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ORIGINAL RESEARCH ARTICLE

Covid-19 Vaccination: The Prevalence And Influencing Factors For Vaccine Hesitancy Among Mbbs Students From International Medical University, Malaysia

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ABSTRACT

Vaccines have been the most effective and safe way to protect people from harmful diseases. With the severity of the pandemic weighing on healthcare systems around the world, the development of COVID-19 vaccines has been prioritized by pharmaceutical companies around the world. Therefore, we decided to carry out research to determine the prevalence of vaccine-acceptance and vaccine-hesitancy attitudes among medical students, to identify factors influencing attitudes towards COVID-19vaccines among medical students, and to establish correlation among various variables toward COVID-19vaccination. This comparative cross-sectional study recruited medical students from semester 1 to 10, and data was collected by using a questionnaire adopted from a similar study in the local settings. A total of 397 students responded to this study. Overall, students of both phases had similar attitudes but the only significant difference regarding the trust in vaccines approved by the Ministry of Health with more agreeability in clinical phase students. This study is one of few studies that evaluate the vaccine hesitancy of medical students in Malaysia. Further studies should be carried out to compare these findings with undergraduates at various points of their education.

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INTRODUCTION

As Coronavirus disease 19 (COVID-19) spreads throughout the world causing a pandemic, countries around the world imposed lockdown measures to curb the spread of the virus in the hope that it will not overburden the healthcare system of each country. The first COVID-19 case reached Malaysia on the 25th of January 2020, and since then as of 18th May 2021, Malaysia has gone through 3 waves of COVID-19 cases and is currently still on the rise with 465,330 cases in total [1]. Due to many factors including non-compliance to Standard Operating Procedures (SOPs), the government of Malaysia has implemented a third Movement Control Order (MCO) to prevent a possible fourth wave of the COVID-19 virus. Malaysia is not the only country that is affected by the COVID-19 virus, many other countries such as India or Brazil are seeing an unimaginable number of cases a day that is bringing their healthcare systems to the brink of collapse. Vaccines have been the most effective and safe way to protect people from harmful diseases and with the severity of the pandemic weighing on healthcare systems around the world. The development of COVID-19 vaccines has been prioritized by pharmaceutical companies around the world. With the completion of the development of COVID-19 vaccines, many countries around the world have started procuring and planning immunisation programmes to distribute these vaccines and ensure that all of their citizens are vaccinated. Similar to drugs, vaccines have also been at the forefront of controversies and scepticism around the world. Therefore, we decided to carry out research to determine the prevalence of vaccine-acceptance and vaccine-hesitancy attitudes among medical students, to identify factors influencing attitudes towards COVID-19vaccines among medical students, and to establish correlation among various variables toward COVID-19vaccines. The reason for recruiting medical students was those medical students were our future doctors and they played an important role in educating and influencing the public regarding vaccination.

METHODS

The study was conducted among semester 1-10 medical students from the MBBS programme at International Medical University. A self-administered online questionnaire was distributed to 397 students enrolled in MBBS programme. The online questionnaire was in Microsoft Forms format and was sent to the selected students through email.

The questionnaire was developed based on past research on the attitudes of medical students against the COVID-19 Vaccine where permission was obtained from one of the authors, Dr. Victoria C Lucia to adapt the questionnaire according to our local settings. [8] The questionnaire assessed the prevalence of vaccine hesitancy among the students of the IMU MBBS program. The questionnaire included demographics, attitudes towards the COVID-19 vaccines, knowledge regarding COVID-19 vaccines, concerns about the COVID-19 vaccines, and personal experiences regarding the COVID-19 vaccines. There

were five demographic questions, eight questions about attitude, two multiple choice questions about concerns, six questions about knowledge, and four questions about personal experiences.

STUDY DESIGN

This study was a comparative cross-sectional study involving Sem 1-10 MBBS students at International Medical University.

SAMPLE SIZE

The estimated sample size was 397 MBBS students calculated by using Slovin's formula and simple random sampling.

