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Acceptability of COVID-19 vaccination among medical students' families

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ABSTRACT— Since the first covid-19 case has been confirmed in Iraq on the 22nd of February 2020, this pandemic led to a markable impact on the Iraqi health system and life in general. The vaccination against COVID-19 is considered to be a highly effective strategy in reducing severe illness and mortality due to COVID-19 and hopefully reduce the risk of future waves of COVID-19. To assess the prevalence of vaccination against COVID-19 among families of medical students in Al-Nahrain medical college, some socio-demographic characteristics and the impact of these characteristics on the vaccination acceptance and the most preferred vaccine manufacture. A cross-sectional study enrolled 375 adults (aged 18 years and above except pregnant women) who were families of randomly selected medical students for the period (from May to July 2021). Each were directly interviewed. Data were entered and analyzed using SPSS version 24. The prevalence of vaccination was 62.4% with a higher rate among people with a high educational level (p=0.001). Binary logistic regression for vaccine manufacture showed that 24.3% will be more likely to accept vaccination when it is of Pfizer manufacture (p=0.001). Low prevalence rate of vaccination in Iraq mandates urgent governmental actions to enhance people's acceptance to get vaccinated. Pfizer vaccine should be more available.

KEYWORDS: COVID-19, vaccine, Iraq.

1. INTRODUCTION

The COVID-19 pandemic led to a huge impact on the different aspects of our lives, putting challenges on medical services, researchers, and policy-makers about the nature of the virus with the aid of governments especially in the least developed country category in which they still trying to prevent the rapid spread of this virus using multiple measures of movement restrictions, quarantine and other measures such as mandatory use of face coverings [1], [2]. Until the 10th of July 2021, there have been 1,421,746 confirmed cases of covid-19 and there have been 17,515 deaths in Iraq [3]. From the end of September 2020 until the end of March 2021, only one hospital has admitted around 350 critical and severe patients, note that one-third of them have been admitted in the last month alone. To cope with the influx, beds were expanded from 36 beds to 51, but the death rate remains frightening. Despite the best efforts of the hospital team, seven patients died on a single day [4].

The biological preparation (vaccine) is considered to be a highly effective strategy in reducing severe illness and mortality that's caused by COVID-19 and preventing any further waves in the future [5]. The first COVID-19 vaccine was introduced to Iraq was the Sinopharm vaccine and the batch was about 50,000 doses on the 2nd of March [6] which were given only for medical staff since they're at high risk of getting the infection as well as another batch of 336,000 doses of Oxford/AstraZeneca was received on the 25th of March 2021, leading to the start of a vaccination program for priority groups according to the national

vaccine deployment plan and framework then now there're three main vaccines in Iraq are Oxford/AstraZeneca, Pfizer/BioNTech, and Sinopharm [7]. Each of these is available in Iraqi hospitals and primary health care centers where individuals can book their vaccine dose online or also, they can book it at the hospital. Until the 10th of July 2021, there have been 1,018,966 doses of the vaccine given [3].

All of these three FDA-authorized vaccines prevent COVID-19 and serious health outcomes that the virus can cause also the FDA evaluated and analyzed the safety and effectiveness data for all authorized COVID-19 vaccines [8]. The FDA determined that the available data for each vaccine provides clear evidence that the known and potential benefits outweigh the known and potential risks of each vaccine [9]. Since Iraqi people are still reluctant to be vaccinated and medical students are at high risk to get infected which also will lead to a high risk of transmission of the virus to their families so we aimed to explore the prevalence of the vaccination in a sample of the medical students' families in Iraq, what are the preferred vaccines manufacture and most importantly the reasons not to be vaccinated?

