Knowledge and Practices among Selected Malaysian Adults towards COVID-19: A Web-Based Cross-Sectional Survey

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ABSTRACT

Background: COVID-19 is an emerging infectious disease caused by a novel Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). In Malaysia, first few cases of COVID-19 were detected in January 2020, among Chinese nationals and the cases keep increasing day by day.

Methods: This self-administered web based cross sectional study using Google forms was conducted among 400 Malaysian adults to explore their level of knowledge, attitude and practice towards COVID-19, as well as factors associated with the variables. Descriptive and binary logistic regression were performed using SPSS version 22.

Results: Knowledge and practice among Malaysian adults towards COVID-19 were low. Gender (p = 0.030, OR:0.616, 95% CI 0.398-0.955) and occupation (p = 0.002, OR:2.489, 95% CI 1.485-4.172) were found as significant predictors of practice towards COVID-19.

Conclusions: In conclusion, proper mass public health messages should be conducted by the higher authorities to improve knowledge and practice towards COVID-19.

KEY WORDS

COVID-19, knowledge, practice, Malaysia

INTRODUCTION

COVID-19 is a new infectious disease caused by a novel coronavirus, named explicitly as SARS-CoV-2 (McAleer, 2020). Since the first case was detected in Wuhan, China, at the end of December 2019, the disease becomes globally outspread (Perrella *et al*., 2020). On March 11 2020, the World Health Organization declared COVID-19 as a pandemic (World Health Organization, 2020).

In Malaysia, COVID-19 started to emerge on January 25, 2020, among three Chinese nationals. The number of cases was under controlled until mid of March 2020. The second wave was linked to a *tabligh* (conservative Islamic movement) mass gathering at Sri Petaling Mosque from 27th February to March 1, 2020, which involved 16,000 participants from Malaysia and other countries in South East Asia such as Brunei, Thailand and Singapore (Abdullah, 2020). As the number of cases increased, the Malaysian government started the Movement Control Order (MCO) on March 18, 2020, for 14 days. When this article is written, the period has been extended to April 14, 2020, due to increasing number of positive COVID-19 cases and the number of death (Prime Minister, 2020)

Based on the Global Health Security (GHS) Index, Malaysia is listed as among the top 30 countries with the best preparation for an epidemic or pandemic emergency (McAleer, 2020). This preparedness can be shown by the grand strategy and effort by the higher authorities, especially the Ministry of Health Malaysia in managing the outbreak.

This level of preparedness could be attributed to the similar experience of the authorities in managing the Nipah virus in 1998 and Avian Influenza in 2004.

Study on knowledge and practice towards COVID-19 is very limited since this disease is a newly emerging infectious disease which requires robust research (National Institute of Allergy and Infectious Diseases, 2020). Therefore, this study was conducted to explore the level of knowledge and practice among Malaysians towards COVID-19, as well as factors associated with these two important variables.

METHODOLOGY

This cross-sectional study was conducted via an online Google forms from 13 to March 17 2020, a day before the movement control order was announced. The study sample size was estimated using the Raosoft sample size calculator. A minimum of 385 participants were required at a margin of error of 5%, a 95% confidence interval (CI), and a population size of 32.6 million at a 50% response distribution. The questionnaire was designed using Google forms and was posted, advertised and distributed by the study investigators using their private accounts on social media platforms such as WhatsApp and Facebook. The public were requested to take part in the survey by completing the questionnaire without any time restrictions. Multiple responses or submissions were controlled using the 'Limit to one response' feature of

Table 1. Socio-demographic characteristics of respondents (N = 400)

Characteristics	Frequency (n)	Percentage (%)
Age group		
18-30	269	67.3
31-50	113	28.3
more than 50 years old	18	4.5
Gender		
Male	143	35.8
Female	257	64.3
Education level		
College and university	355	88.8
Secondary school	32	8.0
Primary school or none	13	3.3
Occupation		
Professional	129	32.3
Non-professional	62	15.5
Not working/student/pensioner	209	52.3

