

# Knowledge And Attitude Towards General Prevention Of Covid-19 Other Than Vaccination Among Malaysian Undergraduate Students

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## Abstract

COVID-19 is a disease that can lead to acute respiratory distress syndrome (ARDS). It spread to 200 nations and has been declared a worldwide pandemic by the World Health Organisation (WHO). Until now, there have been more than 237 million positive COVID-19 cases recorded, with around 4.84 million deaths worldwide. General preventive practises such as face masks, hand washing, social distancing, frequent hand sanitising, and other prevention and control (IPC) measures have helped to reduce the risk of getting infected. The aim of this study was to determine the knowledge and attitude towards general prevention of COVID-19 other than vaccination among undergraduate students as prevention is better than cure. Therefore, we believe that this study will give us an opportunity to increase the knowledge as well as to promote their attitude towards general prevention of COVID-19 other than vaccination among undergraduate students. Cross-sectional and convenience sampling method was used throughout the research whereby the responses of 342 undergraduate students with 109 Malays, 159 Chinese and 74 Indians from both medical and non-medical fields were collected through online platforms. The data was analysed by using Statistical Package for the Social Science (SPSS). Based on the data collected regarding comparison of the knowledge between medical and non-medical undergraduate students about general prevention of COVID-19 other than vaccination, questions 6 and 11 were statistically significant with P values less than 0.05 ( $P < 0.05$ ) while questions 1,2,3,4,5,7,8,9, and 10 showed statistically not significant as their P values were greater than 0.05 ( $P > 0.05$ ). In addition, for the comparison of attitudes between medical and non-medical towards general prevention of COVID-19 other than vaccination among undergraduate students, questions 1 to 20 were shown statistically not significant as their P values were greater than 0.05 ( $P > 0.05$ ). Therefore, in conclusion, our study revealed that there was no significant difference between knowledge and attitudes towards the general prevention of COVID-19 other than vaccination among medical and non-medical undergraduate students. The findings obtained from our study may be utilised as an extension for implementing awareness campaigns between the undergraduate students.

**Keywords:** Knowledge, Attitude, General Prevention of COVID-19 Other than Vaccination

## INTRODUCTION

The Coronavirus disease 2019 (COVID-19) arose in Wuhan, China, towards the end of 2019. From that point forward, it spread to 200 nations and has been declared a worldwide pandemic by the World Health Organisation (WHO). Until now, there have been more than 237 million positive COVID-19 cases recorded, with around 4.84 million deaths worldwide [1]. The infection can be spread in two ways, specifically by inhalation and contact with air droplets the brooding period for the illness shifts from 2 to 14 days [2]. Preventive measures, which incorporated the utilisation of face mask, hand cleanliness, social distancing at least 1 metre, legitimate ventilation in indoor conditions, monitoring, trace contacts, quarantine, segregation, and other infection prevention and control (IPC) measures, were important to avoid Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) transmission from one individual to another[2]. In addition, personal hygiene was essential in preventing COVID-19, such as bathing or washing hands after returning from public places, frequently sanitising high touched surfaces such as phones and doorknobs.

The use of face masks can assist with lessening infection transmission between people who were contaminated with the infection yet have not gained any indications, just as between people who do not have manifestations yet were having the disease [2]. During that time, public health announced that wearing masks were conflicting, clashing, and touched with disdainful remarks, which confused the public. At the same time, the government had implemented face masks as mandatory in public places or else the person would be penalised. After some while, the protocol has been updated in suggesting using a double face mask. The government also set the upper limit price for face masks so that everyone could afford a mask. Besides that, the government held a program that gave free masks to every family. Eventually, the suggestion evolved in lockstep with scientific understanding [2]. Kishore et al. suggested that the practice of social distancing measures to narrow the peak intensity of outbreaks, wherein the hauled up of the standards results in recovery of SARS-CoV-2 transmission [3].

The Malaysian Prime Minister implemented a development control request (MCO) on 18th March 2020 as a moderation work to diminish local area spread and the overburdening of the country's well-being framework. Malaysians were essentially permitted to take off from the house for crucial activities like buying food and searching for clinical treatment. In a way, the MCO restricted Malaysians from leaving the country, and foreigners' entry was not allowed. Insignificant sectors were requested to close, or licence agents were to work from home. Lockdown measures were seen as essential to trace the spread of the infection as fast as human-to-human transmission happened and with regards to the infection stayed obscure [4].

When the underlying MCO declaration was made, Malaysians responded in a frenzy and disarrayed manner. Besides alarm purchasing, individuals swarmed public transportation centres to return to their hometown, possibly expanding the danger of disease to different parts of the country. While this response to the MCO was not startling, it raised issues concerning the degree of comprehension and perspectives towards COVID-19 among Malaysians [4]. As a result, the government developed an application called 'MySejahtera' to track and trace the transmission of disease and get to know who might have been in close contact with the infected person in a better way.

The data, points of view and practises (KAP) towards COVID-19 expected an essential part in choosing an overall population's status to recognise direct change measures from prosperity trained professionals. KAP concentrated on giving design information to select the kind of mediation expected to change the contamination's misinterpretation. Assessing the KAP related to COVID-19 among the general populace would be valuable to give a superior arrangement to address vulnerable data about the affliction and the headway of preventive procedures and prosperity progression programs. Among the delineations acquired from the SARS, erupted is that data and points of view were connected with levels of free for all and feeling, which could furthermore befuddled measures to contain the spread of the affliction [4]. The review likewise gave an overall image of COVID-19 among Malaysians' counteraction rehearsed before the MCO. This can more readily set up the public authority to address future wellbeing emergencies, including irresistible sicknesses. The aftereffects of this review were critical to illuminate future endeavours zeroing in on cultural status to conform to pandemic control measures.

Transmission of the COVID-19 virus can occur in many ways, as the primary mode of transmission of this virus through exposure to respiratory droplets that carry the infectious agent from one to another, airborne transmission and fomite transmission from contamination of non-living things with SARS-CoV-2 [5-7]. Research said that poor knowledge and a negative attitude towards COVID-19 were causing the transmission of the infectious disease to spread quickly. The studies showed that young people that did not practice the preventive measure might be due to the low level of knowledge on this disease. Besides that, students needed more instructions and motivation from families and other authorities to handle this pandemic positively. Moreover, during the first wave in Malaysia, many elders were infected and died, leading to the misinterpretation of the disease and its preventive measures. Accordingly, sex and age, the negative attitudes caused the distraction about the disease, discernment the body's immunity to oppose the infection, absence of agreement towards the infection at home, obliviousness of realities towards the disease, absence of trust on early proof towards the disease, ways of life with discouragement, ease limitation of movement control, and carelessness toward rehearsing preventive measures [8].

The COVID-19 has become a significant threat to public health globally irrespective of race, economy and geographical location. The spread of the coronavirus worldwide has affected almost every country's economy and health system. Even if vaccines have started to be available in several countries, COVID-19 cannot be cured. Therefore, prevention and the control of COVID-19 has become essential in combating the coronavirus. To attain effective preventive and control measures of COVID-19, the knowledge and attitude towards the COVID-19 among the group who were at higher risk of getting infected have been improved [9].