2. METHODS

From May to June 2021, 375 adults who are 18 years old and more (except pregnant women) were included in this cross-sectional study. Study participants were randomly selected from the families of Al-Nahrain College of medicine students (12th ranked university in Iraq and 3685 world rank) [10]. The sample size for this study was determined using single proportion formula [11]. The participants were directly interviewed and the data (including socio-demographic data) were filled in a questionnaire that was specifically designed for the purpose of the study and included questions about being vaccinated or not (and the reason for it) and the preferred type of vaccine (if want to vaccinate) were inquired. Smoking was classified into Non-smoker (never smoked), Smoker (if current smoker which type of tobacco), and former smoker (someone who has smoked more than 100 cigarettes in their lifetime but has not smoked in the last 28 days) [12]. The data were entered and analyzed using SPSS trial version 24. The mean was used to express continuous data. The Chi-square test was used to compare between dependent and independent variables. Binary logistic regression was used to predict the likelihood of vaccination according to vaccine manufacture. P-value equal to or less than 0.05 is considered significant.

3. RESULTS

The prevalence of COVID vaccination was (34.9%) (figure1) with mean age of participants (35.1 ±14.9) years with slight female predominance (54.9%) (table1). There was statistically significant relationship between vaccination acceptance and higher education level (p=0.001) (figure2).

Binary logistic regression for vaccine type showed that (24.3%) will be more likely to accept vaccination when it is of Pfizer manufacture (p-value <0.001) (table 2) while only 3.1% will be more likely to accept vaccination when it is of Oxford-AstraZeneca manufacture (P=0.002). The main reason to reject vaccination was due to media (whether TV or communication media sites) and their negative role in vaccine promotion (table3).

4. DISCUSSION

The prevalence reflects somehow poor acceptance rate when compared to other countries which have a higher acceptance rate for COVID-19 vaccines such as Ecuador (97.0%), Malaysia (94.3%), Indonesia (93.3%) and China (91.3%) [13- 15]. However, our results were nearly in the mid-range when compared to neighborhood countries. For example, in the Middle East counties the vaccine acceptance rates are low as in Kuwait (23.6%) and Jordan (28.4%), and high in Saudi Arabia (64.7%), and Turkey (66.0%) [16- 18]. Such low rates can be related to the widespread conspiratorial beliefs in the Middle East region which lead to its

subsequent negative attitude towards vaccination. However, the highest vaccine prevalence rate in the region was reported in Israel (75.0%) [13]. The finding that participants with low education level had also a low vaccination rate in comparison with higher rates in people with higher education levels was in agreement with other studies [19], [20] which may address the ability of highly educated people to filter the received information through their differentiation between true well-supported scientific resources of information and fake news as well they're able to look after the resource of each information that may read or listen to in TV or social. This study documented the preference of Pfizer-BioNtech manufacture of vaccine over Oxford-AstraZeneca which may be related to the recent reports on hemorrhage, blood clots, and thrombocytopenia after administration of the vaccines in people with pre-existing coagulation disorders or the patients on certain medications, moreover, the temporary suspension of the Oxford-AstraZeneca vaccine in some European countries [21]. All these factors have raised public concern regarding the safety of the Oxford-AstraZeneca vaccine in social media which made some people in Iraq reluctant to receive the Oxford-AstraZeneca vaccine so they waited for a while and received the mRNA-based Pfizer-BioNtech. This news made too many people mistrust the safety of the COVID-19 vaccines in general.

In this study, the main reason to reject vaccination was due to the media negative influence on vaccine attitude was a major cause of hesitancy to not vaccinate.

Unfortunately, some religious beliefs may have a role in the rejection of the COVID-19 vaccine in which some religious leaders are trying to convince their fellows to not receive the vaccine as for example they believe that the vaccine "can cause homosexual tendencies" and it "controls the mind" so, this aids what we found in this study in which 66% of participants believe that the main reason of the vaccine hesitancy is the media promotion and the spread of false information about the vaccine [22]. While 19.7% of the study participants have agreed that the health system confidentiality plays a major role in the acceptance of the vaccine between the public.

The positive point is the unvaccinated individuals are more flexible to change their minds to receive the vaccine by educating them about how the vaccines in general work and how to get vaccine-related information from the most trusted resources so appropriate strategies are required to organize awareness campaigns to resolve the public's concerns and misconceptions regarding the COVID-19 vaccine safety. In addition to that, these campaigns should also concern about the religious or philosophical beliefs of the public [23], [24]. These campaigns need collaboration between the different stakeholders such as the government, religious leaders, and civil society although receiving vaccines in Iraq, is not mandatory yet, the Government has a plan to obligate the employees of the public sector to receive a COVID-19 vaccine in the next weeks, as well, the universities' students must be vaccinated to do their final examinations for this year (2020/2021).

