Knowledge, Attitude and Acceptance among Undergraduate Students in Faculty of Health Science (FSK) and Faculty of Islamic Studies (FPI), Universiti Kebangsaan Malaysia (UKM) Towards Covid-19 Vaccines
(Pengetahuan, Sikap dan Penerimaan dalam kalangan Pelajar Sarjana Muda di Fakulti Sains Kesihatan (FSK) dan Fakulti Pengajian Islam (FPI), Universiti Kebangsaan Malaysia (UKM) Terhadap Vaksin Covid-19)

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ABSTRACT

The best hope for a long-term solution to the COVID-19 pandemic is the development of a vaccine. A vaccination must, however, be accepted and utilised by the vast majority of people in order to achieve herd immunity. Therefore, this study aims to investigate the knowledge, attitude and acceptance of COVID-19 vaccine among the students in the Faculty of Health Science (FSK) and Faculty of Islamic Studies (FPI) of Universiti Kebangsaan Malaysia (UKM). This is a cross-sectional study, and the questionnaire was conducted through an online platform. The questionnaire was then distributed to the third-year students of FSK and FPI of UKM. Respondents' demographic information was gathered and the knowledge, attitudes and acceptance score of the participants towards COVID-19 vaccine were calculated and classified according to their faculty. The relationship between knowledge regarding COVID-19 and the acceptance of COVID-19 vaccine was identified by using the Chi-Square test. The association between attitude and acceptance towards COVID-19 vaccine was also determined by using the same test. 143 students participated in this study where 80 (55.9%) of them are from FSK and 63 (44.1%) are from FPI. Majority of the respondents are female and aged 22-25 years old with Malay being the highest race of respondents. Both faculties have the same level of knowledge regarding COVID-19 which are on the moderate level with FSK (81.25%) and FPI (76.19%) respectively. Next, 55% of FSK students have a high level of attitude while 52.34% of FPI students have a medium level of attitude towards COVID-19 vaccine. In addition, the majority of both students from FSK (97.5%) and FPI (85.72%) will definitely accept the COVID-19 vaccine. Furthermore, there is a relationship between knowledge regarding COVID-19 and acceptance towards COVID-19 vaccines among FSK and FPI students ($p = 0.009$, $p<0.05$) but there is no relationship between attitude and acceptance towards COVID-19 vaccine ($p = 0.627$, $p>0.05$). Respondents from both faculties reported high acceptance of COVID-19 vaccines. Further studies can be done regarding the specific factors affecting their knowledge, attitude, and acceptance towards COVID-19 vaccines.

Keywords: COVID-19 knowledge; vaccine acceptance; vaccine refusal

ABSTRAK

Pendidikan pasca siswazah sering menghadkan graduan kepada peranan akademik. Walau bagaimanapun, lepasan ijazah mempunyai potensi untuk menawarkan penyelesaian inovatif di luar had makmal. Program "Beyond Lab Walls" bertujuan untuk menyediakan pelajar pascasiswazah dengan kemahiran, perspektif dan minda yang diperlukan untuk penglibatan masyarakat. Program ini menggalakkan para peserta untuk melihat penyelidikan sebagai saluran untuk pembaikan masyarakat dengan memupuk komunikasi yang berkesan, memangkin gabungan antara disiplin, dan mencetuskan perubahan transformatif. Artikel ini menyerlahkan kesan lawatan ke Santuari Penyu Chagar Hutang, yang menyelami siswazah dalam pemuliharaan dipacu penyelidikan yang bersilang dengan mata pencarian dan pembangunan tempatan. Hasil yang dijangkakan termasuk komunikator mahir yang merapatkan jurang pengetahuan, sinergi antara disiplin melahirkan inovasi, penyelidik berkhidmat sebagai ejen

perubahan dan penglibatan pihak berkepentingan yang lebih luas. Penemuan ini membentuk semula pendidikan pasca siswazah dengan merapatkan jurang antara penyelidikan dan akibat sosial yang ketara. Metrik kejayaan menilai impak penyelidikan melangkaui akademik, kedalaman kerjasama antara disiplin dan menjejaki sikap peserta terhadap anjakan impak masyarakat. Artikel ini menyokong untuk memikirkan semula peranan pasca siswazah dan meletakkan jawatan siswazah sebagai agen perubahan masyarakat.

