



## Knowledge, attitude and practice (KAP) towards COVID-19 prevention among Malaysian adults during the period of Movement Control Order (MCO): An online cross-sectional survey

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### ABSTRACT

Malaysian government started the Movement Control Order (MCO) on 18th March 2020, as one of the initiatives to prevent the more massive outbreak of COVID-19. Recent statistics showed a rapid rise in the numbers of positive COVID-19 patients. However, the statistics on COVID-19 patients being discharged showed that the higher authority was very committed in managing COVID-19 crisis. This online study was conducted among 1,543 Malaysian adults using a validated questionnaire to explore more findings on the Malaysian's Knowledge, Attitude and Practice (KAP) level towards COVID-19 prevention during the MCO period. Descriptive study and binary logistic regression were performed using SPSS version 22. This study showed that the majority of respondents have good KAP level regarding COVID-19 prevention. WhatsApp and Telegram were the primary sources of information used by the respondents. Education level was the main predictor for knowledge (OR: 2.083, CI: 1.605-2.702), attitude (OR: 1.854, CI: 1.42-2.42) and practice (OR: 1.745, CI: 1.326-2.096) regarding COVID-19 prevention ( $p < 0.001$ ). Knowledge (OR: 1.636, CI: 1.302-2.054) and practice (OR: 2.328, CI: 1.858-2.916) were predictors of attitude regarding COVID-19 prevention ( $p < 0.001$ ). In conclusion, total adherence to the Movement Control Order (MCO) along with public health interventions focusing on behavioral change may play vital roles in breaking the chain of infection.



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### INTRODUCTION

The World Health Organization (WHO) has declared that COVID-19 caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV2) as a pandemic on 11th March 2020 (WHO, 2020). After its first emergence detected in Wuhan, China, COVID-19 has affected more than 200 countries around the globe (CDC, 2020a). Since this new disease involved an unprecedented situation, the Malaysian government has taken all the necessary actions to overcome this pandemic challenge (Sarif and Yahya, 2020).

The Malaysian government started the Movement Control Order (MCO) on 18th March 2020, as one of an initiative to prevent the more massive outbreak of COVID-19. Currently, there are 28 hospitals allocated for COVID-19 patients under the Ministry of Health (MOH) Malaysia to manage the outbreak. Statistics data endorsed by MOH showed a rapid rise in the numbers of positive COVID-19 patients. However, the statistics on COVID-19 patients being discharged showed that the higher authority was very committed in managing COVID-19 crisis (Sarif and Yahya, 2020). When this article was written, the MCO period has been extended to 28th April 2020 (Prime Minister's Office of Malaysia, 2020). The extension of the MCO period was supposed to allow more time to the healthcare personnel battling the COVID-19 outbreak as well to avoid another increase of cases if the MCO is released too soon (Bernama, 2020).

The period of MCO is a very challenging episode as it may cause considerable impacts on Malaysian society. Up until now, the fourth week of the MCO period, there were limited studies conducted to see the effect of MCO to the Malaysian community. Therefore, the Department of Statistics Malaysia (DOSM) is currently doing an online survey to see the impact of COVID-19 to individuals and businesses in the country (Atira, 2020). Literature reviews showed that there were very limited studies in the area of public health to determine the knowledge, attitude and behavioural practice on COVID-19 prevention among Malaysian during MCO. Thus, we decided to conduct this study so that we can manage and explore more findings on the Malaysian's KAP level during this tough period so that further insights and strategies can be implemented to mitigate the spread of COVID-19 in the community.

## MATERIALS AND METHODS

### Study design and methodology

A cross-sectional study was conducted among 1,543 Malaysian adults during the MCO period from 15th to 30th March 2020. The self-constructed questionnaire was developed by a group of experts in the field of Public Health Medicine, Clinical Microbiology and Internal Medicine. The reliability test was done to 100 respondents, and the Cronbach Alpha value obtained for the KAP section ranged from 0.5 to 0.55. (Hinton *et al.*, 2014) stated that Cronbach Alpha value of 0.5 to 0.7 showed moderate reliability. The respondents for this study were Malaysian adult above 18 years old and recruited through messaging services (Whatsapp and Telegram). The validated online questionnaire was distributed via link

to the Google form to be answered by the respondents.