With 953 students from preclinical and 439 students from clinical school

Sample of students from preclinical school

$n = N / (1 + Ne2)$

$= 953/(1+1000*0.05^2)$

$= 272$

Sample of students from clinical school

$n = N / (1 + Ne2)$

$= 439/(1+1000*0.05^2)$

$= 125$

272 preclinical students + 125 clinical students = 397 students from MBBS

Participants were stratified based on the phase of the MBBS programme, with Phase 1 (preclinical) being one stratum, and Phase 2 (clinical) being the other. The sample size in either stratum was calculated using Slovin's formula. For preclinical students, the sample size was 272. For clinical students, the sample size was 125. Systematic random sampling was then used to draw preclinical students and clinical students from a list of all students arranged alphabetically without confinement to the corresponding

semester. This was to avoid underlying patterns in the order of the individuals, and with each interval k = 4, the participants were selected. The sample size for each semester totaled:

Preclinical		Clinical	
S1	**53**	S6	**33**
S2	**51**	S7	**11**
S3	**54**	S8	**30**
S4	**55**	S9	**24**
S5	**59**	S10	**27**
Grand Total	**272**	**Grand Total**	**125**

Theoretical Framework for the Research Study

Abbreviations

D-V Dependent Variable

IN-V Independent Variable

E- Experience- Moderating Variable

K – Knowledge- Moderating Variable

G- Gender Influencing Variable

R- Race Influencing Variable

L- Religion- Moderating Variable

This research assessed the attitudes of the students in the IMU MBBS program towards the COVID-19 vaccine and took into account their gender, race, religion, knowledge, and experience with the COVID-19 vaccine to assess the prevalence of vaccine hesitancy among the students in the IMU MBBS program.

INCLUSION CRITERIA

Students enrolled in IMU MBBS program.

Students who had given consent for participating in the study.

EXCLUSION CRITERIA

Students who had received 2nd dose of COVID-19 vaccine.

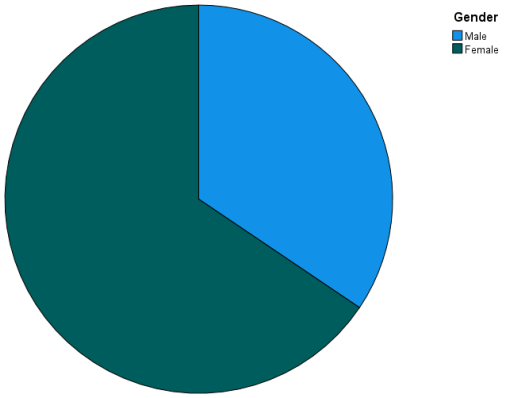
Students unable to take vaccine due to medical reasons.

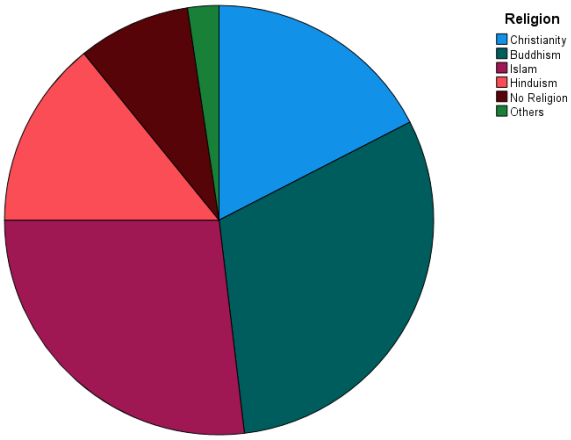
RESULT

5 demographic questions, 8 questions about attitude, 2 multiple choice questions about concerns, 6 questions about knowledge, and 4 questions about personal experience.