A cross-sectional study was conducted in Tepi, Ethiopia, to investigate the knowledge, attitudes, and practises toward COVID-19 and associated factors among university students of Mizan Tepi University. A total of 402 respondents whose ages from 19 to 30 years old were selected randomly. The study depicted that 47% of the students had good knowledge of COVID-19. In contrast, students from health science were significantly associated with good knowledge. With the multivariate logistic regression analysis, health science students had almost three times more for the odds knowledge of COVID-19 than those non-health sciences students [10]. The study depicted that 54% of the students had a positive attitude towards COVID-19. Furthermore, in this research, it was found that 66.7% of the respondents agreed to visit the healthcare centre if they showed clinical manifestations of the COVID-19. With the multivariate logistic regression analysis, health science students had almost two times more odds of having a positive attitude towards COVID-19 than those non-health sciences students [10]. From the perspective of practice towards COVID-19, the study revealed that 42.8% of the students had good practice towards COVID-19. The study demonstrated that 288 students used to wash their hands often and 224 of them practised the proper method of coughing. Moreover, with the multivariate logistic regression analysis, students with good knowledge were twice as likely as students with poor knowledge to have a solid COVID-19 preventive strategy. In this study, factors identified for the poor practice were knowledge, attitude, and residence. Good knowledge is positively associated with practising COVID-19 prevention. A positive attitude is positively associated with the prevention of COVID-19 [10].

A cross-sectional study was performed in the United Arab Emirates to determine the knowledge, attitudes, and practises (KAP) towards COVID-19 among university students at the University of Sharjah (UOS). A total of 1012 respondents were involved in the study, where 481 were health-related (HR) majors students and 531 were non-health-related (NHR) majors students. The students' age group was 20-25 years old. With an overall knowledge score of 72.4%, students from HR majors were more knowledgeable with a 76% knowledge score than that of NHR majors students (69%) [11]. From an attitude perspective, NHR majors students had a slightly higher attitude score (72.19%) than HR majors (71.72%). However, the calculation of the attitude scores revealed that the mean score was 72%, with no significant differences between HR and NHR majors. From a practice perspective, HR majors students had a slightly higher practice score (86.04%) than NHR majors (85.25%). However, the practice calculation revealed that the mean score was 85.6%, with no significant differences between HR and NHR majors [11]. In this study, it was reassuring to see that the students had positive attitudes and low-risk behaviours when it comes to COVID-19 prevention. However, it was clear that HR students outperformed NHR students in all categories, particularly in the knowledge domain [11].

A cross-sectional study was performed in Nepal to investigate the knowledge and attitude on the prevention of COVID-19 among the community health workers working at health facilities during the COVID-19 situation. In this study, it was found that the majority of the respondents (63.2%) had a high level of knowledge about the prevention of the COVID-19. The availability of a network of information and advanced level of education of the population may be the reason for being extremely knowledgeable about the preventive measures. It was also found that the attitude of 65.9% of the respondents towards the prevention of COVID-19 was positive. In addition, the findings showed that the majority of the respondents, 70.7%, were well versed about the isolation period of the coronavirus disease [12]. Regarding the attitude of the respondents towards the COVID-19, during the pandemic, 56% of them felt that they would be infected with the virus. However, most of the respondents agreed that they should stay in isolation in case they got infected, which conveyed a positive attitude from their side. However, 8% of the respondents did not agree to be isolated, demonstrating poor knowledge about imperative preventive and isolation measures. Furthermore, 80.5 % of the respondents had a positive attitude towards the successful control of the COVID-19 [12]. Also, the study indicated that males had more knowledge and a positive attitude toward the prevention of COVID-19 ( $p < 0.002$ ) than females. This might be because, in Nepal, men are more exposed to various fields and orientation programs. In contrast, women have more household responsibilities, and they cannot contribute to training and seminars conducted. Regardless of some respondents having a low level of knowledge and attitude toward preventing COVID-19, the findings indicated that the respondents working in different health facilities had good knowledge and attitude towards preventing the coronavirus disease. Therefore, this study was imperative and helpful in preventing the pandemic situation from further deterioration [12].

A study was carried out among Chinese residents in Hubei, China, to investigate the theory of knowledge, attitude and practices (KAP) towards COVID-19 during the rapid rise period of the outbreak. In this study, it was found that the majority of the respondents of 96.45%, had not visited any crowded places and that 98.0% of them used to wear masks while leaving home. However, the findings also demonstrated that a minority of the respondents of 3.6%, had visited crowded places, and 2.0% had not worn face masks while going out [13]. The male gender, occupation of “students”, marital status of “others”, residing in other parts of China, and poor COVID-19 knowledge were associated with the risky behaviours of the respondents. Even though the respondents had a positive attitude towards the COVID-19 situation, most people took preventive measures towards coronavirus disease, such as not going out in crowded places and wearing masks. The implementation of strict preventive and control measures by local governments, such as inhibiting public gatherings, has resulted in a high level of knowledge concerning the infectivity of the virus among the residents. The respondents were more aware of the high communicability of the coronavirus between people via droplets through the respiratory system. As well as the application of these measures mentioned above has been the reason for following strict preventive practice among the residents [13]. The young age of the students in China was the ultimate reason for going out in crowded places. Besides, the non-Hubei residents believed that they had a lower risk of being infected with the coronavirus due to the less serious situation of the COVID-19 in this part of China as compared to the Hubei part. This has induced the residents not to wear face masks while going out in places [13].

Nonetheless, it is seen that not much research regarding the level of knowledge and the attitude towards the general prevention of COVID-19 other than vaccinations among the undergraduate students has been done in Malaysia. Therefore, we had chosen to conduct this research because we hoped to increase the knowledge and improved the attitude towards the general prevention of COVID-19 other than vaccinations among the undergraduate students in Malaysia, thus can help in overcoming this pandemic situation.

## MATERIALS AND METHODS

### Study area:

This study was conducted at colleges and universities in Malaysia. The ethical approval to perform this study was obtained by the ethical committee of SEGI University.

**Study population:**

The study population involved approximately 342 undergraduate students, consisting of 109 Malays, 159 Chinese, and 74 Indians from both medical and non-medical fields. There was a total of 138 medical undergraduate students and 204 non-medical undergraduate students.

**Sampling method:**

The convenience sampling method was applied throughout this cross-sectional study. This sampling method was being used to determine the knowledge and attitude of the undergraduate students towards the general prevention of COVID-19 other than vaccination. This method was easy to conduct, inexpensive and efficient. No specific procedure was required when disseminating the questionnaire to respondents [14].

**Sample size:**

The sample size of this study was calculated with the formula given by Daniel WW [15].

**Research instruments:**

In this study, an online questionnaire that was designed using google form was used as the research instrument. The questionnaire was circulated to the respondents via WhatsApp and Facebook. The questionnaire was conducted in the English language, and it consisted of three sections. The first section included 7 questions and was able to gather information on the respondents' demographic background such as age, gender, race, state, program, university and year. The second section was able to assess respondents' knowledge about the general prevention of COVID-19 other than vaccination. This part included 11 questions on COVID-19 pandemic outbreak such as mode of transmission, clinical symptoms, prevention and control. The third section consisted of 20 questions that were able to assess respondents' attitudes towards general prevention of COVID-19 other than vaccination [16]. For both the second and third parts, respondents were being evaluated using a five-point Likert scale and they are asked to state their level of agreement, from "strongly disagree," "disagree," "neither agree nor disagree", "agree," or "strongly agree." Before the respondents proceeded with the questionnaire, they had to give online informed consent. Furthermore, respondents were informed about the introduction and background of the study on the first page of the questionnaire. The information and opinions that the respondents provided had been kept anonymous and confidential [6].

**Data entry and analysis:**

The data collected through the online questionnaire was entered into Microsoft Excel. Data analysis was performed with the Statistical Package for the Social Science (SPSS) version 22 [6,17]. Moreover, the data was exported to SPSS version 22 software and analysed using the non-parametric test, chi-square test. After assessing the survey, the undergraduate students' degree of knowledge and attitude towards general prevention of COVID-19 other than vaccination were determined.