### Instrumentation

The questionnaire used in this study consists of five sections. Section A consists of socio-demographic data questions. The geographical location of the respondents were divided into several regions. The Federal Territory of Kuala Lumpur, state of Selangor, Negeri Sembilan and Melaka consisted of the central region while the other states were classified as others. Section B consists of six questions regarding general knowledge regarding COVID-19 prevention with three given answers (Yes, No, Don't know). One mark was given for every correct answer while 0 marks given for incorrect or unsure answer. The total knowledge score was six in which those who obtained marks above the mean of the overall score were categorized as having good knowledge. In contrast, those who obtained marks equal or below mean value were categorized as having poor knowledge. Section C consists of multiple-choice answers regarding different sources of information regarding COVID-19. Section D comprises of five questions on attitude regarding COVID-19 prevention. The total attitude score was 25 in which those who obtained marks above the mean of the overall score were categorized as having a good attitude while those who obtained marks equal or below mean value were categorized as poor attitude. For positive statement, five marks were given to those answering, 'Strongly Agree', four marks for 'Agree', three marks for 'Neutral', two marks for 'Disagree' and one mark for 'Strongly Disagree'. Reverse scoring was given to negative statement. The overall score was 25. Respondents who obtained marks above the mean of the overall score were categorized as having a good attitude. Lastly, section E consists of five questions on the practice regarding COVID-19 prevention with four different answers (Every time, Frequent, Sometimes, Never). Three marks were given to those who answer every time, two marks for frequent, one mark for sometimes and 0 marks for never. This scoring applied to the positive statement only, while reverse scoring was given to negative statement. The total score was 15. Respondents who obtained marks above the mean of the overall score were categorized as having good practice while those who obtained marks equal or below mean value were categorized as poor practice.

### Data Analysis

Descriptive, Chi-Square and binary logistic regression tests were conducted using IBM Statistics version 22 for data analysis.

**Table 1: Background of the respondents (N=1,543)**

Background	Frequency (n)	Percentage (%)
<b>Age group</b>		
18-35	769	49.8
36-55	641	41.5
more than 55	133	8.6
<b>Gender</b>		
Male	567	36.7
Female	976	63.3
<b>Education level</b>		
Tertiary	1,184	76.7
Secondary	351	22.7
Primary or none	8	0.6
<b>Location</b>		
Central region	1,012	65.6
Others	531	34.4
<b>History of inter-state movement after MCO</b>		
Yes	197	12.8
No	1,346	87.2
<b>Person under investigation (PUI)</b>		
Yes	17	1.1
No	1526	98.9
<b>Positive COVID-19</b>		
Yes	2	0.1
No	1,541	99.9

**RESULTS**

**Background of the respondents**

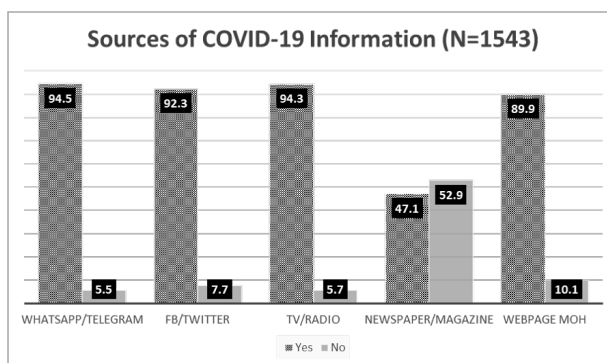
Table 1 showed, nearly half of the respondents were from age 18-35 years old and most were females with a majority of the respondents completed tertiary education. The Table 1 below also showed the related history of the respondents on MCO and Covid-19.

**Sources of COVID-19 Information**

Based on Figure 1, the most three favourable sources used by the respondents to obtain information related to COVID-19 were smartphone applications through WhatsApp and Telegram, followed by electronic media such as television and radio and social networking media such as Facebook and Twitter. A high number of respondents also obtained information from the official webpage of Ministry of Health (MOH) Malaysia.

**Level of knowledge, attitude and practice regarding COVID-19 prevention**

The mean (SD) knowledge score towards COVID-19 was 4.71 (1.04), while for attitude was 23.57 (1.84) and practice was 12.53 (2.19). The minimum



**Figure 1: Sources of COVID-19 Information**

score obtained by the respondents for knowledge was zero, and the maximum score was six. For attitude, the minimum score obtained was 15, and the maximum score was 25. Lastly, for practice, the minimum score obtained was 4, and the maximum score was 15.

Figure 2 showed percentage of distribution of respondents according to their level of knowledge.

