a higher intention to vaccinate of 94.3%, 83.5% and 54%, respectively. In our study more than half (62.2%) think that the vaccine is not dangerous to health and 63% accept to vaccinate against only 37% who refuse the vaccine, which could be justified by the fact that this category, young and educated, having easy access to various sources of information, and involved in life events [23], is more informed and aware of the importance of the vaccine in the fight against this pandemic. In fact, university students with a higher level of education had more knowledge about the covid vaccine, which is similar to the results found by other research that proved that, the surveys of high level of education had more knowledge about COVID-19 [24,25], and concluded that the more accurate knowledge of COVID-19 is significantly associated with education [26,27].

Statistical analysis showed a highly significant correlation between knowledge of people who had been infected or died from COVID-19 and predisposition to be vaccinated, demonstrating that perception of the seriousness of COVID-19 and the benefits of the COVID-19 vaccine are also predictors of intention to administer the COVID-19 vaccine [17]. It is also important to note, that the predisposition to be vaccinated against COVID-19 was not significant according to the sex of the participants (65.2% for women versus 63.11% for men, p = 0.1). however, studies have confirmed a significant relationship between gender and acceptance of the COVID-19 vaccine [28, 29, 30].

A study conducted in the United States [29] shows that the majority of respondents assumed that the vaccine could have side effects, while in China, the majority of respondents postponed vaccination until the safety of the vaccine was confirmed [20], which shows that they do not trust the vaccine. These results are similar to our own, where 53%% of the respondents who refused to be

vaccinated did not trust the vaccine and 38,15% feared the side effects of the vaccine , which confirms that concerns about efficacy and side effects are a barrier to the success of the vaccine against covid19 [20]. Those who said they did not trust the vaccine also stated as main reasons that it was made in a short period of time and the politicization of the pharmaceutical market.

Indeed, the speed of manufacture and clinical trials of this vaccine and the absence of safety assessments for approved vaccines could be factors of hesitation towards the COVID19 vaccine [31,32]. On the other hand, the manufacture of many vaccines using completely new platforms would reinforce the public's perception of their safety. It should also be noted that the lack of transparency on the part of pharmaceutical companies, which often do not publish trial protocols or results, could also undermine confidence in this vaccine[33].

V. Conclusion

Despite the relatively high tendency to want to be vaccinated against COVID-19, a significant proportion of respondents refuse to be vaccinated. The main reasons for this reluctance are fear about the efficacy of the vaccine and about side effects. Therefore, the results of our study are crucial for the development of awareness and health education programs related to the COVID-19 vaccination, especially among students and the young population in general, since these categories have not yet reached the age range required for vaccination.

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