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COVID-19 Vaccine Hesitancy and Acceptance among Medical Students: An Online Cross-sectional Study in Iraq

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Abstract

BACKGROUND: Vaccine hesitancy and reluctant had an important obstacle in achieving protection and population immunity against coronavirus disease 19 (COVID-19). It is essential to achieve high COVID-19 vaccination acceptance rates among medical students and health care workers to provide recommendations and counseling vaccine hesitant population.

AIM: This study aims to identify level of COVID-19 hesitancy, attitude, knowledge, and factors that affect vaccination decision.

MATERIALS AND METHODS: A cross-sectional study was done among medical students in Al-Kindy College of Medicine, University of Baghdad, Baghdad, Iraq. Data collection was done through an online Google Forms questionnaire during 2021 from 810 medical students.

RESULTS: A total of 810 adults' medical students participated in this study. The majority of the study participants were female (488, 60.2%) while males were 322, 39.8%. Vaccine concept hesitancy among males was 65.21% and rest were vaccinated (34.78%) (OR = 0.13) (95% CI = 0.096–0.177) (p = 0.0001). Same hesitancy from COVID-19 vaccine was same with females (66.80%).

CONCLUSIONS: This study evaluated and shed light on vaccine hesitancy among sample of Iraqi medical students toward COVID-19 vaccination program and considered medical students as leaders and guides in the health system for increased planning and education of the population for COVID-19 vaccine acceptability.

Introduction

Coronavirus disease 19 (COVID-19) caused by rapidly spread coronavirus all over the world resulted in public health crisis and global threat [1]. This pandemic has created an urgent need for vaccine development in spite of control measures against COVID-19 and massive vaccination has emerged as a solution preventive measure to control this disease [2]. There are many types of vaccines with different potency, and duration of efficacy according to the antigen design, adjuvant molecules used, route of vaccine delivery, and immunization method [3]. Thus, arrival of COVID-19 vaccines was a real end of health, industries, tourism, and economic suffering but the rolling out of vaccination is actually challenging in some countries in the world [4]. People who had a priority for vaccination are health care workers, doctors, nurses, and medical students because they are at a high risk for acquiring viral infection or transmitting the disease to other persons [5]. Thus, protecting health care workers and people against COVID-19 by vaccine are important which is a viable future option and end of pandemic. On the other hand, vaccine hesitancy or refusal remains a global challenge and worldwide decline in public trust in immunization due to political views of people that play an important role in their attitude [6], [7]. An online survey in a French sample aged 18 years and older showed that 26% of respondents demonstrated that they would not use it and 37% of low-income people were more reluctant to vaccine [8]. On the other hand, stakeholders such as government and the World Health Organization should be effectively build the positive impacts of COVID-19 vaccine [9].

The aim of this study is to assess vaccine hesitancy, acceptance, and refusal of medical students at Al-Kindy College of Medicine to a new COVID-19 vaccine. Information obtained will help recognize possible concerns to be tackled to ensure adequate uptake among medical students and enable development of educational plans to teach skills to provide vaccine recommendations and advice vaccine hesitant people.

Materials and Methods

The cross-sectional study was conducted with medical students at University of Baghdad, Al-Kindy College of Medicine in Baghdad, Iraq, during 2021. Out

of total number of students, only a suitable sample of 810 students was selected and was agreed to participate in the anonymous online survey. The data were collected using online multi-item questionnaire was created based on reviewing past research relating to vaccinations and a comprehensive literature review [10], [11], [12]. The questionnaire was distributed to the medical students through the use of the Google Forms tool. The survey was sent to students through social media including: E-mail, Facebook, Telegram, and Instagram groups of general medical students. The survey assessed personal data such as age, sex, academic year and residence, current knowledge about vaccine, general attitudes, perception of vaccines, likelihood of getting vaccine (vaccine hesitancy), vaccinated or not, first or second dose, side effect of vaccine, and infected after COVID-19 vaccine.

The study protocol was reviewed by the Scientific and Ethical Committee of Al-Kindy Medical College without funding. Each participant was anonymized and numbered with a code to guarantee their data confidentiality.

Statistical analysis

The data were analyzed using SPSS version 25. Descriptive statistics including frequencies and percentages. Independent Pearson's Chi-square test was used to identify significant differences between pre-clinical and clinical students who would accept and refuse the COVID-19 vaccine. $p < 0.05$ was considered statistically significant.

Logistic regression was used to identify predictors of COVID-19 vaccine uptake.

Results

A total of 810 adults' medical students participated in this study. The majority of the study participants were female (488, 60.2%) while males were 322, 39.8% (Table 1). Vaccine concept hesitancy among males was 65.21% and rest were vaccinated (34.78%) (OR = 0.13) (95% CI = 0.096–0.177) (p = 0.0001). Same hesitancy from COVID-19 vaccine was same with females (66.80%). Most of them their age ranged from 16 to 19 years (42.59%) and vaccine idea acceptance in this group was 32.47%. Students in the pre-clinical stage constitute 76.66% of the total participants with about same percent of vaccine refusal (60.06%). Majority of the students were lived in Baghdad province (79.87%) with high frequency of vaccine idea refusal (76.50%) (OR = 0.09) (p = 0.0001). Regarding the questions on their health and disease status, small percent of them had previous diseases (11.9%) (Table 2) and 3.7% of them had chronic diseases with treatment. Concerning vaccine thought acceptance in this group of students was 12.5% and the rest (87.5%) were reluctant vaccination (OR = 0.02) (95% CI = 0.008–0.048) (p = 0.0001).