Kata kunci - Kepimpinan, Pemuliharaan, Inovasi Sosial, Pembangunan Pelajar

INTRODUCTION

On December 31, 2019, the World Health organization (WHO) announced the discovery of a mysterious pneumonia afflicting dozens of citizens in Wuhan, China. Just over a week later, on January 11, 2020, China reported the first death caused by the virus. On January 20, 2020, WHO declared it a pandemic due to the severity of the infection. Finally, on February 11, 2020, WHO announced that the virus responsible for the pandemic was named severe acute respiratory syndrome coronavirus 2 (SARS-COV-2) and that it causes a severe respiratory illness called COVID-19 (Erin 2020).

The COVID-19 pandemic has resulted in a significant increase in mortality rates worldwide and brought about numerous changes in the way people live their lives. As of April 11, 2020, the global death toll stood at 2,920,537. Vaccination has become a crucial tool in breaking the chain of this pandemic. A COVID-19 vaccine provides acquired immunity against the SARS-CoV-2 virus. In Malaysia, the first phase of the vaccination program began on February 24, targeting frontline staff, and by March 3, a total of 80,336 people had received their first COVID-19 vaccine dose. (Anon. 2021b). COVID-19 vaccine from Pfizer-BioNTech was among the first vaccines given to the public (Joseph 2021). However, a report showed that a significant number of Malaysians, especially those aged 60 and above, failed to show up for their vaccinations. According to the report, around 10,000 residents in Kelantan missed their vaccination appointments as of May 24, 2021 (Jerry 2021).

Despite the overwhelming evidence supporting the safety and efficacy of COVID-19 vaccines, some conspiracy theories regarding vaccine side effects have been circulating, leading to vaccine hesitancy among certain individuals. Various factors have been reported that could influence the vaccine acceptance. A global survey conducted revealed that 48% of respondents were confused about COVID-19 vaccination and remained uncertain about getting vaccinated (Lazarus et al. 2020l; Harapan et al. 2019).

The speed at which the COVID-19 vaccines were developed and registered in less than a year may have contributed to vaccine hesitancy among some individuals. Additionally, various campaigns by anti-vaccinationists have spread false information about the safety and effectiveness of vaccines, citing the short development period (Kazi et al. 2020). These campaigns have been amplified by social media, leading to a decrease in the knowledge about the benefits of vaccination, especially among people who lack a scientific study background (Vosoughi et al. 2018). Therefore, the present study aims to determine the knowledge, attitude and acceptance towards COVID-19 vaccination among two groups of students with differing educational backgrounds at Universiti Kebangsaan Malaysia (UKM): those with prior knowledge about vaccines and those without.

MATERIALS AND METHODS

Sample calculation

This cross-sectional study has got the approval by the Human Research Ethics Committee UKM (ethics reference number: JEP-2021-509). The target population in this study was third-year undergraduate students from the Faculty of Health Sciences (FSK) and the Faculty of Islamic Studies (FPI), Universiti Kebangsaan Malaysia. The target population of the students were 413 of FPI students and 332 of FSK students with a total population of 745 students. Through a purposive sampling method, we have calculated the sample size for this study. Determination of the sample size was performed using GPower software. The total sample size required was 111 students with the effect size =

0.3 (Kim et al., 2019). In this study we managed to get 143 respondents. The inclusion criteria were UKM students from FSK and FPI in year 3 of 2020/2021. The exclusion criteria were UKM students from FSK and FPI in year 3 of 2020/2021 session that are less than 18 years old.

Materials

The research was conducted using an online questionnaire. Questionnaire is a set of questions or other types of prompts that are used to collect information from the respondents. Qualitative and quantitative methods were used for data collection. The advantages of utilizing the online questionnaires are that they are less costly, reduce time-consumption and easy analysis and also visualization of results in collecting data. The approach utilized for questionnaire distribution is through an online social medium due to students' constant usage of the applications for social interaction and excluding the need of face-to-face encounter. Less face-to-face interaction conjoined with nowadays situation due to COVID-19 which is promoting social distancing. Furthermore, they can fill in the form at their leisure time without being pressured into completing the survey. The data collection through scaling questions is more convenient to be used for analysis. The questionnaire consists of four sections that have 22 questions in total. The four sections are demographic section (4 items), knowledge section (8 items), attitude section (7 items) and acceptance section (3 items). We used 70% as a cut-off value for all the questionnaires based on the previously published studies. It consisted of multiple-choice questions and likert scale questions. The questionnaire adopted and modified from (Kazi et al. 2020) and (Alqudeimat et al. 2021). The platform used for the survey is Google Form along with permission and consent request at the beginning of the survey and distributed through an online social platform which is WhatsApp.