## RESULTS

**Sociodemographic characteristics of the respondents**

The questionnaire was filled out by 342 undergraduate students which consisted of 225 (65.8%) female respondents and 117(34.2 %) male respondents. As shown in table 1, out of the 342 respondents, 158 (46.2%) belonged to the age group of 18 to 21 years and 184 (53.8%) belonged to the age group of 22 to 25 years. Among these respondents, 109 (31.9%) were Malays, 159 (46.5%) were Chinese and 74 (21.6%) were Indians. Furthermore, 138 (40.4%) of the respondents were from medical undergraduate students whereas the other 204 (59.6%) respondents were from non-medical undergraduate students.

**Table 1: Sociodemographic profile**

Characteristics	Classification	n (%)
Gender	Female	225 (65.8%)
	Male	117(34.2%)
Age	18-21	158 (46.2%)
	22-25	184 (53.8%)
Races	Malay	109 (31.9%)
	Chinese	159 (46.5%)
	Indian	74 (21.6%)
Faculty	Medical	138 (40.4%)
	Non-medical	204 (59.6%)

**Knowledge towards general prevention of COVID-19 other than vaccination among medical and non-medical undergraduate students**

Table 2 displays the frequency and the percentage of respondents from medical and non-medical undergraduate students concerning the questions about the knowledge towards general prevention of COVID-19 other than vaccination. A total of 11 questions were used to determine the knowledge of the respondents. Furthermore, the frequency and the percentage of the races about the knowledge were also shown in table 2 along with the total percentage.

**Table 2: Questions related to knowledge of medical and non-medical undergraduate students on general prevention of COVID-19 other than vaccination**

Q.	Question	Options	Medical			N= 138 (%)	Non-medical			N= 204 (%)
			Chinese	Indian	Malay		Chinese	Indian	Malay	
1.	I am aware of COVID-19 pandemic outbreak.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (1.0%)	0 (0.0%)	2 (1.0%)
		Neither agree nor	1 (0.7%)	1 (0.7%)	2 (2.4%)	4 (3.8%)	2 (1.0%)	3 (1.5%)	1 (0.5%)	6 (3.0%)

		disagree								
		Agree	19 (13.8%)	10 (7.2%)	7 (5.1%)	36 (26.1%)	23 (11.2%)	9 (4.4%)	6 (2.9%)	38 (18.6%)
		Strongly agree	44 (31.9%)	28 (20.3%)	26 (18.8%)	98 (71.0%)	70 (34.3%)	21 (10.3%)	67 (32.8%)	150 (77.4%)
2.	COVID -19 virus spreads via respiratory droplets of the infected person through the air.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	0 (0.0%)	1 (0.7%)	1 (0.7%)	2 (1.4%)	0 (0.0%)	1 (0.5%)	0 (0.0%)	1 (0.5%)
		Neither agree nor disagree	4 (2.9%)	1 (0.7%)	1 (0.7%)	6 (4.3%)	1 (0.5%)	4 (2.0%)	3 (1.5%)	8 (4.0%)
		Agree	20 (14.5%)	13 (9.4%)	13 (9.4%)	46 (33.3%)	34 (16.7%)	14 (6.9%)	12 (5.9%)	60 (29.5%)
		Strongly agree	40 (29.0%)	24 (17.5%)	20 (14.5%)	84 (61.0%)	60 (24.9%)	16 (7.8%)	59 (28.9%)	135 (66.1%)
3.	Signs and symptoms of COVID-19 usually appear within 2 to 14 days.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	1 (0.7%)	0 (0.0%)	0 (0.0%)	1 (0.7%)	4 (2.0%)	1 (0.5%)	0 (0.0%)	5 (2.5%)
		Neither agree nor disagree	4 (2.9%)	3 (2.2%)	5 (3.6%)	12 (8.7%)	5 (2.5%)	2 (1.0%)	4 (2.0%)	11 (5.5%)
		Agree	29 (21.0%)	11 (8.0%)	11 (8.0%)	51 (37.0%)	31 (15.2%)	14 (6.9%)	19 (9.3%)	64 (31.4%)
		Strongly agree	30 (29.7%)	25 (18.1%)	19 (13.8%)	74 (61.6%)	55 (27.0%)	18 (8.8%)	51 (25.0%)	124 (60.8%)
4.	The main clinical symptoms of COVID-19 infection are fever, cough, fatigue and loss of taste and smell (ageusia and anosmia).	Strongly disagree	0 (0.0%)	0 (0.0%)	1 (0.7%)	1 (0.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	1 (0.7%)	0 (0.0%)	2 (1.4%)	3 (2.1%)	0 (0.0%)	1 (0.5%)	1 (0.5%)	2 (1.0%)
		Neither agree nor disagree	3 (2.2%)	1 (0.7%)	1 (0.7%)	5 (3.6%)	4 (2.0%)	6 (2.9%)	1 (0.0%)	11 (5.4%)
		Agree	23	10	10	43	26	8	11	45

			(16.7%)	(7.2%)	(7.2%)	(31.1%)	(12.7%)	(2.9%)	(5.4%)	(22.0%)
		Strongly agree	37 (26.8%)	28 (20.3%)	21 (15.2%)	86 (62.3%)	65 (31.9%)	20 (9.8%)	61 (29.9%)	146 (71.6%)
5.	An asymptomatic infected individual does not transmit the virus to others.	Strongly disagree	20 (14.5%)	11 (8.0%)	6 (4.3%)	37 (26.8%)	18 (8.8%)	2 (1.0%)	11 (5.4%)	31 (15.2%)
		Disagree	10 (7.2%)	7 (5.1%)	9 (6.5%)	26 (18.8%)	15 (7.4%)	11 (5.4%)	6 (2.9%)	32 (15.7%)
		Neither agree nor disagree	15 (10.9%)	5 (3.6%)	9 (6.5%)	29 (21.0%)	28 (13.7%)	7 (3.4%)	15 (7.4%)	50 (24.5%)
		Agree	7 (5.1%)	6 (4.3%)	6 (4.3%)	19 (13.7%)	16 (7.8%)	8 (3.9%)	15 (7.4%)	39 (19.1%)
		Strongly agree	12 (8.7%)	10 (7.2%)	5 (3.6%)	27 (19.5%)	18 (8.8%)	7 (3.4%)	27 (12.3%)	52 (25.4%)
6.	Wearing face masks when out of the house is essential in preventing COVID-19 infection.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.5%)	1 (0.5%)	2 (1.0%)
		Neither agree nor disagree	0 (0.0%)	0 (0.0%)	1 (0.7%)	1 (0.7%)	2 (1.0%)	3 (1.5%)	4 (2.0%)	9 (4.5%)
		Agree	20 (14.5%)	9 (6.5%)	12 (8.7%)	41 (29.7%)	19 (9.3%)	10 (4.9%)	13 (6.4%)	42 (20.6%)
		Strongly agree	44 (31.9%)	30 (21.7%)	22 (15.9%)	96 (69.5%)	74 (36.3%)	21 (10.3%)	56 (27.5%)	151 (74.1%)
7.	The practice of frequent handwashing with soap and water for at least 20 seconds helps prevent the COVID-19 infection.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	1 (0.7%)	0 (0.0%)	0 (0.0%)	1 (0.7%)	1 (0.5%)	1 (0.5%)	0 (0.0%)	2 (1.0%)
		Neither agree nor disagree	6 (4.3%)	3 (2.2%)	1 (0.7%)	10 (7.2%)	6 (2.9%)	4 (2.0%)	0 (0.0%)	10 (4.9%)
		Agree	23 (16.7%)	13 (9.4%)	17 (12.3%)	53 (38.4%)	32 (15.7%)	13 (6.4%)	20 (9.8%)	65 (31.9%)
		Strongly agree	34 (24.6%)	23 (16.7%)	17 (12.3%)	74 (53.6%)	56 (27.5%)	17 (8.3%)	54 (26.5%)	127 (62.3%)