The mistrust toward the COVID-19 vaccines is considered to be the main challenge in achieving the required vaccination coverage to reach herd immunity.

Since there is close contact between medical students and the patients during their clinical practice, as well as the established pieces of evidence regarding the transmission of the COVID-19 through aerosols and droplets, making the medical students at the high risk for getting infected with the SARS-CoV-2 virus. Also, medical students expressed a higher intention of getting vaccinated against COVID-19 as a result, the families of the medical students are also at high risk to get infected either by direct contact with the medical students or even through their contact with the community [25].

Although only about one million people get vaccinated until the 10th of July according to Iraqi ministry of health which's when compared to the total population of Iraq shows that Iraq is in the countries of low acceptance rates however, comparing the acceptance rate of the total population in Iraq to that of the of medical students' families, show that the medical students' families have a higher acceptance rate for the vaccination which may be explained by the influence of the medical students on their families and considering medical students as a trusted source of information which decreased the impact of hesitancy factors that have been mentioned before.

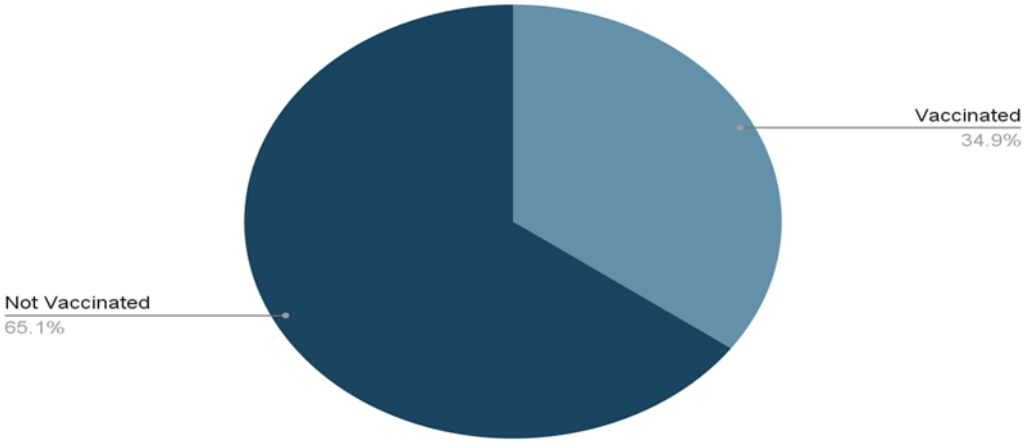

Figure 1. The prevalence of vaccination among the study sample.