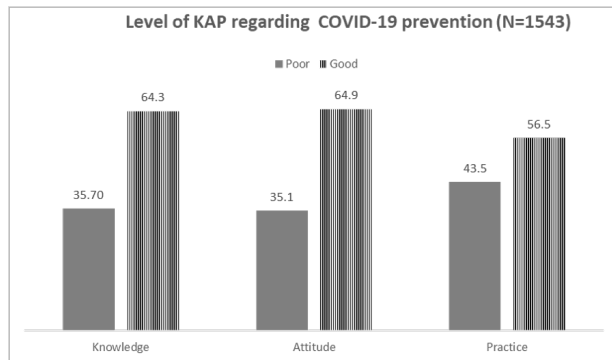
**General knowledge regarding COVID-19 prevention**

Table 2 showed the respondents general knowledge

**Table 2: General knowledge regarding COVID-19 prevention (N=1,543)**

General knowledge on COVID-19	Yes (n, %)	No (n, %)	Don't know (n,%)	Correct (n,%)	Incorrect (n,%)
COVID-19 has high transmission rate*	1,487 (96.4)	17 (1.1)	39 (2.5)	1,487 (96.4)	56 (3.6)
A person infected with COVID-19 does not necessarily show symptoms such as fever, cough or difficulty breathing*	1,117 (72.4)	299 (19.4)	127 (8.2)	1,117 (72.4)	426 (21.6)
Influenza vaccination may prevent COVID-19	121 (7.8)	814 (52.8)	608 (39.4)	121 (7.8)	1,422 (92.2)
World Health Organization has declared COVID-19 as a pandemic*	1,411 (91.4)	6 (0.4)	126 (8.2)	1,141 (91.4)	132 (8.6)
COVID-19 virus that sticks to surfaces made of plastic has a life span of up to a few days*	962 (62.3)	286 (18.5)	295 (19.2)	962 (62.3)	581 (81.5)
Movement control order may prevent the spread of the COVID-19 outbreak*	1,486 (96.3)	19 (1.2)	38 (2.5)	1,486 (96.3)	51 (3.7)
Total score					4.71 (1.04)

\* indicates yes is the correct answer



**Figure 2: Level of KAP regarding COVID-19 prevention**

on COVID-19.

**Attitude regarding COVID-19 prevention**

Table 3 showed the respondents attitude and their willingness to undergo COVID-19 screening, staying at home as to break the chain of infection as suggested by the government, telling the truth regarding contact with COVID-19 patients and carrying hand sanitiser when going out.

**Practice regarding COVID-19 prevention**

The practices to prevent COVID-19 such as maintaining social distance, practicing hand washing

using soap, using hand sanitizer and wearing face mask were shown in Table 4.

**Factors influencing general knowledge regarding COVID-19 prevention**

Binary logistic regression analysis in Table 5 showed that tertiary education, location, history of interstate movement and attitude were found to be associated with knowledge regarding COVID-19 prevention. A group with tertiary education compared to the group with no tertiary education is two times more likely to have good knowledge (OR:2.083, CI:1.605-2.702). The group staying in central region location compared to staying in another location is 0.6 times more likely to have good knowledge (OR: 0.582, CI: 0.456-0.741). A group with no interstate movement history compared to the group with interstate movement history during movement control order (MCO) is 1.7 times more likely to have a good knowledge (OR: 1.701, CI: 1.233-2.345). Lastly, the group with good attitude compared to the group with low attitude is 1.6 times more likely to have good knowledge (OR:1.64, CI: 1.307-2.060).

**Factors influencing attitude regarding COVID-19 prevention**

Binary logistic regression analysis in Table 6 showed that tertiary education, history of interstate move-