8.	The practice of frequent hand sanitising with an alcohol-based hand sanitizer with at least 60% alcohol helps prevention of the COVID-19 infection.	Strongly disagree	0 (0.0%)	0 (0.0%)	1 (0.7%)	1 (0.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	1 (0.7%)	0 (0.0%)	0 (0.0%)	1 (0.7%)	3 (1.5%)	1 (0.5%)	2 (1.0%)	6 (3.0%)
		Neither agree nor disagree	7 (5.1%)	3 (2.2%)	2 (1.4%)	12 (8.7%)	8 (3.9%)	6 (2.9%)	4 (2.0%)	18 (8.8%)
		Agree	21 (15.2%)	15 (10.9%)	16 (11.6%)	52 (37.7%)	33 (16.2%)	12 (5.9%)	23 (11.3%)	68 (33.4%)
		Strongly agree	35 (25.4%)	21 (15.2%)	16 (11.6%)	72 (52.2%)	51 (25.0%)	16 (7.8%)	45 (22.1%)	112 (54.9%)
9.	Individuals should avoid going to crowded and poorly ventilated places like movie theatres, restaurants and public transportation, thus reducing the risk of being infected with COVID-19.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.5%)	2 (1.0%)	0 (0.0%)	3 (1.5%)
		Neither agree nor disagree	3 (2.2%)	0 (0.0%)	2 (1.4%)	5 (3.6%)	5 (2.5%)	4 (2.0%)	0 (0.0%)	9 (4.5%)
		Agree	21 (15.2%)	9 (6.5%)	13 (9.4%)	43 (31.1%)	27 (13.2%)	8 (3.9%)	14 (6.9%)	49 (24.0%)
		Strongly agree	40 (29.0%)	30 (21.7%)	20 (14.5%)	100 (65.2%)	62 (30.4%)	21 (10.3%)	60 (29.4%)	143 (70.1%)
10.	To prevent the COVID-19 infection, frequent disinfecting of high touch surfaces daily, including tablets, phones, handles, and toilets, is necessary.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	0 (0.0%)	1 (0.7%)	0 (0.0%)	1 (0.7%)	2 (1.0%)	1 (0.5%)	0 (0.0%)	3 (1.5%)
		Neither agree nor disagree	4 (2.9%)	3 (2.2%)	1 (0.7%)	8 (5.8%)	4 (2.0%)	3 (1.5%)	1 (0.5%)	9 (4.5%)
		Agree	20 (14.5%)	9 (6.5%)	15 (10.9%)	44 (31.9%)	31 (15.2%)	14 (6.9%)	18 (8.8%)	63 (30.9%)
		Strongly agree	40 (29.0%)	26 (18.8%)	19 (13.8%)	85 (61.6%)	58 (28.4%)	17 (8.3%)	54 (26.5%)	129 (63.2%)
11.	The practice of social	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

distancing at least 1 metre helps limit the spread of COVID-19.	Disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (1.0%)	2 (1.0%)	1 (0.5%)	5 (2.5%)
	Neither agree nor disagree	6 (4.3%)	0 (0.0%)	2 (1.4%)	8 (5.7%)	5 (2.5%)	3 (1.5%)	1 (0.9%)	9 (4.5%)
	Agree	19 (13.8%)	12 (8.7%)	18 (13.0%)	49 (35.5%)	25 (12.3%)	9 (4.4%)	15 (7.4%)	49 (24.1%)
	Strongly agree	39 (28.3%)	27 (19.6%)	15 (10.9%)	81 (58.8%)	63 (30.9%)	21 (10.3%)	57 (27.9%)	141 (69.1%)

### Attitude towards general prevention of COVID-19 other than vaccination among medical and non-medical undergraduate students

Table 3 shows the frequency and the percentage of respondents from medical and non-medical undergraduate students regarding the question about the attitude of undergraduate students on general prevention of COVID-19 other than vaccination. It showed the results of assessed participants' attitudes based on 20 questions. Each question showed the answers with percentage and the frequencies.

**Table 3: Questions related to attitude of medical and non-medical undergraduate students on general prevention of COVID-19 other than vaccination**

Q.	Question	Options	Medical			N=138 (%)	Non-medical			N=204 (%)
			Chinese	Indian	Malay		Chinese	Indian	Malay	
1.	I think I have a chance to get infected with COVID-19.	Strongly disagree	3 (2.2%)	3 (2.2%)	0 (0.0%)	6 (4.4%)	4 (2.0%)	2 (1.0%)	2 (1.0%)	8 (4.0%)
			Disagree	5 (3.6%)	8 (5.8%)	5 (3.6%)	18 (13.0%)	15 (7.4%)	5 (2.5%)	6 (2.9%)
		Neither agree nor disagree	20 (14.5%)	10 (7.2%)	8 (5.8%)	38 (27.5%)	20 (9.8%)	11 (5.4%)	16 (7.8%)	47 (23.0%)
		Agree	18 (13.0%)	11 (8.0%)	14 (10.1%)	43 (31.1%)	36 (17.6%)	8 (3.9%)	28 (13.7%)	72 (35.2%)
		Strongly agree	18 (13.0%)	7 (5.1%)	8 (5.8%)	33 (23.9%)	20 (9.8%)	9 (4.4%)	22 (10.8%)	51 (25.0%)
2.	I will keep my distance from others (at least 1	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	1 (0.7%)	1 (0.7%)	1 (0.7%)	3 (2.1%)	2 (1.0%)	0 (0.0%)	0 (0.0%)	2 (1.0%)

	meter) to prevent COVID-19 infection. .	Neither agree nor disagree	5 (3.6%)	2 (1.4%)	1 (0.7%)	7 (4.3%)	3 (1.5%)	3 (1.5%)	1 (0.5%)	8 (4.0%)
		Agree	23 (16.7%)	15 (10.9%)	15 (10.9%)	46 (33.3%)	23 (11.3%)	14 (6.9%)	19 (9.3%)	60 (29.5%)
		Strongly agree	35 (25.4%)	21 (15.2%)	18 (13.0%)	84 (61.0%)	67 (32.8%)	18 (8.8%)	54 (26.5%)	135 (66.1%)
3.	To protect me from COVID-19 infection, I will wear a face mask when leaving home.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.5%)	0 (0.0%)	0 (0.0%)	1 (0.5%)
		Disagree	1 (0.7%)	0 (0.0%)	0 (0.0%)	1 (0.7%)	2 (1.0%)	0 (0.0%)	0 (0.0%)	2 (1.0%)
		Neither agree nor disagree	1 (0.7%)	0 (0.0%)	1 (0.7%)	2 (1.4%)	1 (0.5%)	3 (1.5%)	1 (0.5%)	5 (2.5%)
		Agree	10 (7.2%)	7 (5.1%)	9 (6.5%)	26 (18.8%)	13 (6.4%)	10 (4.9%)	11 (5.4%)	34 (16.7%)
		Strongly agree	52 (37.7%)	32 (23.2%)	25 (18.1%)	109 (79.0%)	78 (38.2%)	22 (10.8%)	62 (30.4%)	162 (79.4%)
4.	I will practice handwashing with soap and water as a preventive measure against COVID-19 infection.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.5%)	0 (0.0%)	0 (0.0%)	1 (0.5%)
		Neither agree nor disagree	2 (1.4%)	0 (0.0%)	2 (1.4%)	4 (2.8%)	2 (1.0%)	2 (1.0%)	3 (1.5%)	7 (3.5%)
		Agree	16 (11.6%)	14 (10.1%)	13 (9.4%)	43 (31.1%)	23 (11.3%)	11 (5.4%)	16 (7.8%)	50 (24.5%)
		Strongly agree	46 (33.3%)	25 (18.1%)	20 (14.5%)	91 (70.4%)	69 (33.8%)	22 (10.8%)	55 (27.0%)	146 (71.6%)
5.	I can prevent the spread of COVID-19 infections by frequently sanitising hands with an alcohol-	Strongly disagree	0 (0.0%)	0 (0.0%)	1 (0.7%)	1 (0.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	0 (0.0%)	1 (0.7%)	2 (1.4%)	3 (2.1%)	1 (0.5%)	0 (0.0%)	3 (1.5%)	4 (2.0%)
		Neither	5	2	2	9	4	6	2	12