The type of research in this study is descriptive and in the form of quantitative cross-sectional analysis where the quantifiable data is required involving numerical and statistical explanation. The data collected is primary data where surveys are conducted through online questionnaires by the team themself and collected before being processed and analysed in order to determine the cause-effect relationship between variables in a point of time. There are proper procedures in obtaining data for the research. The form design needs to be considered so the questions and the answers provided in the form are related to the study objectives. The platform used for the form is also necessary to be considered to allow easy access for the research participants which in this case, Google form is the medium of choice. Trial-run by filling in the questionnaire and analysing the result is also crucial to conduct before distributing the forms to ensure no errors present during data analysis. The form is distributed through WhatsApp due to easier contact along with the letter of consent as a part of ethical action in performing research. The data obtained from the form is then sorted and analysed using IBM SPSS software.

STATISTICAL ANALYSIS

Kolmogorov Smirnov was used to assume the normality of the data due to the sample size being more than 100 and all data were normal in this study. The demographic data of both FPI and FSK students was analyzed using a descriptive analysis. The Independent Sample t-test was used to compare two independent variables (FSK and FPI). Next, to determine the relationship between two categorical variables, the Chi-Square Test of Independence (Pearson Chi-Square Test) was used in this study.

RESULTS

First objective is to determine the sociodemographic between third year students of FSK and FPI in Universiti Kebangsaan Malaysia.

The table 1 below shows the sociodemographic factors of the respondents based on the faculty, gender, age and race. A total of 80 respondents from the Faculty of Health Science and 63 respondents from Faculty of Islamic Studies completed the questionnaire form. Based on the descriptive analysis, respondents consisted of 13 of male students and 67 of female students with percentage of 16.2% and 83.8% respectively for FSK, meanwhile for FPI consisted of 18 of male students and 45 of female students with percentage of 28.6% and 71.4% respectively. The respondents that were between the ages of 22-25 are dominant with 90% in FSK and 85.7% in FPI and while there was only 6.3% and 12.7% for FSK and FPI respectively in the 18-21 age group. The lowest age group of respondents is 26-30 which is 3.8% in FSK and 1.6% in FPI. 23. Based on the race, Malay students were the majority in this study with 86.3% in FSK and 100% in FPI followed by India students which is 8.8% in FSK and Chinese students with 3.8% for FSK. Bumiputera Sabah had the lowest number of respondents with 1.3% in FSK.

TABLE 1. Demographic data of respondents

Profile		Categories	Frequency	Percentage(%)
Faculty		FSK	80	55.9
		FPI	63	44.1
Gender	FSK	Male	13	16.2
		Female	67	83.8
	FPI	Male	18	28.6
		Female	45	71.4
Age	FSK	18-21	5	6.3
		22-25	72	90
		26-30	3	3.8
	FPI	18-21	8	12.7
		22-25	54	85.7
		26-30	1	1.6
Race	FSK	Chinese	3	3.8
		India	7	8.8
		Malay	69	86.3
		Bumiputera Sabah	1	1.3
	FPI	Chinese	0	0.0
		India	0	0.0
		Malay	63	100
		Bumiputera Sabah	0	0.0

Table 2 shows the comparison in the knowledge, attitude and acceptance between third year students of FSK and FPI in Universiti Kebangsaan Malaysia. Based on table 2, it is shown that the majority of FSK and FPI students have medium knowledge regarding COVID-19 with 81.3% and 79.4% respectively. The number of FPI students with high knowledge was slightly higher (20.6%) than FSK students (17.5%). Yet, the number of FSK students with low knowledge regarding COVID-19 was slightly lower (1.3%) than FPI students (0%).