**Table 3: Attitude regarding COVID-19 prevention (N=1,543)**

Attitude	Strongly not agree (n, %)	Not agree (n, %)	Neutral (n, %)	Agree (n, %)	Strongly agree (n, %)	Mean (SD)
If you are asked to undergo COVID-19 screening because a colleague working in the same workplace has been positively diagnosed with COVID-19, you will go straight to the nearby hospital/health clinic.	3 (0.2)	12(0.8)	18 (1.2)	232 (15.0)	1,278 (82.8)	4.79 (0.51)
Mr A was so tired of staying home after a few days. He planned to visit his parents in his hometown even during the period of movement control. Do you agree with Mr A plan? *	1,144 (74.1)	351(22.7)	39 (2.5)	5 (0.3)	4 (0.3)	4.70 (0.56)
Your best friend who has close contact with COVID-19 patients has a fever and goes to the clinic for treatment. He deliberately did not tell the truth to the health care staff who were worried about being quarantined. Do you agree with your friend's action?*	1,279 (82.9)	189(12.2)	8 (0.5)	18 (1.2)	49 (3.2)	4.70 (0.82)
You have been invited to a party of more than 50 guests during this COVID-19 outbreak. You declined the invitation to the event.	32 (2.1)	18 (1.2)	16 (1.0)	202 (13.1)	1,275 (82.6)	4.73 (0.73)
You are comfortable carrying hand sanitizer every time you go out of the house.	3 (0.2)	9 (0.6)	89 (5.8)	338 (21.9)	1,104 (71.5)	4.64 (0.64)
Total score						23.57 (1.84)

\* refer to negative statement

ment, knowledge and practice were found to be associated with knowledge regarding COVID-19 prevention. The group with tertiary education compared to the group with no tertiary education is 1.9 times more likely to have a good attitude (OR:1.854, CI:1.420-2.421). The group with no interstate movement history compared to the group with interstate movement history during movement control order (MCO) is 1.5 times more likely to have a good attitude (OR: 1.498, CI: 1.085-2.070). The group with

good knowledge compared to the group with low knowledge is 1.6 times more likely to have a good attitude (OR:1.636, CI: 1.302-2.054). Lastly, the group with good practice compared to the group with low practice is 2.3 times more likely to have a good attitude (OR:2.328, CI: 1.858-2.916).

**Factors influencing practice regarding COVID-19 prevention**

Binary logistic regression analysis in Table 7 showed



**Table 4: Practice regarding COVID-19 prevention (N=1,543)**

Practice	Every time (n, %)	Frequent (n, %)	Sometimes (n, %)	Never (n, %)	Mean (SD)
When leaving home due to urgent matters, you will maintain a safe social distance.	1,194 (77.4)	278 (18.0)	65 (4.2)	6 (0.4)	2.72 (0.55)
When returning home from a public place, you will wash your hands using soap and water	1166 (75.6)	306 (19.8)	68 (4.4)	3 (0.2)	2.70 (0.55)
When returning home from a public place, you will wash your hands using hand sanitizer	783 (50.7)	396 (25.7)	287 (18.6)	77 (5.0)	2.37 (0.78)
When you need to leave home due to urgent matters, you wear a face mask even without experiencing respiratory symptoms such as cough	839 (54.4)	278 (18.0)	310 (20.1)	116 (7.5)	2.19 (1.0)
When you meet family members during an outbreak, you shake hands with them*	37 (2.4)	78 (5.1)	442 (28.6)	986 (63.9)	2.50 (0.7)
Total score					12.53 (2.19)

\* refer to negative statement

that age, tertiary education, location and attitude were found to be associated with practice regarding COVID-19 prevention. Younger age group compared to the older age group is 1.9 times more likely to have a good practice (OR:1.874, CI:1.495-2.349). Middle age group compared to the older age group is two times more likely to have a good practice (OR: 2.035, CI: 1.368-3.026). The group with tertiary education compared to the group with non-tertiary education is 0.7 times less likely to have a good practice (OR:1.745, CI:1.326-2.296). The group staying in central region location compared to staying in another location is 1.5 times more likely to have a good practice (OR:1.546, CI: 1.236-1.935). Lastly, the group with a good attitude compared to the group with a low attitude is 2.3 times more likely to have a good practice (OR:2.329, CI: 1.860-2.916).

## DISCUSSION

The main findings in this study revealed that smartphone messaging applications; WhatsApp or Telegram is the preferred primary sources of information on COVID-19. Compared to a survey by Hanafiah and Wan (2020), the usage of social media as the primary source of information regarding COVID-19 was lower, which was 62.4%. Based on Boulos *et al.* (2016), the usage of smartphones is effective in improving social learning and commu-

nication in the area of health and healthcare. The usage of messaging applications such as WhatsApp and social media like Facebook may enhance the dissemination of health messages to a broader population. Different types of social media can be good communication channels in risk and crisis management. However, there were few challenges need to be considered, especially on the transparency and reliability of the information (Wendling *et al.*, 2013). Further investigation should be done to explore more on the potential roles of social media, especially during a public health event (Shah and Kaushik, 2015). In Malaysia, the effort of the government to control the spread of fake news regarding COVID-19 was shown through the launching of official Telegram channel authorized by Crisis Preparedness and Response Centre, Ministry of Health Malaysia and Malaysia Communications and Multimedia Commission (MCMC) (Yeoh, 2020; Hanafiah and Wan, 2020).