	based hand sanitizer with at least 60% alcohol.	agree nor disagree	(3.6%)	(1.4%)	(1.4%)	(6.4%)	(2.0%)	(2.9%)	(1.0%)	(5.9%)
		Agree	25 (18.1%)	12 (8.7%)	12 (8.7%)	49 (35.5%)	33 (16.2%)	12 (5.9%)	21 (10.3%)	66 (32.4%)
		Strongly agree	34 (24.6%)	24 (17.4%)	18 (13.0%)	76 (55.0%)	57 (27.9%)	17 (8.3%)	48 (23.5%)	122 (59.7%)
6.	I will avoid touching my face with unwashed hands to help in preventing COVID-19 infection.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	0 (0.0%)	1 (0.7%)	0 (0.0%)	1 (0.7%)	0 (0.0%)	0 (0.0%)	1 (0.5%)	1 (0.5%)
		Neither agree nor disagree	6 (4.3%)	2 (1.4%)	1 (0.7%)	9 (6.4%)	4 (2.0%)	3 (1.5%)	2 (1.0%)	9 (4.5%)
		Agree	22 (15.9%)	10 (7.2%)	12 (8.7%)	44 (31.8%)	30 (14.7%)	13 (6.4%)	18 (8.8%)	61 (29.9%)
		Strongly agree	36 (26.1%)	26 (18.8%)	22 (15.9%)	84 (60.8%)	61 (29.9%)	19 (9.3%)	53 (26.0%)	133 (65.2%)
7.	I will avoid shaking hands with others to help in preventing COVID-19 infection.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	0 (0.0%)	1 (0.7%)	0 (0.0%)	1 (0.7%)	1 (0.5%)	0 (0.0%)	0 (0.0%)	1 (0.5%)
		Neither agree nor disagree	8 (5.8%)	1 (0.7%)	1 (0.7%)	10 (7.9%)	4 (2.0%)	0 (0.0%)	2 (1.0%)	6 (3.0%)
		Agree	19 (13.8%)	9 (6.5%)	11 (8.0%)	39 (28.3%)	25 (12.3%)	11 (5.4%)	15 (7.4%)	51 (25.1%)
		Strongly agree	37 (26.8%)	28 (20.3%)	23 (16.7%)	88 (63.8%)	65 (31.9%)	24 (11.8%)	57 (27.9%)	146 (71.6%)
8.	I will change my clothes after going to a crowded or public place to help in preventing COVID-19 infection.	Strongly disagree	0 (0.0%)	0 (0.0%)	1 (0.7%)	1 (0.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	0 (0.0%)	2 (1.0%)	1 (0.7%)	3 (2.1%)	0 (0.0%)	0 (0.0%)	1 (0.5%)	1 (0.5%)
		Neither agree nor disagree	6 (4.3%)	1 (0.7%)	2 (1.4%)	9 (6.4%)	4 (2.0%)	2 (1.0%)	3 (1.5%)	9 (4.5%)
		Agree	16 (11.6%)	8 (5.8%)	9 (6.5%)	33 (23.9%)	19 (9.3%)	13 (6.4%)	21 (10.3%)	53 (26.0%)

		Strongly agree	42 (30.4%)	28 (20.3%)	23 (16.7%)	93 (67.4%)	72 (35.3%)	20 (9.8%)	49 (24.0%)	141 (69.1%)	
9.	I will cover my mouth or nose during a cough or sneeze with the elbow or a tissue to help in preventing COVID-19 infection.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.5%)	1 (0.5%)	
		Disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.5%)	1 (0.5%)
		Neither agree nor disagree	2 (1.4%)	1 (0.7%)	0 (0.0%)	3 (2.1%)	3 (1.5%)	2 (1.0%)	1 (0.5%)	6 (3.0%)	
		Agree	19 (13.8%)	8 (5.8%)	11 (8.0%)	38 (27.6%)	22 (10.8%)	7 (3.4%)	17 (8.3%)	46 (22.5%)	
		Strongly agree	43 (31.2%)	30 (21.7%)	24 (17.4%)	97 (70.3%)	70 (34.3%)	26 (12.7%)	54 (26.5%)	150 (73.5%)	
10	I will avoid close contact with sick people to prevent being infected by the COVID-19 virus.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
		Disagree	1 (0.7%)	0 (0.0%)	0 (0.0%)	1 (0.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
		Neither agree nor disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.5%)	1 (0.5%)	2 (1.0%)	
		Agree	19 (13.8%)	9 (6.5%)	10 (7.2%)	38 (27.5%)	20 (9.8%)	11 (5.4%)	11 (5.4%)	42 (20.6%)	
		Strongly agree	44 (31.9%)	30 (21.7%)	25 (18.1%)	99 (71.7%)	75 (36.8%)	23 (11.3%)	62 (30.4%)	160 (78.5%)	
11	One should isolate oneself if one gets sick to avoid the spread of COVID-19.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
		Disagree	0 (0.0%)	1 (0.7%)	1 (0.7%)	2 (1.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
		Neither agree nor disagree	2 (1.4%)	0 (0.0%)	0 (0.0%)	2 (1.4%)	2 (1.0%)	2 (1.0%)	0 (0.0%)	4 (2.0%)	
		Agree	15 (10.9%)	10 (7.2%)	8 (5.8%)	3 (23.9%)	26 (12.7%)	9 (4.4%)	16 (7.8%)	51 (24.9%)	
		Strongly agree	46 (33.3%)	28 (20.3%)	27 (19.6%)	101 (73.2%)	67 (32.8%)	24 (11.8%)	58 (28.4%)	149 (73.0%)	
12		Strongly	0	0	0	0	2	0	1	3	