TABLE 2. Percentage of FSK and FPI students regarding knowledge, attitude and acceptances towards COVID-19 vaccines

Variables	Catogeries	Faculty	
		FSK	FPI
Knowledge	Low	1.3% (n=1)	0.0% (n=0)
	Middle	81.3% (n=65)	79.4% (n=50)
	High	17.5% (n=14)	20.6% (n=13)
Attitude	Low	0.0% (n=0)	0.0% (n=0)
	Middle	45.0% (n=36)	52.4% (n=33)
	High	55.0% (n=44)	47.6% (n=30)
Acceptance	No	0.0% (n=0)	4.8% (n=3)
	Yes with worries	2.5% (n=2)	9.5% (n=6)
	Definitely Yes	97.5% (n=78)	85.7% (n=54)

For attitude, FSK and FPI students have a middle and high attitude towards COVID-19 vaccine. For FSK students, 45% of them have a medium attitude while 55% of them have a high attitude. For FPI students, 52.4% of them have a medium attitude while 47.6% of them have a high attitude.

As for the acceptance, most FSK and FPI students will definitely accept the COVID-19 vaccine. For FSK students, no student chooses not sure so that represents 0%. For yes with worries, 2.5% that represent 2 students OF FSK while for definitely yes, 97.5% that represent 78 students of FSK. For FPI students, 4.76% represent 3 students who answer no. For yes with worries, 9.5% that represent 6 students of FPI while for definitely yes, 85.7% that represent 54 students of FPI.

Table 3 below shows that there was no significant difference in the average score of knowledge and attitude towards COVID-19 between FSK and FPI ($p>0.05$). The average score of acceptance for FSK students is 3.98 while the average score of FPI students is 3.81 which is slightly lower than FSK student average score. The average score towards COVID-19 vaccine was significantly increased ($p<0.05$) in FSK (3.98 ± 0.0176 Standard Error of Mean) as compared to FPI (3.81 ± 0.063 Standard Error of Mean).

TABLE 3. Average Score of Knowledge, Attitude and Acceptance among FSK and FPI students towards COVID-19 Vaccines.

Variables	Categories	Faculty	
		FSK	FPI
Knowledge	Average score	9.03	8.95
	Standard Error of mean	0.19	0.20
	P value	$p>0.05$, $p=0.481$	
Attitude	Average score	20.69	20.71
	Medium Standard Error of mean	0.22	0.25
	P value	$p>0.05$, $p=0.821$	
Acceptance	Average score	3.98	3.81
	Medium Standard Error of mean	0.0176	0.063
	P value	$p<0.05$, $p=0.000$	

The table 4 below shows the result of the Pearson Chi-Square test that was statistically significant $p<0.05$ ($p=0.009$), indicating there was a relationship between knowledge regarding COVID-19 and the acceptance of COVID-19 vaccine in overall third year students of FSK and FPI.

Table 5 below exhibits the relationship between the knowledge regarding COVID-19 and the acceptance of COVID-19 vaccine for the third-year students from each faculty, FSK and FPI in UKM.

TABLE 4. Knowledge regarding Covid-19 and Acceptance of Covid-19 vaccine.

Knowledge	Acceptance		
	No	Yes with worries	Definitely Yes
High	11.1% (n=3)	7.4% (n=2)	81.5% (n=22)
Middle	0.0% (n=0)	5.2% (n=6)	94.8% (n=109)
Low	0.0% (n=0)	0.0% (n=0)	100% (n=1)
Pearson Chi-Square Test (P)	0.009		

For FSK students., there was no significant difference, p>0.05 (p=0.470), indicating that there was no relationship between knowledge regarding COVID-19 and the acceptance of COVID-19 vaccine. Meanwhile in FPI, the result of the Pearson Chi-Square test was significantly different p<0.05 (P=0.002), indicating that there was a relationship between knowledge regarding COVID-19 and the acceptance of COVID-19 vaccine.

TABLE 5. Knowledge regarding Covid-19 and Acceptance of Covid-19 vaccine by faculty.

