Perceived Barriers and COVID-19 Vaccine Acceptance Among Health Professions Students in Vietnam

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Abstract— *Health professions students are at high risk of contracting COVID-19 when practicing in medical facilities. The delay in accepting vaccination by this force is a barrier to providing effective immunity against the COVID-19 epidemic. This study was conducted on 384 students of the Da Nang University of Medicine Technology and Pharmacy with the aim of exploring the barriers affecting COVID-19 vaccine acceptance by healthcare students. The results showed that most of the students concerned about "the side effects of the vaccine that may interfere with daily living activities" (48.5%), followed by "worried about the safety of vaccination" (37.2%) and "worried about the effectiveness of vaccination" (33.6%), respectively. Binominal logistic regression showed that "worried about the safety of vaccination" (OR = 0.4; 95% CI 0.2 – 0.8), "worried about the effectiveness of vaccination" (OR = 0.5; 95% CI 0.2 – 0.9), and "afraid needle and injection" (OR = 0.4; 95% CI 0.2 – 0.4) were predictors to COVID-19 vaccine acceptance. Therefore, choosing a vaccine that is safe, has few side effects, and has high immunity could increase the acceptance rate of the COVID-19 vaccination.*

Keywords— *Perceived barriers, health professions students, vaccination acceptance, COVID-19.*

I. INTRODUCTION

The COVID-19 pandemic has spread rapidly and caused significant impacts on the social, educational, and economic aspects of every nation and the world. The World Health Organization recommends that vaccination against COVID-19 is the most effective proactive measure to prevent the spread of the disease [1]. Despite the high vaccination rates achieved through vaccination campaigns, there are still many reasons why people feel fearful, uncertain, and unsafe when it comes to the vaccines they receive, as revealed by surveys on vaccine-related issues [2]. This can make individuals hesitant in their vaccine acceptance [2]. The delay in accepting or refusing vaccination is a serious threat to global health [3]. Currently, health science students are at high risk of contracting COVID-19 while doing their internships in healthcare facilities. Furthermore, their decisions regarding health issues can significantly impact those around them. The delay in accepting or refusing vaccination by this group is a barrier to providing effective immunity to the general population in the fight against COVID-19. Therefore, we conducted this study to identify the barriers affecting COVID-19 vaccine acceptance among students at the University of Medicine and Pharmacy, Da Nang.

II. METHODS

2.1. Subjects

Students of the Da Nang University of Medical Technology and Pharmacy (DUMTP)

2.1.1. Inclusion criteria:

Full-time students currently studying at DUMTP

Students who consent to participate in the study

2.1.2. Exclusion criteria:

Students is contraindicated for COVID-19 vaccination

Students who have already had COVID-19

2.2. Research methodology

2.2.1. Study design: Cross-sectional study

2.2.2. Sample size:

The sample size of study was calculated using the formula:

$$n = (z)2 \, p \, (1 – p)/ \, d2$$

based on a 95% confidence interval and margin of error of 5% and estimation of 50% students who decide to get vaccinated. Thus, the estimated sample size was 384 individuals. We used the convenience sampling method to recruit potential participants.

2.2.3. Study instrument:

The questionnaire was adopted and modified from previously published studies. The questionnaire consisted of three sections. The first section collects the respondents' demographic information such as their age, gender, field of study, and academic year. The second section consisted of questions about the respondents' perception of barriers to vaccination (perceived barriers). The perceived barriers were assessed using 5 Likert-scale questions ranging from completely disagree to completely agree. Responses of completely agree and agree were coded as "agree", while other choices were coded as "disagree". Finally, the third section include one question collects the information about students' COVID-19 vaccine acceptance with 3 values: will vaccinate, will not vaccinate, and uncertain/no opinion.

2.2.4. Data collection:

The information was gathered between December 2021 and February 2022. Only those who met the inclusion criteria and gave their written agreement to participate in the study were contacted for the interviews. They also informed the participants that their data would be kept anonymous and confidential. The structured questionnaire was used by the interviewers to conduct the interview.

2.2.5. Data analysis:

Data was analysed by using Statistical Package for the Social Sciences (SPSS) version 20 (SPSS Inc., Chicago, IL, USA). Descriptive statistics, such as frequency and percentage, were used to describe the data. Binary logistic regression analysis was used to examine the relationships between perceived barriers and COVID-19 vaccine acceptance. Statistically significant association in any of the explanatory variables were identified at the level of $p < 0.05$.

2.2.6. Ethical issues:

The study was approved by the Biomedical Ethics Committee of the University of Medicine and Pharmacy at Da Nang University on December 20, 2021.

III. RESULTS

3.1. Demographic characteristics of participants

The study was conducted on 384 students from health science fields. Among them, female students accounted for the majority (81.3%). The mean age of the study population was 20.51 ± 1.55. Medical students accounted for the highest proportion (25.5%), followed by pharmacy students (22.4%), general nursing students (19.3%), medical laboratory students (6.8%), and the remaining were dental nursing, anesthesia and intensive care nursing, public health, midwives, rehabilitation, and medical imaging. Students in third year and above accounted for 54.2%.