.	If I get infected with the COVID-19 virus, I would stay at the COVID-19 treatment centre.	disagree	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(1.0%)	(0.0%)	(0.5%)	(1.5%)
		Disagree	3 (2.2%)	0 (0.0%)	1 (0.7%)	4 (2.9%)	5 (2.5%)	0 (0.0%)	1 (0.5%)	6 (3.0%)
		Neither agree nor disagree	9 (6.5%)	3 (2.2%)	3 (2.2%)	15 (10.9%)	16 (7.8%)	7 (3.4%)	2 (1.0%)	25 (12.0%)
		Agree	19 (13.8%)	9 (6.5%)	12 (8.7%)	40 (28.2%)	20 (9.8%)	10 (4.9%)	19 (9.3%)	49 (24.0%)
		Strongly agree	33 (23.9%)	27 (19.6%)	19 (13.8%)	79 (57.3%)	52 (25.5%)	18 (8.8%)	51 (25.0%)	121 (59.3%)
13	Generally, People who have contact with someone infected with the COVID-19 should be adequately isolated with an observation period of 14 days.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	1 (0.7%)	0 (0.0%)	0 (0.0%)	1 (0.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Neither agree nor disagree	4 (2.9%)	0 (0.0%)	2 (1.4%)	6 (4.3%)	2 (1.0%)	2 (1.0%)	2 (1.0%)	6 (3.0%)
		Agree	15 (10.9%)	8 (5.8%)	12 (8.7%)	35 (25.4%)	22 (10.8%)	9 (4.4%)	13 (6.4%)	44 (21.6%)
		Strongly agree	44 (31.9%)	31 (22.5%)	21 (15.2%)	96 (69.6%)	71 (34.8%)	25 (11.8%)	59 (28.9%)	155 (75.5%)
14	I will stay at home to minimise the risk of infection.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	2 (1.4%)	0 (0.0%)	0 (0.0%)	2 (1.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Neither agree nor disagree	4 (2.9%)	1 (0.7%)	1 (0.7%)	6 (4.3%)	8 (3.9%)	1 (0.5%)	1 (0.5%)	10 (4.9%)
		Agree	20 (14.5%)	13 (9.4%)	12 (8.7%)	45 (32.6%)	29 (14.2%)	15 (7.4%)	15 (7.4%)	59 (29.0%)
		Strongly agree	38 (27.5%)	25 (18.1%)	22 (15.9%)	85 (61.5%)	58 (28.4%)	19 (9.3%)	58 (28.4%)	135 (66.1%)
15	I will maintain a healthy lifestyle as a	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	1 (0.7%)	0 (0.0%)	0 (0.0%)	1 (0.7%)	2 (1.0%)	0 (0.0%)	0 (0.0%)	2 (1.0%)

	preventive step against COVID-19 infection.	Neither agree nor disagree	5 (3.6%)	1 (0.7%)	4 (2.9%)	10 (7.2%)	7 (3.4%)	3 (1.5%)	4 (2.0%)	14 (6.9%)
		Agree	26 (18.8%)	12 (8.7%)	10 (7.2%)	48 (34.7%)	37 (17.2%)	13 (6.4%)	15 (7.4%)	65 (31.0%)
		Strongly agree	32 (23.2%)	26 (18.8%)	21 (15.2%)	79 (57.2%)	51 (25.0%)	19 (9.3%)	55 (27.0%)	125 (61.3%)
16	I will clean and disinfect surfaces regularly touched, such as door handles and phone screens, at high frequency to help in preventing COVID-19 infection.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	5 (3.6%)	0 (0.0%)	0 (0.0%)	5 (3.6%)	1 (0.5%)	0 (0.0%)	1 (0.5%)	2 (1.0%)
		Neither agree nor disagree	4 (2.9%)	2 (1.4%)	6 (4.3%)	12 (8.6%)	9 (4.4%)	5 (2.5%)	5 (2.5%)	19 (9.4%)
		Agree	21 (15.2%)	11 (8.0%)	12 (8.7%)	44 (31.9%)	28 (13.7%)	9 (4.4%)	15 (7.4%)	52 (25.5%)
		Strongly agree	34 (24.6%)	26 (18.8%)	17 (12.3%)	77 (55.7%)	57 (27.9%)	21 (10.3%)	53 (26.0%)	129 (64.2%)
17	I will wash my hands and will take a bath after going out to a public place to help in preventing COVID-19 infection.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.5%)	1 (0.5%)
		Neither agree nor disagree	4 (2.9%)	0 (0.0%)	2 (1.4%)	6 (8.6%)	5 (2.5%)	3 (1.5%)	5 (2.5%)	13 (6.5%)
		Agree	19 (13.8%)	8 (5.8%)	15 (10.9%)	42 (30.5%)	23 (11.3%)	10 (4.9%)	14 (6.9%)	34 (23.1%)
		Strongly agree	41 (29.7%)	31 (22.5%)	18 (13.0%)	90 (64.2%)	67 (32.8%)	22 (10.8%)	54 (26.5%)	143 (70.1%)
18	I will clean my house more frequently as compared to before COVID-19.	Strongly disagree	1 (0.7%)	0 (0.0%)	0 (0.0%)	1 (0.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	6 (4.3%)	0 (0.0%)	1 (0.7%)	7 (5.0%)	4 (2.0%)	1 (0.5%)	1 (0.5%)	6 (3.0%)
		Neither agree nor disagree	9 (3.5%)	8 (5.8%)	8 (5.8%)	25 (15.1%)	10 (10.9%)	1 (1.5%)	8 (3.9%)	19 (16.3%)

		Agree	18 (13.0%)	12 (8.7%)	11 (8.0%)	41 (29.7%)	39 (19.1%)	15 (7.4%)	15 (7.4%)	69 (33.9%)
		Strongly agree	30 (21.7%)	19 (13.8%)	15 (10.0%)	64 (45.5%)	41 (20.1%)	16 (7.8%)	50 (24.5%)	107 (52.4%)
19	I am willing to learn more about prevention steps against COVID-19.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.5%)	0 (0.0%)	1 (0.5%)
		Neither agree nor disagree	7 (5.1%)	1 (0.7%)	1 (0.7%)	9 (6.5%)	4 (2.0%)	3 (1.5%)	3 (1.5%)	10 (5.0%)
		Agree	17 (12.3%)	12 (8.7%)	15 (10.9%)	33 (31.9%)	27 (13.2%)	9 (4.4%)	16 (7.8%)	52 (25.4%)
		Strongly agree	40 (29.0%)	26 (18.8%)	19 (13.8%)	85 (61.6%)	64 (31.4%)	22 (10.8%)	55 (27.0%)	141 (69.2%)
20	I am ready for solid support and active compliance in the prevention and control for COVID-19.	Strongly disagree	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Disagree	1 (0.7%)	0 (0.0%)	0 (0.0%)	1 (0.7%)	1 (0.5%)	0 (0.0%)	0 (0.0%)	1 (0.5%)
		Neither agree nor disagree	4 (2.9%)	1 (0.7%)	0 (0.0%)	5 (3.6%)	5 (2.5%)	3 (1.5%)	4 (2.0%)	12 (6.0%)
		Agree	22 (15.9%)	12 (8.7%)	15 (10.9%)	49 (35.5%)	28 (13.7%)	7 (3.4%)	17 (8.3%)	52 (25.4%)
		Strongly agree	37 (26.8%)	26 (18.8%)	20 (14.5%)	83 (60.1%)	61 (29.9%)	25 (12.3%)	53 (26.0%)	139 (68.2%)

#### Comparison of knowledge towards general prevention of COVID-19 other than vaccination between medical and non-medical undergraduate students

Table 4 shows that questions 6 and 11 were statistically significant (P-value was less than <math><0.05</math>) while questions 1,2,3,4,5,7,8,9, and 10 showed statistically not significant (P-value was more than >0.05).