Another important finding in this study is a discovery that approximately 65% of the respondents were found to have good knowledge and attitude regarding COVID-19 prevention. However, the level of practice regarding COVID-19 prevention was slightly lower, which was about 57%. Compared to a study done in Hubei, China by Zhong *et al.* (2020), majority of the respondents had good knowledge, optimistic attitude and good practice

**Table 5: Factors influencing general knowledge regarding COVID-19 prevention (N=1,543)**

Variables	Knowledge		Adjusted analysis			
	Poor (n,%)	Good (n,%)	OR	95% CI		p-value
<b>Gender</b>			1.137	0.907	1.424	0.266
Male	224 (39.5)	343 (60.5)				
Female	327 (33.5)	649 (66.5)				
<b>Age</b>						0.101
18-35	284 (36.9)	485 (63.1)	0.931	0.623	1.391	0.727
36-55	218 (34.0)	423 (66.0)	1.203	0.802	1.804	0.371
>55	49 (36.8)	84 (63.2)				
<b>Received tertiary education</b>			2.083	1.605	2.702	p<0.001**
No*	182 (52.7)	177 (49.3)				
Yes	369 (31.2)	815 (68.8)				
<b>Location</b>			0.582	0.456	0.741	p<0.001**
Central region (Klang Valley)	404 (39.9)	608 (60.1)				
Others*	147 (27.7)	384 (72.3)				
<b>Interstate movement</b>			1.701	1.233	2.345	0.001***
No	463 (34.4)	883 (65.6)				
Yes*	88 (44.7)	109 (55.3)				
<b>Person Under Investigation (PUI)</b>			1.919	0.598	6.157	0.273
No	547 (35.8)	979 (64.2)				
Yes	4 (23.5)	13 (76.5)				
<b>Positive COVID-19</b>			1.100	0.053	22.734	0.951
No	550 (35.7)	991 (64.3)				
Yes	1 (50.0)	1 (50.0)				
<b>Attitude</b>			1.640	1.307	2.060	p<0.001**
Poor*	244 (45.0)	298 (55.0)				
Good	307 (30.7)	694 (69.3)				
<b>Practice</b>			1.157	0.922	1.451	0.209
Poor	252 (37.6)	419 (62.4)				
Good	299 (34.3)	573 (65.7)				

\* refer to the variables which have been chosen as reference variables during the analysis; \*\* significant at p<0.001, \*\*\* significant at p<0.05

towards COVID-19 infection. In term of general knowledge regarding COVID-19 prevention, nearly all the respondents knew that the Movement Order Control (MCO) might prevent the spread of COVID-19 and majority of them aware that COVID-19 is a pandemic disease and has high transmission rate. Form this study, we found that about 12.7% of them still travelling across the state in the country even after the government announced MCO. Therefore, we suggest that the government should emphasize and always remind the public to restrict their movement or else they might spread the disease to other localities. A recent study in China found that travel restriction was useful in reducing the early phase of

COVID-19 outbreak ([Kraemer et al., 2020](#)).

From our study, half of the respondents were aware of the fact that influenza vaccine cannot prevent COVID-19. At the moment, there is no vaccination available to prevent COVID-10 ([Cascella et al., 2020](#)). However, the numbers of research that focus on the design and development of vaccines for this disease are actively increasing ([Liu et al., 2020](#)). The findings in this study also found that only around 60% of the respondents knew that COVID-19 virus could survive on a plastic surface for a few days. Therefore, more information on the survival and mode of transmission of this virus on effective disinfection method should be stressed to the community, espe-