COVID-19 status of medical students was 42.6% had COVID-19 and 60.86% accept vaccine thought (OR = 2.41) (p = 0.0001). About 52.17% their disease were diagnosed by signs and symptoms and 87.22% of them agree to have vaccine and 44.92% were diagnosed by PCR test to nasal or pharyngeal swab with vaccine believe rate were 79.35% and the rest were diagnosed by CT scan of lung (2.89%) (Table 2).

Students that had a vaccine whether Pfizer, AstraZeneca, or Sinopharm constitute 13.3% and 86.11% of them had two doses of vaccines. Most of them had side effects (84.25%) such as pain at the site of injection, fever, fatigue, and axillary lymphadenitis that lasts for 1–2 weeks (80.55%). Majority of them were not used treatment (74.07%). About 13.88% of them were reinfected with COVID-19 again.

Discussion

The COVID-19 pandemic is one of the first causes of hospitalization and death worldwide and many people should be vaccinated to prevent bad prognosis of this disease, especially old age, health care workers, and patients with chronic disease after approve of these vaccines by Centers for Disease Control and Preventions and FDA. Nearly one-quarter of the medical students in this study were hesitated to be vaccinated in this study despite perception and knowledge of increased risk of exposure to this virus. This study was in difference with other study that demonstrated that vaccine is a central role of protection of COVID-19 infections and considered as a key protective behavior [13]. The main causes regarding vaccine refusal by medical students were serious side effects after vaccination, lack of trust in those vaccines due to information get it from public health and social media, and afraid from reinfection with this virus [14]. Others are willing to get vaccine after acceptability should be checked after the development of vaccine and became worldwide [15]. One of the important groups that should be confident and sure about vaccine safety and effectiveness against viral infection is medical health care, doctors, and medical students [16]. The reasons for that were physicians and medical students play an important task in influencing the decisions and their recommendations about vaccine intake among general populations [17]. Other studies have mentioned that vaccinated medical students have a positive attitude and idea about vaccine

Table 1: Sociodemographic characters of the participants

Survey item	All students No. = 810 No. (%)	Vaccine idea acceptance No. = 108 No. (%)	Vaccine idea hesitancy No. = 702 No. (%)	Odds ratio 95% CI	p value
Male gender	322 (39.8)	112 (34.78)	210 (65.21)	0.13 0.096–0.177	0.0001
Female gender	488 (60.2)	162 (33.19)	326 (66.80)	0.24 0.189–0.322	0.0001
Age 16–19 years	465 (57.4)	151 (32.47)	314 (67.52)	0.231 0.175–0.304	0.0001
Age 20–25 years	345 (42.59)	110 (31.88)	235 (68.11)	0.21 0.159–0.301	0.0001
1–3 stage pre-clinical	621 (76.66)	248 (39.93)	373 (60.06)	0.44 0.352–0.554	0.0001
4–6 stage clinical	189 (23.33)	72 (38.09)	117 (61.90)	0.37 0.250–0.573	0.0001
Province Baghdad	647 (79.87)	152 (23.49)	495 (76.50)	0.09 0.072–0.121	0.0001
Other province	163 (20.12)	77 (47.23)	86 (52.76)	0.81 0.526–1.253	0.347

Table 2: Survey responses among medical students (No. = 810)

Survey item	Health and disease status of the participants Participants that responded affirmatively (yes)				
	All students No. = 810 No. (%)	Vaccine idea acceptance No. = 108 No. (%)	Vaccine idea hesitancy No. = 702 No. (%)	Odds ratio 95% CI	p value
Have a previous disease that interfere with vaccine	96 (11.9)	12 (12.5)	84 (87.5)	0.02 0.008–0.048	0.0001
Have a chronic diseases	30 (3.7)	5 (16.66)	25 (83.33)	0.04 0.010–0.155	0.0001
Have allergy from vaccines or drugs	80 (9.9)	19 (23.75)	61 (76.25)	0.09 0.046–0.201	0.0001
Have a drugs for chronic diseases	30 (3.7)	5 (16.66)	25 (83.33)	0.04 0.010–0.155	0.0001
COVID-19 status of medical students.					
Have COVID-19 previously	345 (42.6)	210 (60.86)	135 (39.13)	2.41 1.782–3.285	0.0001
Confirm COVID-19 infection by signs and symptoms	180 (52.17)	157 (87.22)	23 (12.77)	46.59 25.094–86.519	0.0001
PCR test positive	155 (44.92)	123 (79.35)	32 (20.64)	14.77 8.523–25.609	0.0001
CT lung positive	10 (2.89)	8 (80)	2 (20)	16 1.788–143.156	0.013
COVID-19 vaccine status of medical students.					
COVID-19 Hesitancy	702 (86.7)	100 (14.24)	602 (85.75)	0.0008 0.000–0.012	0.0001
COVID-19 acceptance	108 (13.3)	108 (100)	0 (0)		
Two doses of vaccine	93 (86.11)				
Side effect of vaccine – mild pain, fever	108 (84.25)				
Duration of these symptoms for 1–2 weeks	87 (80.55)				
Not used drugs for these symptoms	80 (74.07)				
Infected with COVID-19 after vaccines	15 (13.88)				

and encourage vaccine uptake [11]. Other study in Pakistan showed that students enrolled in different medical universities of Pakistan were aware of the COVID-19 [18]. Most of them were afraid from different COVID-19 symptoms [19]. Thus, this study evaluates and assesses vaccine hesitancy and acceptance among sample of medical students in Iraq.

Conclusions

This study evaluated and shed light on vaccine hesitancy among sample of Iraqi medical students toward COVID-19 vaccination program and considered medical students as leaders and guides in the health system for increased planning and education of the population for COVID-19 vaccine acceptability.

Limitations

This study includes single medical college that may impact generalizability. There was low access rate and it was difficult to follow the patients after infection or after vaccination.

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