**Table 4: Comparison of knowledge between medical and non-medical undergraduate students towards general prevention of COVID-19 other than vaccination**

Questions	Options	Medical	Non-medical	Significance (Chi-square)	
				Value	P value

1.	Strongly disagree	0 (0.0%)	0 (0.0%)	3.926	0.270
	Disagree	0 (0.0%)	2 (1.0%)		
	Neither agree nor disagree	4 (2.8%)	6 (3.0%)		
	Agree	36 (26.1%)	38 (18.6%)		
	Strongly agree	98 (71.0%)	158 (77.4%)		
2.	Strongly disagree	0 (0.0%)	0 (0.0%)	1.670	0.644
	Disagree	2 (1.4%)	1 (0.5%)		
	Neither agree nor disagree	6 (4.3%)	8 (3.5%)		
	Agree	46 (33.3%)	60 (29.5%)		
	Strongly agree	84 (60.9%)	135 (66.1%)		
3.	Strongly disagree	0 (0.0%)	0 (0.0%)	4.227	0.238
	Disagree	1 (0.7%)	5 (2.5%)		
	Neither agree nor disagree	12 (8.7%)	11 (5.5%)		
	Agree	51 (37.0%)	64 (31.4%)		
	Strongly agree	74 (53.6%)	124 (60.8%)		
4.	Strongly disagree	1 (0.7%)	0 (0.0%)	6.519	0.164
	Disagree	3 (2.1%)	2 (1.0%)		
	Neither agree nor disagree	5 (3.6%)	11 (5.4%)		
	Agree	43 (31.1%)	45 (22.0%)		
	Strongly agree	86 (62.3%)	146 (71.6%)		
5.	Strongly disagree	37 (26.8%)	31 (15.2%)	9.144	0.058
	Disagree	26 (18.8%)	32 (15.7%)		
	Neither agree nor disagree	29 (21.0%)	50 (24.5%)		

	Agree	19 (13.7%)	39 (19.1%)		
	Strongly agree	27 (19.5%)	52 (25.4%)		
6.	Strongly disagree	0 (0.0%)	0 (0.0%)	8.229	0.042
	Disagree	0 (0.0%)	2 (1.0%)		
	Neither agree nor disagree	1 (0.7%)	9 (4.5%)		
	Agree	41 (29.7%)	42 (20.6%)		
	Strongly agree	96 (69.5%)	151 (74.1%)		
7.	Strongly disagree	0 (0.0%)	0 (0.0%)	2.900	0.407
	Disagree	1 (0.7%)	2 (1.0%)		
	Neither agree nor disagree	10 (7.2%)	10 (4.9%)		
	Agree	53 (38.4%)	65 (31.9%)		
	Strongly agree	74 (53.6%)	127 (62.3%)		
8.	Strongly disagree	1 (0.7%)	0 (0.0%)	4.013	0.404
	Disagree	1 (0.7%)	6 (3.0%)		
	Neither agree nor disagree	12 (8.7%)	18 (8.8%)		
	Agree	52 (37.7%)	68 (33.4%)		
	Strongly agree	72 (52.2%)	112 (54.9%)		
9.	Strongly disagree	0 (0.0%)	0 (0.0%)	4.002	0.261
	Disagree	0 (0.0%)	3 (3.6%)		
	Neither agree nor disagree	5 (3.6%)	9 (4.5%)		
	Agree	43 (31.1%)	49 (24.0%)		

	Strongly agree	90 (65.2%)	143 (70.1%)		
10.	Strongly disagree	0 (0.0%)	0 (0.0%)	0.771	0.856
	Disagree	1 (0.7%)	3 (1.5%)		
	Neither agree nor disagree	8 (5.8%)	9 (4.5%)		
	Agree	44 (30.9%)	63 (18.4%)		
	Strongly agree	85 (61.6%)	129 (63.2%)		
11.	Strongly disagree	0 (0.0%)	0 (0.0%)	8.868	0.031
	Disagree	0 (0.0%)	5 (2.5%)		
	Neither agree nor disagree	8 (5.7%)	9 (8.2%)		
	Agree	49 (35.5%)	49 (24.1%)		
	Strongly agree	81 (58.8%)	141 (69.1%)		

**Comparison of attitude towards general prevention of COVID-19 other than vaccination between medical and non-medical undergraduate students**

Table 5 shows that questions 1 to 20 were statistically not significant (P-value was more than >0.05).

**Table 5: Comparison of attitude between medical and non-medical undergraduate students towards general prevention of COVID-19 other than vaccination.**

Questions	Options	Medical	Non-medical	Significance (Chi-square)	
				Value	P value
1.	Strongly disagree	6 (4.4%)	8 (4.0%)	1.170	0.883
	Disagree	18 (13.0%)	26 (12.8%)		
	Neither agree nor disagree	38 (27.5%)	47 (23.0%)		
	Agree	43 (31.1%)	72 (35.2%)		
	Strongly agree	33 (23.9%)	51 (25.0%)		

2.	Strongly disagree	0 (0.0%)	0 (0.0%)	7.736	0.052
	Disagree	3 (2.1%)	1 (0.5%)		
	Neither agree nor disagree	8 (5.7%)	7 (3.5%)		
	Agree	53 (38.5%)	56 (27.5%)		
	Strongly agree	74 (53.6%)	139 (68.1%)		
3.	Strongly disagree	0 (0.0%)	1 (0.5%)	1.365	0.850
	Disagree	1 (0.7%)	2 (1.0%)		
	Neither agree nor disagree	2 (1.4%)	5 (2.5%)		
	Agree	26 (18.8%)	34 (16.7%)		
	Strongly agree	109 (79.0%)	162 (79.4%)		
4.	Strongly disagree	0 (0.0%)	0 (0.0%)	2.462	0.482
	Disagree	0 (0.0%)	1 (0.5%)		
	Neither agree nor disagree	4 (2.8%)	7 (3.5%)		
	Agree	43 (31.1 %)	50 (24.5%)		
	Strongly agree	91 (65.9%)	146 (71.6%)		
5.	Strongly disagree	1 (0.7%)	0 (0.0 %)	2.113	0.715
	Disagree	3 (2.1%)	4 (2.0%)		
	Neither agree nor disagree	9 (6.4%)	12 (5.9%)		
	Agree	49 (35.5%)	66 (32.4%)		
	Strongly agree	76 (55.0%)	122 (59.7%)		
6.	Strongly disagree	0 (0.0%)	0 (0.0%)	1.122	0.772

	Disagree	1 (0.7%)	1 (0.5%)		
	Neither agree nor disagree	9 (6.4%)	9 (4.5%)		
	Agree	44 (31.8%)	61 (29.9%)		
	Strongly agree	84 (60.8%)	133 (65.2%)		
7.	Strongly disagree	0 (0.0%)	0 (0.0%)	4.403	0.221
	Disagree	1 (0.7%)	1 (0.5%)		
	Neither agree nor disagree	10 (7.2 %)	6 (3.0 %)		
	Agree	39 (28.3 %)	51 (25.1%)		
	Strongly agree	88 (63.8%)	146 (71.6%)		
8.	Strongly disagree	0 (0.0%)	0 (0.0%)	2.867	0.413
	Disagree	3 (2.1%)	9 (6.4%)		
	Neither agree nor disagree	1 (0.5%)	33 (23.9%)		
	Agree	9 (4.5%)	53 (26.0%)		
	Strongly agree	93 (67.4%)	141 (69.1%)		
9.	Strongly disagree	0 (0.0%)	1 (0.5%)	2.490	0.646
	Disagree	0 (0.0%)	1 (0.5%)		
	Neither agree nor disagree	3 (2.1%)	6 (3.0%)		
	Agree	38 (27.6%)	46 (22.5 %)		
	Strongly agree	97 (70.3%)	150 (73.5%)		
10.	Strongly disagree	0 (0.0%)	0 (0.0%)	5.017	0.171
	Disagree	1 (0.7%)	0 (0.0%)		