**Table 6: Factors influencing attitude regarding COVID-19 prevention (N=1,543)**

Variables	Attitude		Adjusted analysis			
	Poor (n,%)	Good (n,%)	OR	95% CI	p-value	
<b>Gender</b>			1.229	0.980	1.541	0.075
Male	225 (39.7)	342 (60.3)				
Female	317 (32.5)	659 (67.5)				
<b>Age</b>						0.521
18-35	265 (34.5)	504 (65.5)	1.157	0.771	1.736	0.482
36-55	229 (35.7)	412 (64.3)	1.017	0.677	1.527	0.937
>55	48 (36.1)	85 (63.9)				
<b>Received tertiary education</b>			1.854	1.420	2.421	p<0.001**
No*	166 (46.2)	193 (53.8)				
Yes	376 (31.8)	808 (68.2)				
<b>Location</b>			0.979	0.771	1.243	0.861
Central region (Klang Valley)	359 (35.5)	653 (64.5)				
Others	183 (34.5)	348 (65.5)				
<b>Interstate movement</b>			1.498	1.085	2.070	0.014***
No	455 (33.8)	891 (66.2)				
Yes*	87 (44.2)	110 (55.8)				
<b>Person Under Investigation (PUI)</b>			0.901	0.320	2.535	0.843
No	536 (35.1)	990 (64.9)				
Yes	6 (35.3)	11(64.7)				
<b>Positive COVID-19</b>			0.000	0.000	-	0.999
No	540 (35.0)	1001 (65.0)				
Yes	2 (100.0)	0 (0)				
<b>Knowledge</b>			1.636	1.302	2.054	p<0.001**
Poor*	244 (44.3)	307 (55.7)				
Good	298 (30.0)	694 (70.0)				
<b>Practice</b>						
Poor*	301 (44.9)	370 (55.1)	2.328	1.858	2.916	p<0.001**
Good	241 (27.6)	631 (70.0)				

\* refer to the variables which have been chosen as reference variables during the analysis; \*\* significant at p<0.001; \*\*\* significant at p<0.05

cially on the safety after touching 'public surface'. Binary logistic results found that tertiary education, staying in central region area, do not having a history of the interstate movement and a good attitude were found to be associated with high knowledge regarding COVID-19 prevention. A similar study done by [Zhong et al. \(2020\)](#) found that knowledge scores were significantly different in diverse groups such as genders, age-groups, marital status, education level, and residence place.

In term of the attitude regarding COVID-19 prevention, it was found that most of the respondents gave a positive response based on the scenario given. The positive response is evidenced by the mean score for each question in the attitude section ranging from

4.64 to 4.79. This finding was also supported by a study conducted by [Hanafiah and Wan \(2020\)](#), which found that the level of perception of COVID-19 among Malaysians was high. However, more education needs to be done as they were respondents who were still having uncomfortable feelings when carrying hand sanitizer when going out and negative attitude of keeping important information regarding one's health status to the health professionals.

In Malaysia, there were several incidents happened when patients were not honest on their health status and their risk of COVID-19 exposure such as a history of close contact that may lead to a more substantial risk of COVID-19 transmission ([Desiree, 2020](#)). Binary logistic results found that tertiary



**Table 7: Factors influencing practice regarding COVID-19 prevention (N=1,543)**

Variables	Practice		Adjusted analysis			
	Poor (n,%)	Good (n,%)	OR	95% CI		p-value
<b>Gender</b>			1.066	0.854	1.332	0.572
Male	246 (43.4)	321 (56.6)				
Female	425 (43.5)	551 (56.5)				
<b>Age</b>						p<0.001**
18-35	400 (52.0)	369 (48.0)	1.874	1.495	2.349	p<0.001
36-55	225 (35.1)	416 (64.9)	2.035	1.368	3.026	p<0.001
>55*	46 (34.6)	87 (65.4)				
<b>Received tertiary education</b>			0.745	0.000	0.573	p<0.001**
No*	118 (32.9)	241 (67.1)				
Yes	553 (46.7)	631 (53.3)				
<b>Location</b>			1.546	1.236	1.935	p<0.001**
Central region (Klang Valley)	398 (39.3)	614 (60.7)				
Others*	273 (51.4)	258 (48.6)				
<b>Interstate movement</b>			1.013	0.734	1.398	0.937
No	572 (42.5)	774 (57.5)				
Yes	99 (50.3)	98 (49.7)				
<b>Person Under Investigation (PUI)</b>			1.215	0.437	3.376	0.709
No	664 (43.5)	862 (56.5)				
Yes	7 (41.2)	10 (58.8)				
<b>Positive COVID-19</b>			0.000	0.000	-	0.999
No	669 (43.4)	872 (56.6)				
Yes	2 (100.0)	0 (0)				
<b>Knowledge</b>			1.154	0.920	1.447	0.215
Poor	252 (45.7)	299 (54.3)				
Good	419 (42.2)	573 (57.8)				
<b>Attitude</b>						
Poor*	301 (55.5)	241 (44.5)	2.329	1.860	2.916	p<0.001**
Good	370 (37.0)	631 (63.0)				