Faculty	Knowledge	Acceptance of vaccine		
		No	Yes with worries	Definitely yes
FSK	High	0.0% (n=0)	7.1% (n=1)	92.9% (n=13)
	Middle	0.0% (n=0)	1.5% (n=1)	98.5% (n=64)
	Low	0.0% (n=0)	0.0% (n=0)	100% (n=1)
Pearson Chi-Square Test (P)			0.470	
FPI	High	23.1% (n=3)	7.7% (n=1)	69.2% (n=9)
	Middle	0.0% (n=0)	10.0% (n=5)	90.0% (n=45)
	Low	0.0% (n=0)	0.0% (n=0)	0.0% (n=0)
Pearson Chi-Square Test (P)			0.002	

The table 6 below shows the result of the Pearson Chi-Square test that was not statistically significant p>0.05 (p=0.627), indicating there was no relationship between attitude regarding COVID-19 vaccine and the acceptance of COVID-19 vaccine in overall third year students of FSK and FPI.

The table 7 below displays the relationship between the attitude regarding COVID-19 and the

TABLE 6. Attitude regarding COVID-19 vaccine and Acceptance of COVID-19 vaccine

Attitude	Acceptance		
	No	Yes with worries	Definitely Yes
High	2.7% (n=2)	4.1% (n=3)	93.2% (n=69)
Middle	1.4% (n=1)	7.2% (n=5)	91.3% (n=63)
Low	0.0% (n=0)	0.0% (n=0)	0.0% (n=0)
Pearson Chi-Square Test (P)		0.627	

acceptance of COVID-19 vaccine for the third-year students from each faculty, FSK and FPI in UKM. From the table 7, there was no relationship between the attitude regarding COVID-19 and the acceptance of COVID-19 vaccine among the third-year students in each faculty.

DISCUSSION

The results show the majority of respondents is from FSK with 80 students (55.9%) and in agreement with prior study with more than half of respondents is from health-related educational backgrounds (El-Elimat et al. 2021). As for the gender, the majority of respondents is female. Also supported by previous study with the

TABLE 7. Attitude regarding Covid-19 and Acceptance of Covid-19 vaccine by faculty

Faculty	Attitude	Acceptance of vaccine		
		No	Yes with worries	Definitely yes
	High	0.0% (n=0)	2.3% (n=1)	97.7% (n=43)
FSK	Middle	0.0% (n=0)	2.8% (n=1)	97.2% (n=35)
	Low	0.0% (n=0)	0.0% (n=0)	0.0% (n=0)
	Pearson Chi-Square Test (P)	**0.886**		
	High	6.7% (n=2)	6.7% (n=2)	86.7% (n=26)
FPI	Middle	3.0% (n=1)	12.1% (n=4)	84.8% (n=28)
	Low	0.0% (n=0)	0.0% (n=0)	0.0% (n=0)
	Pearson Chi-Square Test (P)	**0.627**		

highest total respondent were female and almost 80% of total respondents had attained post-secondary education (Elhadi et al. 2021). In short, gender may play a vital role in determining the level of education as a study showed higher participation comes from women. The highest range of respondents is between 22-25 years old from both FSK and FPI. Prior studies also state that half of their respondents were among those aged 21–30 years old (Harapan et al. 2020). Malay is the highest race of respondents from both FSK and FPI. The lowest race of respondents is Bumiputera Sabah from FSK.

The average score of knowledge towards COVID-19 for both faculties are the same since the results are not significant (p>0.05) p=0.481. Statistically there is no significant difference of knowledge regarding COVID-19 among the general population, medical students, medical doctors, and paramedics (Elhadi et.al 2021). This could be due to the fact that the student population is young and have their mobile devices with Internet availability almost all the time (Hasan et al. 2021). In contrast, students with high education levels and bio-backgrounds were found to have more advanced knowledge about viruses, vaccines and drug targets (Hatabu et al. 2021). The average score of attitudes towards COVID-19 vaccines for both FSK and FPI students is the same since the results are not significant, (p>0.05, p=0.821). Both Health-related and Non-Health-related course University students of UOS believed that COVID-19 was dangerous and about three-quarters were worried about suffering from the infection (Hasan et al. 2021). Young students are up to date with the information of COVID-19 (Hasan et al. 2021). The average score of acceptance towards COVID-19 vaccines is higher