	Neither agree nor disagree	0 (0.0%)	2 (1.0%)		
	Agree	38 (27.5%)	42 (20.6%)		
	Strongly agree	99 (71.7%)	160 (78.4%)		
11.	Strongly disagree	0 (0.0%)	0 (0.0%)	3.119	0.374
	Disagree	2 (1.4%)	0 (0.0%)		
	Neither agree nor disagree	2 (1.4%)	4 (2.0%)		
	Agree	33 (23.9%)	51 (24.9%)		
	Strongly agree	101 (73.2%)	149 (73.0%)		
12.	Strongly disagree	0 (0.0%)	3 (1.5%)	3.005	0.557
	Disagree	4 (2.9%)	6 (2.5%)		
	Neither agree nor disagree	15 (10.9%)	25 (12.2%)		
	Agree	40 (29.0%)	49 (24.0%)		
	Strongly agree	79 (57.3%)	121 (59.3%)		
13.	Strongly disagree	0 (0.0%)	0 (0.0%)	2.851	0.415
	Disagree	1 (0.7%)	0 (0.0%)		
	Neither agree nor disagree	6 (4.3%)	6 (3.0 %)		
	Agree	35 (25.4%)	44 (21.6%)		
	Strongly agree	96 (69.6%)	154 (75.5%)		
14.	Strongly disagree	0 (0.0%)	0 (0.0%)	3.647	0.302
	Disagree	2 (1.4 %)	0 (0.0%)		
	Neither agree nor disagree	6 (4.3%)	10 (4.9 %)		

	Agree	45 (32.6%)	59 (29.0%)		
	Strongly agree	85 (61.5%)	135 (66.1%)		
15.	Strongly disagree	0 (0.0%)	0 (0.0%)	0.688	0.876
	Disagree	1 (0.7%)	2 (1.0%)		
	Neither agree nor disagree	10 (7.2%)	14 (6.9%)		
	Agree	48 (34.7%)	63 (31.0%)		
	Strongly agree	79 (57.2%)	125 (61.3%)		
16.	Strongly disagree	0 (0.0%)	0 (0.0%)	5.002	0.172
	Disagree	5 (3.6%)	2 (1.0%)		
	Neither agree nor disagree	12 (8.6%)	19 (9.4 %)		
	Agree	44 (31.9%)	52 (25.5 %)		
	Strongly agree	77 (55.7%)	131 (64.2%)		
17.	Strongly disagree	0 (0.0%)	0 (0.0%)	3.302	0.347
	Disagree	0 (0.0%)	1 (0.5%)		
	Neither agree nor disagree	6 (4.3%)	13 (6.5%)		
	Agree	42 (30.5%)	47 (23.1%)		
	Strongly agree	90 (65.2%)	143 (70.1%)		
18.	Strongly disagree	1 (0.7%)	1 (0.5%)	5.846	0.211
	Disagree	7 (5.0%)	6 (3.0%)		
	Neither agree nor disagree	25 (18.1%)	21 (10.3%)		
	Agree	41 (29.7%)	69 (33.9%)		

	Strongly agree	64 (46.4%)	107 (52.4 %)		
19.	Strongly disagree	0 (0.0%)	0 (0.0%)	2.969	0.396
	Disagree	0 (0.0%)	1 (0.5%)		
	Neither agree nor disagree	9 (6.5%)	10 (5.0%)		
	Agree	44 (31.9%)	52 (25.4%)		
	Strongly agree	85 (61.6%)	141 (69.2%)		
20.	Strongly disagree	0 (0.0%)	0 (0.0%)	4.529	0.210
	Disagree	1 (0.7%)	1 (0.5%)		
	Neither agree nor disagree	5 (3.6%)	12 (6.0 %)		
	Agree	49 (35.5 %)	52 (25.4 %)		
	Strongly agree	83 (60.1%)	139 (68.2%)		

## DISCUSSION

Table 1 showed the sociodemographic profile of the respondents. The questionnaire was answered by 342 students which consisted of 225 female respondents (65.8%) and 117 male (34.2 %) respondents. Out of the 342 respondents, 158 were (46.2%) belonged to the age group of 18 to 21 years and 184 were (53.8%) belonged to the age group of 22 to 25 years. Among these respondents, 109 respondents which was 31.9% were Malays, 159 respondents which was 46.5% were Chinese and 74 respondents which was 21.6% were Indians. Furthermore, 138 respondents which was 40.4% of the respondents were medical undergraduate students whereas the other 204 respondents which was about 59.6% respondents belonged to non-medical undergraduate students.

Table 2 displayed the frequency and the percentage of respondents from medical and non-medical undergraduate students concerning the questions about the knowledge towards general prevention of COVID-19 other than vaccination. A total of 11 questions were used to determine the knowledge of the respondents. Furthermore, the frequency and the percentage of the races such as Malay, Chinese and Indian about the knowledge were also shown in table 2 along with the total percentage.

Table 3 showed the frequency and the percentage of respondents from medical and non-medical undergraduate students regarding the question about the attitude of undergraduate students on general prevention of COVID-19 other than vaccination. It showed the results of assessed respondents' attitudes based on 20 questions. Each question showed the answers with percentage and the frequencies.

Table 4 showed the comparison of the knowledge between medical and non-medical undergraduate students about general prevention of COVID-19 other than vaccination. From table 4, questions 6 and 11 showed statistically significant as P values were less than 0.05 ( $P < 0.05$ ) while other questions except question 6 and 11 showed

statistically not significant as their P values were greater than 0.05 ( $P > 0.05$ ). Therefore, this suggests that medical undergraduate students and non-medical undergraduate students have no significant difference in their knowledge level towards general prevention of COVID-19 other than vaccination. Our results were compared to a cross-sectional study done in Mizan Tepi University which aims to assess knowledge, attitude, and practice of the students towards COVID-19. Their findings were different from our research. According to their findings, medical students were correlated with good knowledge towards COVID-19. The odds of a high level of COVID-19 related knowledge of medical students were almost 3 times more than non-medical students with an adjusted odd ratio (AOR), 2.983 [10]. A similar cross-sectional study done in United Arab Emirates was having similar findings as the study done in Mizan Tepi University. According to their findings, students from health-related majors (knowledge score of 76%) were more knowledgeable towards COVID-19 than the students from non-health related majors (knowledge score of 69%) [11]. These findings were different from our findings.

Table 5 showed the comparison of attitude between medical and non-medical undergraduate students about general prevention of COVID-19 other than vaccination. Based on table 5, the results showed that questions 1 to 20 were statistically not significant with the P value of more than 0.05 ( $P > 0.05$ ). Thus, our study revealed that there was no significant difference in the attitude between the medical and non-medical undergraduate students about general prevention of COVID-19 other than vaccination. Our results were compared to a cross-sectional study which was comparing the attitude and knowledge of medical and non-medical students toward the 2019 novel coronavirus. The study was conducted in 20 colleges and universities in China. A total of 588 responses from the respondents were collected which included 190 males (32.3%) and 398 females (67.7%). Moreover, 66.0% of the respondents were medical students which comprised 118 (30.4 %) males and 270 (69.6%) were females whereas the other 34.0% were non-medical students where the proportion of females were greater than males with a percentage of 64. The results of their research for comparing the attitude between medical and non-medical undergraduate students also showed that there was no significant difference in the questions between the two groups similar to our research [18].

## CONCLUSION

Our data regarding comparison of the knowledge between medical and non-medical undergraduate students towards the general prevention of COVID-19 other than vaccination showed that questions 6 and 11 were statistically significant with the P values less than 0.05 ( $P < 0.05$ ) while questions 1,2,3,4,5,7,8,9, and 10 showed statistically not significant as their P values were greater than 0.05 ( $P > 0.05$ ). Hence, there was no significant difference in knowledge towards general prevention of COVID-19 other than vaccination between the medical and non-medical undergraduate students.

Our data regarding the comparison of attitude between medical and non-medical undergraduate students towards general prevention of COVID-19 other than vaccination showed that questions 1 to 20 were statistically not significant and the P values were greater than 0.05 ( $P > 0.05$ ). Therefore, there were no significant differences between the two groups.

In conclusion, our study revealed that there was no significant difference between knowledge and attitudes towards the general prevention of COVID-19 other than vaccination among medical and non-medical undergraduate students. The findings obtained from our study may be utilised as an extension for implementing awareness campaigns between the undergraduate students.

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## CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest.

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