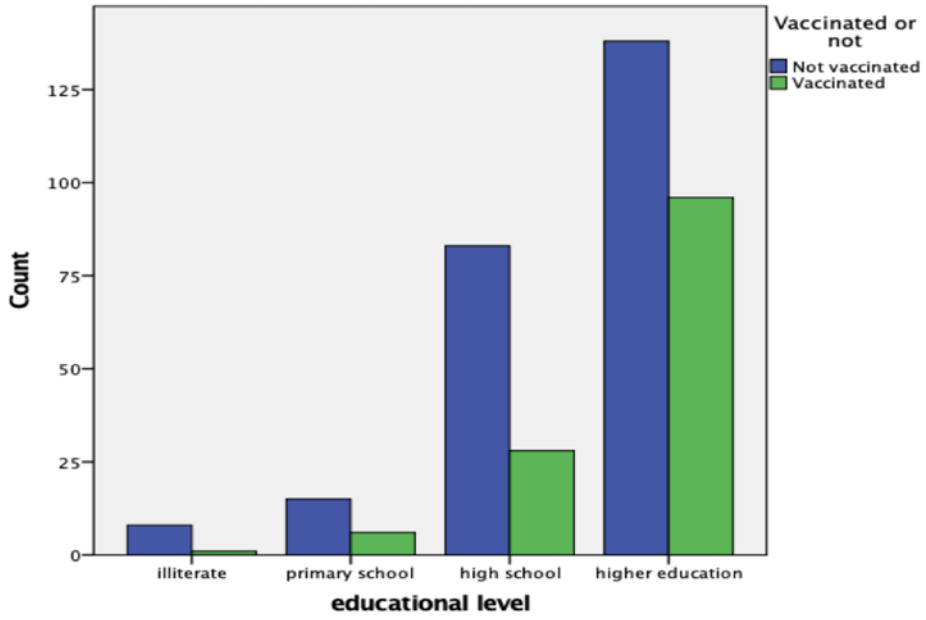

Figure 2. The correlation between education level and vaccination.

Table 1. Basic Demographic characteristics of the study sample.

Variable	Numbers (%)
Age*	35.1 ±14.9
Sex**	Male 172(45.9)
	Female 203(54.1)

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Educational level**	Illiterate 9(2.4%)
	Primary School 21(5.6%)
	High School 111(29.6%)
	Higher Education 234(62.4%)
Past Medical History**	None 291(77.6 %)
	Hypertension 36(9.6 %)
	Diabetes Mellitus 34(9.1 %)
	Others 14(3.7 %)
Smoking**	Smokers 67(17.9 %)
	None 302(80.5 %)
	Ex-smokers 6 (1.6 %)

*Expressed as mean ±sd
** Expressed as frequency (percentage)

Table 2. Binary logistic regression for vaccine manufacture preference.

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1[a]	**Pfizer (1)**	-1.413	.364	15.108	1	.000	.243	.119	.496
	Sinopharm (1)	-2.067	.668	9.578	1	.002	.127	.034	.469
	AstraZeneca (1)	-3.481	.501	48.303	1	.000	.031	.012	.082
a. Variable(s) entered on step 1: Pfizer, Sinopharm, AstraZeneca.									

Table 3. The reasons not to vaccinate.

Variable	Frequency	%
Country health system confidentiality	48	19.7
Media promotion	161	66.0
Previous infection	23	9.4
Allergy	12	4.9

5. REFERENCES

[1] United Nation. Department of Economic and Social Affairs. Comprehensive Study on the Impact of COVID-19 on the Least Developed Country Category. https://www.un.org/development/desa/dpad/publication/comprehensive-study-on-the-impact-of-covid-19-on-the-least-developed-country-category/ [accessed 10 September 2021].

[2] Sherman SM, Smith LE, Sim J, et al. COVID-19 vaccination intention in the UK: results from the COVID-19 vaccination acceptability study (CoVAccS), a nationally representative cross-sectional survey. Hum Vaccin Immunother. 2021;17(6):1612-1621. doi:10.1080/21645515.2020.1846397.

[3] Iraqi Ministry of health. Public health directorate. http://phd.iq/CMS.php?CMS_P=293. [accessed 12 September 2021].

[4] Medicine Sans Frontiers. Only vaccination will end the ferocious spread of COVID-19 in Iraq. https://www.msf.org/iraq-only-vaccination-will-end-fast-spread-covid-19. [accessed 12 September 2021].

[5] WHO. Coronavirus disease (COVID-19): Vaccines. https://www.who.int/news-room/q-a-detail/coronavirus-disease-(covid-19)-vaccines. [accessed 20 September 2021].

[6] Reuters. Iraq receives first batch of COVID-19 vaccines from China. https://www.reuters.com/article/health-coronavirus-iraq-vaccine-int-idUSKBN2AU0YD. [accessed 20 September 2021].

[7] UNICEF/Iraq. Iraq receives the first delivery of COVID-19 vaccines through the COVAX Facility. https://www.unicef.org/iraq/press-releases/iraq-receives-first-delivery-covid-19-vaccines-through-covax-facility. [accessed 20 September 2021].

[8] FDA. Learn More About COVID-19 Vaccines From the FDA. https://www.fda.gov/consumers/consumer-updates/learn-more-about-covid-19-vaccines-fda. [accessed 22 September 2021].