\* refer to the variables which have been chosen as reference variables during the analysis; \*\* significant at p<0.001; \*\*\* significant at p<0.05

education respondents did not have a history of interstate movement. [Latiff et al. \(2012\)](#) emphasized on the vital roles of knowledge, attitudes and practices triad to be applied in all aspects of life in human societies. Thus, more research is recommended to be conducted to understand the Malaysian's attitude towards COVID-19, especially in the perspective of qualitative study because the measurement and definition of attitude are very broad and abstract. Lastly, for the practice regarding COVID-19 prevention, it was identified that majority of the respon-

dents were having good practice (answered either every time or frequent) especially on the practice of social distancing and washing hands using water and soap. This result supports the findings by [Hanafiah and Wan \(2020\)](#), where the majority of Malaysians were aware of the importance of hand-washing, hygiene and avoiding crowded places to reduce the risk of COVID-19 infection. However, the practice of washing hands using sanitizer and wearing masks even without symptoms either every time or based on a frequent basis were still low.

The usage of hand sanitizer might be low compared to the usage of soap and water may because the encouragement by the government to always wash hands using water and soap. Even though washing hands with soap and water is considered as the most effective method to reduce the risk of COVID-19, the usage of hand sanitizer should not be overlooked especially during the time where washing hand using soap and water is impossible (Gold *et al.*, 2020). In addition, the usage of face mask even without symptoms among the respondents in this study was not persistent might due to the different recommendations for the usage of face mask in a community setting by various authorities (Feng *et al.*, 2020). However, the latest statement by the executive director of the WHO's health emergencies programme quantified that the use of masks at the community level may beneficial to reduce the spread of the contagious virus to others (Arumugam, 2020). CDC (2020b) recommended the use of cloth face mask in public settings where other social distancing measures are hard to maintain. A randomized control trial study by Aiello *et al.* (2012) found that the practice of wearing face masks combined with proper hand hygiene may mitigate the rate of influenza in community settings. Another study in Japan also supported that the compliance towards the practice of wearing a face mask was associated with other personal hygiene practices such as washing hands, avoiding crowds and close contact with a sick person (Wada *et al.*, 2012). Interestingly, binary logistic results found that the group with no tertiary education, younger age group (18-35 years old), no history of the interstate movement and having good attitude were found to be associated with high practice regarding COVID-19 prevention. Even though those who received tertiary education are more likely to have good knowledge and attitude, it seemed that they still did not completely practice good hygiene behavior towards COVID-19 prevention. As mentioned in the earlier discussion regarding different recommendations of the usage of face masks, those with a higher education group might tend to follow the previous advice of not wearing masks for those without any symptoms. Moreover, the high socialization of those in a higher education group may increase their tendency to meet and greet people, thus allowing them to do the 'formal handshaking' practice. A study conducted in China during the pandemic of H1N1 found an interesting result in which a large proportion of the respondents overlooked on the handshaking transmission route (Lin *et al.*, 2011). A study by Zhong *et al.* (2020) found that higher age and male gender were considered as the potential group

to perform dangerous practices towards COVID-19.

In this study context, it is also crucial to target the older group for promoting good hygiene practice, especially during their routine follow up in the clinic since this group are a vulnerable group and having a high risk of getting COVID-19. Research has shown that older group may pose health risks due to social isolation and a lack of social networks (Cornwell and Waite, 2009; Bell *et al.*, 2013). Therefore, the encouragement of family members to educate their parents to learn about new technology is crucial so that they can use social media to obtain information regarding COVID-19.

## CONCLUSION

As a conclusion, majority of the respondents had good knowledge, attitude and practice on COVID-19 prevention. Education level was the main predictor for KAP regarding COVID-19 prevention. Messaging Applications such as WhatsApp and Telegram can be the best media used in conveying health message and education to the community. Health message using social media targeting the older group should be emphasized as this group pose a high risk of getting COVID-19 infection. Moreover, the attitude was found to play an important role to change knowledge and practice regarding COVID-19 prevention. Lastly, the total adherence to the Movement Control Order (MCO) along with public health interventions focusing on behavioral change may play vital roles in breaking the chain of infection.

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## Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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