Table 2. Level of knowledge and practice towards COVID-19 (N = 400)

Variable	Frequency (n)	Percentage (%)
Knowledge		
Low	211	52.8
High	189	47.3
Practice		
Poor	224	56.0
Good	176	44.0

Google forms. Our respondents for this study include those who understand the Malay language and aged above 18 years old. Five medical lecturers from different specialties (internal medicine, microbiology and public health) developed the questionnaires. Reliability measurement was tested earlier to 130 respondents. Kruder Richardson 20 reliability value obtained for knowledge (26 questions) was 0.60, while Cronbach alpha value for practice (4 questions) was 0.74. The questionnaire consisted of three main parts: Section A consists of socio-demographic data questions. Section B consists of questions regarding knowledge towards COVID-19 with three given answers (Yes, No and Don't know). One mark was given for any correct answer while 0 marks given for an incorrect answer. The total knowledge score was 26 in which those who obtained marks above the mean of the total score will be categorized as having high knowledge. Lastly, section C consists of questions regarding practice towards COVID-19 with four different answers (Every time, Frequent, Sometimes and Never). Four marks were given to those who answer every time, three marks for frequent, two marks for sometimes and 1 for never. The total score was 16, in which those who obtained marks above the mean of the total score were categorized as having good practice.

DATA ANALYSIS

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

RESULTS

a) Socio-demographic characteristics of respondents

From Table 1, most of the respondents were from age 18-30 years old (n = 269, 67.3%), females (n = 257, 64.3%) and graduated from college or university (n = 355, 88.8%).

b) Level of knowledge and practice among respondents towards COVID-19

The mean (SD) knowledge score towards COVID-19 was 18.01 (3.09) while total practice score was 10.38 (2.40). The minimum score obtained by the respondents for knowledge was three, and the maximum score was 24. For practice, the minimum score obtained was four, and the minimum score was 16. From Table 2, it is noted that more than half of the respondents had low knowledge and had poor practice.

c) Knowledge towards COVID-19

Based on Table 3, majority of the respondents were aware that COVID-19 could be transmitted by touching hand (n = 379, 94.8%) and droplet on the surface (n = 342, 85.5%). However, only about half of the respondents (n = 217, 54.3%) were aware that COVID-19 could be transmitted through air droplet and about half of the respondents aware that COVID-19 cannot be transmitted through excretion (n = 203, 50.8%). More than half of the respondents were not aware that anti-pyretics (n = 228, 57.0%) is among the treatments for COVID-19 patients and about half of them were aware that COVID-19 can be treated using by antiviral (n = 211, 52.8%). Only a quarter (n = 150, 37.5%) of respondents were aware that there is no current treatment for this disease. About half of the respondents answered correctly on the knowledge that vitamin is not the treatment of COVID-19 (n = 183, 45.8%).

For symptoms of COVID-19, most of the respondents aware that fever (n = 395, 98.9%), sore throat (n = 367, 91.8%), difficulty in breathing (n = 383, 95.8%) and cough (n = 389, 97.3%) are symptoms associated with COVID-19. Most of the respondents also know that suspected person should self-quarantine (n = 392, 98.0%) and seek treatment (n = 396, 99.0%). Most of them were also aware that someone who is infected by COVID-19 must see a doctor (n = 396, 99.0%).

Logistic regression analysis in Table 4 found that there was no association between socio-demographic data and practice with knowledge towards COVID-19.

d) Practice towards COVID-19

It can be found that most of the respondents practice handwashing with soap before and after going to the toilet either every time or frequently (n = 337, 84.3%). However, hygiene practice such as covering mouth using handkerchief or tissue during coughing or sneezing either every time or frequent basis was not on the satisfactory level because the percentage did not even reach three quarter (n = 248, 62.0%). Moreover, the practice using face mask also based on every time and frequent used was considered very low (n = 153, 38.3%). The practice of mouth gargling using antiseptic or saltwater was the least practice done by the respondents (n = 55, 13.8%) as shown by Table 5.