3.2. Students' perceived barriers affecting COVID-19 vaccine acceptance

TABLE I. Students' perceived barriers affecting COVID-19 vaccine acceptance

Perceived barriers about COVID-19 vaccine acceptance	Disagree		Agree	
	n	%	n	%
1. The side effects of the vaccine interfere with my daily activities.	198	51.6	186	48.4
2. I am concerned about the efficacy of the COVID-19 vaccination	255	66.4	129	33.6
3. I am concerned about the safety of COVID-19 vaccination.	241	62.8	143	37.2
4. I am afraid of needles and injections.	320	83.3	64	16.7
5. I am worried that getting the COVID-19 vaccine will actually give me COVID-19	344	89.6	40	10.4

The results show that 48.4% of students believe that the side effects of vaccines can interfere with their daily activities, 37.2% of students are concerned about the safety of vaccination, and 33.6% are worried about the effectiveness of vaccination.

The study identified barriers affecting COVID-19 vaccine acceptance among students in healthcare fields, including "concerns about the effectiveness of vaccination", "concerns about the safety of vaccination", and "fear of needles and injections". Among these, students who were concerned about the effectiveness of vaccination had a lower likelihood of deciding to receive COVID-19 vaccination compared to those who were not concerned (OR=0.5; 95% CI 0.2-0.9; p=0.04). Students who were concerned about the safety of vaccination had a lower likelihood of deciding to receive COVID-19

vaccination compared to those who were not concerned (OR=0.4; 95% CI 0.2-0.8; p=0.01). Students who had a fear of needles and injections had a lower likelihood of deciding to receive COVID-19 vaccination compared to those who did not have this fear (OR=0.4; 95% CI 0.2-0.4; p=0.03).

TABLE II. Perceived barriers and students' COVID-19 vaccine acceptance (n = 384)

Perceived barriers affecting COVID-19 vaccine acceptance	COVID-19 vaccine acceptance	
	OR (95% CI)	p
The side effects of the vaccine interfere with daily activities. Disagree Agree	 0.6 (0.3-1.3)	 0.20
Concerns about the effectiveness of COVID-19 vaccination Disagree Agree	 0.5(0.2 – 0.9)	 **0.04**
Concerns about the safety of COVID-19 vaccination Disagree Agree	 0.4(0.2 – 0.8)	 **0.01**
Fear of needles and injections Disagree Agree	 0.4(0.2 – 0.4)	 **0.03**
Belief that getting vaccinated can cause a COVID-19 infection Disagree Agree	 0.8(0.3 – 2.4)	 0.69

IV. DISCUSSION

Regarding the safety and effectiveness of vaccination, research results showed that 33.6% of students were concerned about the effectiveness and 37.2% of students were concerned about the safety of vaccination. These rates were higher than a study conducted by Le and colleagues at the same time, which found that 21.1% of students believed vaccines were less effective and 25.9% of students agreed that the COVID-19 vaccine was unsafe [6]. These rates were much higher than in previous studies [4, 5], indicating that trust in the effectiveness and safety of vaccination has not improved. The rapid development and availability of multiple COVID-19 vaccines could be the reasons why students are not fully confident in their safety and effectiveness [9].

Furthermore, research results also showed that concerns about the effectiveness and safety of vaccination are factors that influence COVID-19 vaccine acceptance. This was also confirmed in previous studies [6]. Therefore, educational measures need to be implemented by the university to increase students' awareness of the effectiveness and safety of the COVID-19 vaccine.

Although the study was conducted on healthcare students, some students still expressed fear of needles and injections (16.7%). This rate was higher than the study conducted by Le and colleagues. Although the rate of students afraid of needles and injections is not high, it still affects their vaccine acceptance. Students who fear needles and injections are 0.4 times less likely to get vaccinated than those who do not fear

needles and injections. This is consistent with the results of Suragawa and colleagues' study [10].

Our study showed that about half of the students believed "Vaccine side effects may interfere with daily activities" (48.4%). The rate of students who agreed with this statement was the highest. Fear of vaccine side effects has been reported to be related to vaccine hesitancy in previous studies [11, 12]. However, in our study, vaccine side effects were not a barrier to students' vaccine acceptance. This result is similar to Suragawa and colleagues' study [10]. This may be because our study was conducted after the majority of students had received their first vaccine dose and their experiences after vaccination had reduced their concerns about side effects.

V. Conclusion

Barriers affecting the decision to vaccinate against COVID-19 among students include concerns about the safety and effectiveness of vaccination, as well as fear of needles and injections. The study's results indicate that identifying barriers that affect health-related students' decisions to receive the COVID-19 vaccine is truly necessary in order to increase the trust among students and communities regard to the safety and effectiveness of vaccination.

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