[9] Kadali RAK, Janagama R, Peruru S, Malayala SV. Side effects of BNT162b2 mRNA COVID-19 vaccine: A randomized, cross-sectional study with detailed self-reported symptoms from healthcare workers. Int J Infect Dis. 2021;106:376-381. doi:10.1016/j.ijid.2021.04.047.

[10] Ranking web of universities. https://www.webometrics.info/en/aw/iraq. [accessed 12 September 2021].

[11] Daniel WW, Cross CL. Biostatistics: a foundation for analysis in the health sciences. 10th ed. USA: John Wiley & Sons, Inc; 1999.

[12] CDC. National Center for Health Statistics. https://www.cdc.gov/nchs/nhis/tobacco/tobacco_glossary.htm. [accessed 29September 2021].

[13] Wang J., Jing R., Lai X., et al. Acceptance of COVID-19 Vaccination during the COVID-19 Pandemic in China. Vaccines. 2020;8:482. doi: 10.3390/vaccines8030482.

[14] Harapan H., Wagner A.L., Yufika A., et al. Acceptance of a COVID-19 Vaccine in Southeast Asia: A Cross-Sectional Study in Indonesia. Front. Public Health. 2020;8:381. doi: 10.3389/fpubh.2020.00381.

[15] Dror A.A., Eisenbach N., Taiber S., et al. Vaccine hesitancy: The next challenge in the fight against COVID-19. Eur. J. Epidemiol. 2020;35:775–779.

[16] Sallam M, Dababseh D, Eid H, et al. High Rates of COVID-19 Vaccine Hesitancy and Its Association with Conspiracy Beliefs: A Study in Jordan and Kuwait among Other Arab Countries. Vaccines (Basel). 2021;9(1):42. Published 2021 Jan 12. doi:10.3390/vaccines9010042.

[17] Salali G.D., Uysal M.S. COVID-19 vaccine hesitancy is associated with beliefs on the origin of the novel coronavirus in the UK and Turkey. Psychol. Med. 2020:1–3. doi: 10.1017/S0033291720004067.

[18] Al-Mohaithef M., Padhi B.K. Determinants of COVID-19 Vaccine Acceptance in Saudi Arabia: A Web-Based National Survey. J. Multidiscip. Healthc. 2020;13:1657–1663. doi: 10.2147/JMDH.S276771.

[19] L. JV et al., "Hesitant or Not? The Association of Age, Gender, and Education with Potential Acceptance of a COVID-19 Vaccine: A Country-level Analysis," Journal of health communication, vol. 25, no. 10, pp. 799–807, 2020, doi: 10.1080/10810730.2020.1868630.

[20] J. Khubchandani, S. Sharma, J. H. Price, M. J. Wiblishauser, M. Sharma, and F. J. Webb, "COVID-19 Vaccination Hesitancy in the United States: A Rapid National Assessment," Journal of Community Health 2021 46:2, vol. 46, no. 2, pp. 270–277, Jan. 2021, doi: 10.1007/S10900-020-00958-X.

[21] J. Wise, "Covid-19: European countries suspend use of Oxford-AstraZeneca vaccine after reports of blood clots," BMJ, vol. 372, p. n699, Mar. 2021, doi: 10.1136/BMJ.N699.

[22] Wilson SL, Wiysonge CSocial media and vaccine hesitancyBMJ Global Health 2020; 5:e004206.

[23] Practical considerations and recommendations for religious leaders and faith-based communities in the context of COVID-19. Pdf.

[24] A. Hussain, S. Ali, M. Ahmed, and S. Hussain, "The Anti-vaccination Movement: A Regression in Modern Medicine," Cureus, vol. 10, no. 7, Jul. 2018, doi: 10.7759/CUREUS.2919.

[25] R. H and S. L, "Integrating Health Behavior Theories to Predict COVID-19 Vaccine Acceptance: Differences between Medical Students and Nursing Students," Vaccines, vol. 9, no. 7, Jul. 2021, doi: 10.3390/VACCINES9070783.