Logistic regression analysis in Table 6 found that gender and occupation were associated with practice towards COVID-19. Female compared to male is 0.6 times more likely to have good practice towards hand hygiene (OR:0.616, 95% CI 0.398-0.955). Meanwhile, the professional group compared to those who are not working is 2.5 times more likely to have good practice towards COVID-19 (OR:2.489, 95% CI 1.485-4.172).

DISCUSSION

The main finding in this study revealed that slightly more than half of respondents had a low level of knowledge towards COVID-19; the mean total score for knowledge, suggesting an overall 69% (18.23/26*100) correct rate. Compared to the study conducted in Hubei province, China, the correct rate was higher, which was 90% (Zhong et al., 2020). Majority of the respondents were aware that COVID-19 could be transmitted by touching hand and droplet on the surface. Almost half of the respondents were unsure whether COVID-19 can spread through excretion. There was possibility of faecal-oral transmission of COVID-19, particularly in poor sanitation areas(yeo). According to the World Health Organization (2020), there is no current evidence showing that COVID-19 can be transmitted via sewerage systems with or without wastewater treatment.

Table 3. Knowledge towards COVID-19 (N = 400)

Knowledge on COVID-19	Yes (n, %)	No (n, %)	Don't know (n,%)
COVID-19 can be transmitted through			
Air droplet*	217 (54.3)	106 (26.5)	77(19.3)
Touching hand*	379 (94.8)	14 (3.5)	7 (1.8)
Excretion	78 (19.5)	203 (50.8)	119 (29.8)
Looking directly to someone eyes	24 (6.0)	333 (83.3.)	43 (10.8)
Droplet on surface*	342 (85.5)	19 (4.8)	39 (9.8)
Treatment for COVID-19 patients			
Antibiotics	91 (22.8)	210 (52.5)	99 (24.8)
Antipyretics*	73 (18.3)	228 (57.0)	99 (24.8)
Honey	32 (8.0)	230 (57.5)	138 (34.5)
Antiseptics	79 (19.8)	209 (52.3)	112 (28.0)
No treatment*	150 (37.5)	145 (36.3)	145 (36.3)
Antiviral*	211 (52.8)	90 (22.5)	99 (24.8)
Vitamins	104 (26.0)	183 (45.8)	113 (28.3)
Symptoms of COVID-19			
Fever*	395 (98.9)	2(0.5)	3 (0.8)
Sore throat*?	367 (91.8)	15 (3.8)	18 (4.5)
Stomach-ache	81 (20.3)	241 (60.3)	78 (19.5)
Difficulty in breathing*	383 (95.8)	8 (2.0)	9 (2.3)
Cough*	389 (97.3)	5 (1.3)	6 (1.5)
Runny nose*?	218 (54.5)	93 (23.3)	89 (22.3)
Nasal congestion*?	120 (30.0)	158 (39.5)	122 (30.5)
Suspected person should			
Self-quarantine*	392 (98.0)	2 (0.5)	6 (1.5)
Go to work or school as usual	2 (0.5)	7 (1.8)	391 (97.8)
Seek for treatment*	396 (99.0)	3 (0.8)	1 (0.3)
Rest at home	204 (51.0)	160 (40.0)	36 (9.0)
Person who has been in contact with COVID-19 patient should			
See doctor*	396 (99.0)	1 (0.3)	3 (0.8)
Rest at home	183 (45.8)	184 (46.0)	33 (8.3)
Go to work or school as usual	7 (1.8)	383 (95.8)	10 (2.5)

*indicates yes is the correct answer

#symptoms of mild upper respiratory tract infection

Moreover, only about half of the respondents were aware that COVID-19 could be transmitted through air droplet. In contrast, almost all the respondents (97.8%) in the Hubei study knew the mode of transmission of COVID-19 (Zhong *et al*., 2020). This finding could be due to a lack of exposure to this novel virus. Moreover, one web-based cross-sectional study conducted globally among health care workers in March 2020 discovered that their knowledge on mode of transmission, incubation period and symptoms of COVID-19 were poor (Bhagavathula *et al*., 2020).