Report on demographics - data collection and recruitment, response rates

Our study included 212 participants from MBBS students of International Medical University; gender was presented by male 34.4% (73 of 212), and female 65.6% (139 of 212) of the students. The phases of the medical course were divided into pre-clinical 60.4% (128 of 212) and 39.6% (84 of 212). Religion of participants consisted of Buddhism 30.7% (65 of 212), Islam 26.9% (57 of 212), Christianity 17.5% (37 of 212), no religion 8.5% (18 of 212) and others 2.4% (5 of 212). Of the races included, there were 47.2% (100 of 212) Chinese, 17.9% (38 of 212) Indian, 13.7% (29 of 212) Malays, and other races representing 21.2% (45 of 212). Regarding the COVID-19 vaccination status of the participants, the majority (86.3%) had received the 2nd dose of the COVID-19 vaccine, while only 12.3 % had received the 1st dose of the COVID-19vaccine and 1.4% who were unvaccinated but planned to. When given the option to choose the brand of the COVID-19 vaccine, most participants would choose the brand (62.3%) instead of accepting any brand of the COVID-19 vaccine (37.7%).





Attitude

The majority of students either strongly agreed (58%) or agreed (29.2%) to make the COVID-19 vaccine compulsory, and this perception was held similarly amongst students in pre-clinical who strongly agreed (57%) and clinical students who strongly agreed (59%). Near half (48%) of the participants also strongly agreed with another 36.8% agreeing that the best preventive measure for COVID-19 was getting vaccinated. Students in both pre-clinical and clinical course either strongly agreed (86.8%) or agreed (12.3%) that the role of the physician necessitates learning about vaccines for themselves and patients. Regarding concerns about serious side effects of the COVID-19 vaccine, students who strongly agreed stood at 9%, agreed (33%), neutral (33%), and those who disagreed (20.8%). When participants were questioned if health systems/medical school mandates were the only reason to get a COVID-19 vaccine, students from both phases mostly strongly disagreed (51.4%) or disagreed (33%). However, more than half still expressed strong agreement (58%) in trusting of vaccine approved by the Ministry of health, with another 33.5% agreeing, and 10% remaining neutral (p= 0.002).

Concerns

The relationship between religion and vaccines was seen as 97.6% of students did not hold religious beliefs regarding vaccines. Most students reportedly were not concerned with having not enough time to make an informed decision when taking the COVID-19 vaccine (87.7%). Only 7.5% of students were concerned about getting COVID-19 from the vaccine while 92.5% were not. However, side effects of the vaccines were a major concern with 70.3% of the participants, only 29.7% were not worried. One of the potential barriers to COVID-19 vaccination was lack of information, and this is exemplified by split decisions in students from both phases with 47.6% of clinical phase students agreeing to lack of information, while 52.4% disagreed. More than half of pre-clinical students (67.2%) disagreed with the lack of information while only 32.8% felt a lack of information (p=0.03). Trust in information released by health experts about vaccines was not a concern with the majority (95.3%).

Phase of Medical Course * I trust the vaccine that has been approved by the Ministry of Health Crosstabulation

			I trust the vaccine that has been approved by the Ministry of Health					
			Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
Phase of Medical Course	Pre-Clinical	Count	73	34	20	1	0	128
		% within Phase of Medical Course	57.0%	26.6%	15.6%	0.8%	0.0%	100.0%
	Clinical	Count	42	37	2	1	2	84
		% within Phase of Medical Course	50.0%	44.0%	2.4%	1.2%	2.4%	100.0%
Total		Count	115	71	22	2	2	212
		% within Phase of Medical Course	54.2%	33.5%	10.4%	0.9%	0.9%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	16.802[a]	4	.002	<.001		
Likelihood Ratio	19.256	4	<.001	<.001		
Fisher-Freeman-Halton Exact Test	17.482			<.001		
Linear-by-Linear Association	.025[b]	1	.874	.929	.470	.070
N of Valid Cases	212					

a. 4 cells (40.0%) have expected count less than 5. The minimum expected count is .79.

b. The standardized statistic is .158.

Knowledge about the COVID-19 vaccine

The majority of respondents believed that vaccines were beneficial in preventing the further spread of the virus (94.8%), but vaccination did not increase mortality in an otherwise healthy individual (84.4%). On the other hand, the idea that the COVID-19 vaccine could be used for any variant of the COVID-19 virus showed split results among pre-clinical and clinical phase students with more than half of clinical students agreeing (51.2% vs 48.8%) and pre-clinical students mostly disagreeing (63.3% vs 36.7%) (p=0.037). Most students also believed that the side effects of the vaccine were higher in a person with a history of anaphylaxis (83%) (p=0.032), but most students agreed that vaccines were important to stay healthy as a future physician (97.2%).