for FSK students compared to FPI students because there is a significant difference for the acceptance of COVID-19 vaccines between both faculties, (p=0.005, p< 0.05). Religious factors can be a reason for not supporting vaccination among the students who are non-supporters (Elkalmi et al. 2021). In contrast to Medical students in Egypt, where 46% were hesitant and 19% refused Covid-19 vaccines due to concerns regarding vaccine effectiveness, safety, and adverse effects (Saied et al. 2021). The majority of respondents were worried about the potential side effects, safety of the vaccine, lack of information, personal belief, pain due to injection and effectiveness of vaccination against COVID-19 (Alqudeimat et al. 2021). Hesitation regarding COVID-19 vaccination safety as well as public trust issues may hinder vaccination intake among the general public and healthcare workers (Elhadi et al. 2021). In another similar study, main reasons for the Jordanian participants' vaccination refusal or hesitancy were concerns regarding the use of vaccines and a lack of trust in them. (Al-Qerem & Jarab 2021).

There is no relationship between the knowledge regarding COVID-19 and acceptance towards COVID-19 vaccines for FSK students (p>0.05). However, there is a relationship between the knowledge regarding COVID-19 and acceptance towards COVID-19 vaccines for FPI students (p<0.05). In a study among healthcare workers, they were found to have lower acceptance towards COVID-19 vaccines (27.7%) indicating even people with high knowledge of medical backgrounds were hesitant and reluctant to accept the COVID-19 vaccines (Kabamba et al. 2020). Moreover, a study by Manning et al. (2021) also revealed that there was a lower vaccine acceptance

rate among medical students, who have knowledge on health related. In accordance with our findings, a study by Jain et al. (2021) also showed that there was higher acceptance of COVID-19 vaccine in non-healthcare students than in healthcare students. Overall, students showed a significant relationship between knowledge and acceptance as they acknowledged the importance of vaccines in reducing the rate of morbidity and mortality of diseases. In a previous study conducted in Bangladesh, where 86% of respondents believed that vaccination could reduce morbidity and mortality (Elhadi et.al 2021). Students' educational background itself illustrates that higher levels of education were found to have more knowledge about COVID-19 vaccines. Saiful et. al,2021 stated that more educated people are more knowledgeable and concerned about their health and wellbeing, through easy access to more information sources such as COVID-19 vaccines.

For both FSK and FPI students, there is no significant difference (p>0.05) between attitude and acceptance towards COVID-19 vaccine. Overall, both faculties showed no relationship between attitude and acceptance towards COVID-19 vaccines. The current study confirmed that negative attitudes toward general vaccination independently contributed to vaccine hesitancy (Shan et. al 2020). According to the CDC, the COVID-19 vaccines are safe and effective and meet the requirements of Food and Drug Administration (FDA). In contrast, a study done on adult population in Kuwait shows that participants who indicated that vaccines in general protect against infectious diseases were more likely to accept COVID-19 vaccination (71.2%) than those who were uncertain (30.5%) and those who did not believe that vaccines offer (Alqudeimat et al. 2021).

As for the limitations of our research, there was a lack of verbal communication during the process of asking the students to fill in the questionnaire form, due to the movement control order (MCO). Students also tend to ignore messages that have been forwarded in WhatsApp and in Facebook groups and do not give good cooperation towards this online survey. If there are no challenges like MCO, we could easily meet other students directly and ask them to fill in the forms. Lack of demographic information of the respondent background from each course. For further studies, beside an online survey form, researchers could use phone call surveys or other survey methods to reach the targeted respondent effectively.

CONCLUSION

Overall, although FSK students have good acceptance

towards COVID-19 vaccines compared to FPI students, there is no relationship between the knowledge regarding COVID-19 and the acceptance of COVID-19 vaccines among the third-year students of FSK while there is a relationship for FPI students. Hence, the education level remains to play a role in the acceptance of COVID-19 vaccine regardless of the course background. Since this study is a cross-sectional study, a longitudinal study is required to see the changes and factors that contribute to hesitancy towards COVID-19 vaccines. A wider students' population from other different faculties can be used to obtain a more accurate average score of knowledge, attitude and acceptance towards COVID-19 vaccines. To overcome the problems which are low knowledge, attitude and acceptance among students, a proper awareness program should be carried out to educate the students on the benefits of vaccination.

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