The study also indicated that only a low number of respondents were aware that there is no treatment for this disease. Compared to research by Zhong *et al*. (2020), 94.0% of the respondents answered correctly for this statement. Surprisingly, about half of the respondents answered correctly on the knowledge that vitamin is not the treatment of COVID-19. Currently, there is no treatment for COVID-19. There was no known published clinical trial data regarding efficacy or safety in the treatment of COVID-19 (American Society of Health-System Pharmacists, 2020). There was no specific antiviral treatment recommended for COVID-19, and no vaccine is presently available (Cascella *et al*., 2020). However, early symptomatic and supportive treatment can help most patients recover from the infection (Zhong *et al*. 2020). Zhang and Lui (2020), in their systematic review, found that general treatments, coronavirus-specific treatments, and antiviral treatments should be useful in fighting COVID-19. Logistic regression analysis in this study indicated that there was no relationship between socio-demographic data and practice with knowledge towards COVID-19. However, a study by Zhong *et al* (2020) found that the knowledge scores were significantly varied across genders, age-groups, categories of marital status, education levels, and residence places.

According to Centers for Disease Control and Prevention (CDC), COVID-19 patients were reported to experience non-specific mild illness to severe disease and death. Common symptoms are fever, dry cough, sore throat and shortness of breath. The symptoms may develop within 2 to 14 days after exposure to the coronavirus (Centers for Disease Control and Prevention, 2020). At the time when this questionnaire was developed, there were limited reports regarding the clinical characteristic of COVID-19 disease. However, the majority of the respondents were aware of the common symptoms of COVID-19.

For practice towards COVID-19, the findings found that more than half of the respondents had a low practice. The good thing is, most of the respondents practice handwashing with soap before and after going to the toilet. The World Health Organization (2020) recommended regular and correct hand hygiene techniques as one of the necessary actions to prevent COVID-19. However, hygiene practice such as covering mouth using handkerchief or tissue during coughing or sneezing regularly was not on the satisfactory level, and this might be due to lack of awareness and attitude towards preventing the transmission of the disease. Besides, the low practice of wearing a face mask (38.3%) might be due to insufficient supplies and high demands in the market. Domestic Trade and Consumer Affairs Minister, mentioned that the ministry received a massive amount of complaints regarding the insufficient supply of face masks (New Straits Times Malaysia, 2020). Another finding from a study conducted in Klang Valley to measure the behavioural response to H1N1 outbreak in Malaysia found that the practice of handwashing with soap and cover during cough and sneeze was good, but the prevalence of face mask usage was only 28.7% (Wong & Sam, 2009).

On the other hand, a study conducted in Hong Kong via a telephone call to determine the preventive behaviour of Severe Acute Respiratory Disease Syndrome (SARS) among adult Chinese found that the respondents had higher practice (61.2%) of wearing face masks consistently to reduce the transmission of SARS (Tang & Wong, 2004). The practice of

Table 4. Factors Associated with Knowledge towards COVID-19 (N = 400)

Variables	Knowledge		Adjusted analysis			
	Low (n,%)	High (n,%)	OR	95% CI		p-value
Gender			0.867	0.569	1.322	0.508
Male	79 (55.2)	64 (44.8)				
Female	132 (51.4)	125 (48.6)				
Age			0.863			
18-30 (versus > 50)**	141 (52.4)	128 (47.6)	1.189	0.430	3.290	0.739
31-50 (versus 18-30)	59 (52.2)	54 (47.8)	0.617	1.311	0.454	3.788
> 50	11 (61.1)	7 (38.9)				
Education						0.078
College or university (versus primary school or none)**	179 (50.4)	176 (49.6)	0.344	0.089	1.327	0.121
Secondary school (versus college or university)	22(68.8)	10 (31.3)	0.473	0.208	1.075	0.074
Primary school or none	10 (76.9)	3 (23.1)				
Occupation						0.716
Professional (versus not working/student/pensioner)**	68 (48.1)	67 (51.9)	1.065	0.647	1.779	0.810
Non-professional (versus professional)	38 (61.3)	24 (38.7)	0.812	0.434	1.521	0.516
Not working/student/pensioner	111 (53.1)	98 (46.9)				
Practice			1.343	0.887	2.032	0.163
Poor	126 (56.3)	98 (43.8)				
Good	85 (48.3)	91 (51.7)				