Personal experience

The majority of participants had not been infected with COVID-19 before (97.2%), did not know someone who had had COVID-19 infection (77.4%), and did not care for someone with COVID-19 infection before (76.4%). Most participants also did not personally know someone who died from a COVID-19 infection (63.7%).

DISCUSSION

Since the conception of vaccines against the COVID-19 virus, studies have been done to determine the attitudes of health care workers regarding the vaccines. A study in Canada found that less than 5% of healthcare professionals had no intention of receiving the COVID-19 vaccine. Another study in France demonstrated hesitancy and reluctance to take the COVID-19 vaccine in 28.4% of healthcare professionals. In addition to that, one more study in Palestine illustrated that 30.7% of healthcare professionals were hesitant to receive the COVID-19 vaccine, and 31.5% planned to decline. [1-3] These rates vary widely from country to country but one of the main recurring reasons for the hesitancies was with regards to the safety of the vaccine as it was developed in a short amount of time. Other themes that were explored include concerns regarding the side effects of the vaccines and the distrust of the ministries of health and their experts regarding the information on the vaccines. With regards to medical students, studies have also demonstrated varying rates of vaccine hesitancy. In one study, a group of medical students in the US showed that around 20% of the students were hesitant. While in another study, a group of medical students from two universities in Egypt showed that 46% of their students were hesitant. Similar to the studies of current frontliners and healthcare professionals, one of the main reasons for vaccine hesitancy among medical students was the concerns regarding the side effects of the vaccines and lack of trust in the information received from public health experts. [4-5]

Our study suggested that the students within the school of medicine at International Medical University (IMU), both preclinical (Year 1 – 3) and clinical (Year 3 – 5) year students were not hesitant regarding the COVID-19 vaccination. However, there were still concerns about the vaccines such as the side effects of the vaccines and the lack of information with regard to the vaccines. Information released by health experts about vaccines was not a concern to most of the students in IMU. There did not seem to be any relation between religion and the attitudes of the students towards the vaccines. Students from both pre-clinical and clinical years did not show any big difference in attitudes towards the vaccines with mostly similar attitudes with regards to most of the aspects of the COVID-19 vaccines. More students from the preclinical years felt that there was enough information with regards to the vaccines compared to students from the clinical years who felt that there was not enough information out there regarding the vaccines. The idea that the COVID-19 vaccine could be used for any variant of the COVID-19 seemed to be more agreed upon amongst the clinical students compared to the preclinical students. A difference in the hesitancy of taking the COVID-19 vaccine amongst the students of IMU School of Medicine compared to the medical students of other countries may be due to the difference in time when the studies were done. As our study was only done when COVID-19 vaccine efforts were very well established amongst the government, this might have decreased the hesitancy rates significantly. However, like other medical students around the world, the side effects of vaccines were one of the recurring themes of concern.

This study was one of few studies that evaluate the vaccine hesitancy of medical students in Malaysia and determined any correlation between religion and vaccine hesitancy. Understanding the limitations such as religion on vaccine hesitancy could help improve the rates of vaccination.

Limitations of this study include a low response rate from clinical year students, the timing of our study, and data collection of students at only a single medical school in Malaysia. A better response rate from clinical year students might have yielded different results. The timing of our study was also when governmental efforts for vaccine uptake were very high therefore might not have reflected what their initial attitudes towards the vaccines before. Data was collected only in a single medical school in Malaysia that might limit the generalisation among other medical schools in Malaysia. There was a potential of bias regarding those who decided not to answer as they were hesitant on accepting the vaccine. Further studies may be done to explore more about attitudes of medical students in Malaysia toward the COVID-19 vaccines. The inclusion of differences in curriculum between the medical schools and student population may draw a better picture of the actual attitudes of medical students towards the COVID-19 vaccines.

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