** refer to the variables which have been chosen as reference variables during the analysis

Table 5. Practice towards COVID-19 (N = 400)

Practice	Every time (n, %)	Frequent (n, %)	Sometimes (n, %)	Never (n, %)
Frequency of washing hands with soap after going to the toilet	217 (54.3)	120 (30.0)	61 (15.3)	2 (0.5)
Frequency of covering mouth using handkerchief or tissue during coughing or sneezing	144 (36.0)	104 (26.0)	141 (35.3)	11 (2.6)
Frequency of using face mask while having cough or flu	68 (17.0)	85 (21.3)	172 (43.0)	75 (18.8)
Frequency of gargling mouth using antiseptic or saltwater	21 (5.3)	34 (8.5)	106 (26.5)	239 (59.8)

Table 6. Factors Associated with Practice towards COVID-19 (N = 400)

Variables	Practice		Adjusted analysis			
	Poor (n,%)	Good (n,%)	OR	95% CI		p-value
Gender			0.616	0.398	0.955	0.030*
Male	89 (62.2)	54 (37.8)				
Female	132 (52.5)	122 (47.5)				
Age						0.592
18-30 (versus > 50)**	163 (60.6)	106 (39.4)	0.899	0.328	2.461	0.835
31-50 (versus 18-30)	51 (45.1)	62 (54.9)	1.186	0.417	3.373	0.749
> 50	10 (55.6)	8 (44.4)				
Education						0.409
College or university (versus primary school or none)**	9 (69.2)	4 (30.8)	0.504	0.144	1.759	0.283
Secondary school (versus college or university)	16 (50.0)	16 (50.0)	1.304	0.589	2.886	0.512
Primary school or none	199 (56.1)	156 (43.9)				
Occupation						0.002*
Professional (versus not working)**	54 (41.9)	75 (58.1)	2.489	1.485	4.172	0.001
Non-professional (versus professional)	32 (51.6)	30 (48.4)	1.846	0.989	3.445	0.054
Not working/student/pensioner	138 (66.0)	71 (34.0)				
Knowledge			0.504	1.340	0.855	0.163
Low	126 (59.7)	85 (40.3)				
High	98 (51.9)	91 (48.1)				

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

mouth gargling using antiseptic or saltwater was the least practice done by the respondents. Yan *et al*. (2020) recommended the protective measure of oral care and pharyngolaryngeal humidity to fight against COVID-19 such as mouth washing and rinsing mouth with water and normal saline. Logistic regression analysis in this study found that female and professional group were more likely to have good practice while knowledge did not predict practice towards COVID-19. This finding is in line with the study done by Fung and Cairncross (2007) stated that there were eight studies found that female gender self-reported frequent handwashing. Moreover, a study in Hong Kong found that respondents with a higher educational level were more likely to report frequent handwashing (Lau *et al*., 2005). However, a study done by Wong & Sam (2009) found that knowledge was associated with health-protective behaviour.

CONCLUSION

The study brings impactful results, especially to the area of public health. Firstly, knowledge and practice among Malaysian adults towards COVID-19 were considered low, and these factors may contribute to the spiking cases of COVID-19 in this country during this early period of pandemic. Secondly, factors such as gender and occupation become the very crucial predictors of practice towards COVID-19. Therefore, proper mass public health messages to improve knowledge and practice towards COVID-19 should be conducted by the higher authorities, especially in targeting males, students and non-working group in order to achieve good outcomes. Self-hygiene practice in preventing COVID-19 should be consistently encouraged especially during this pandemic.

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