

Knowledge, attitudes & practices (KAP) of social media users toward COVID-19 in Malaysia: A cross-sectional survey

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Abstract

The unprecedented outbreak of the novel strain of coronaviruses (nCOV) in late 2019 has seen many cases of COVID-19 infections and deaths worldwide. The World Health Organisation's (WHO) responses include immediate public health's enforcement of infection control measures to prevent further spread of the infection, and thus decreasing morbidity and mortality rates. As there's currently no specific medication to treat COVID-19, the outcome of this pandemic largely depends on the behaviour of the general public as a whole in terms of their general knowledge, their attitudes and practices. The aim of this study was to assess the level of knowledge, attitudes & practices (KAP) of social media users toward COVID-19 in Malaysia. A cross-sectional online survey was conducted during MCO 3.0, between 14th June and 27th June 2021. Using voluntary random sampling, 300 social media users above the age of 15 participated in the study. A validated self-administered questionnaire was used to obtain the respondents' socio- demographic data, as well as their knowledge (8 items), attitudes (4 items), and practices (4 items) toward COVID-19. Data were analysed using SPSS, version 28.0. Descriptive statistics and chi-square tests were used. Generally, most of the respondents (83.0 %) obtained good knowledge on various aspects of COVID-19 disease. Most also showed good attitudes toward the efficacy beliefs on COVID-19's preventive standard operating procedures (SOPs) such as the use of face masks and practices of hand hygiene (84.0%), as well as social distancing (87.3%). However, some were uncertain toward the perceived risks of getting COVID-19 (37.3%) and the severe form of the disease (40.3%) which indicated very poor attitude. Majority of the respondents (83.0%) also shown excellent practices toward COVID-19 preventive measures. This study able to give a comprehensive depiction of the level of knowledge, attitudes and practices of the social media users toward the COVID-19 outbreak. Some discrepancies in certain aspects of the KAP however need to be addressed further in order to instill general public willingness for behavioral changes in adapting to the new norms of COVID-19.

Keywords: Covid-19, Pandemic, Knowledge, Attitude, Practices, Social media users

1. Introduction

Coronavirus were initially shared among animals worldwide until human coronavirus strains were discovered. Since then, there has been an erratic streaks of epidemic outbreaks, including the Severe Acute Respiratory Syndrome (SARS-CoV) in 2003, and Middle East Respiratory Syndrome (MERS-CoV) in 2012. The much recent identification of a novel strain of the virus following reports of several incidences of unexplained pneumonia in Wuhan City, Hubei province of China, in late December 2019 is believed to have caused worse illnesses than the acute respiratory syndromes seen in the past. The WHO officially designated the strain as (2019 – nCoV).

Since then, a massive surge of similar cases was reported in other Chinese provinces leading to a much rapid spread of outbreaks worldwide. Subsequently, on 11th March 2020, WHO officially declared the 2019 Coronavirus Disease (COVID-19) as a pandemic. More than 1,990,000 confirmed cases and 130,000 deaths globally were said to be reported to WHO by 16th April 2020. The first case of COVID-19 in Malaysia was detected on 25th January 2020 involving three tourists from China⁸. On 4th February 2020, Malaysia recorded its first national case of COVID-19 and on 17th March 2020, the nation's first two deaths were recorded³⁶. As of the 3rd of June 2021, Malaysia continues to record more than 595,374 confirmed cases and 3,096 deaths¹⁹.

In an attempt to reduce the incidence of COVID-19 and the spread of the outbreaks, policymakers adopted various standard public health guidelines according to the outbreak control strategies. This includes containment and mitigation guidelines by imposing immediate closure of borders, travel restrictions, national lockdown, quarantines, self-isolation, closure of non-essential sectors, and community preventive measures. The guidelines are exhorted by implementing campaigns that aim to educate the general public of the disease's significance in terms of their general knowledge, their attitudes toward limiting the spread of the disease, and their awareness toward the practices that they can adopt to help limit the widespread of the disease.

Given the novelty of the disease and its dire impacts, the world still struggles to contain the disease's progression. Malaysia has undergone three major waves of COVID-19 outbreaks since the announcement of the pandemic in March 2020³⁰. While we may have seen a decline in the number of new cases after the first 2 waves, a third wave has been ongoing since 8th September 2020³⁰. This has put the country in an impossible position. Multiple factors are said to play a part in the increasing number of new cases, amongst which is the general public's behaviour. Malaysians reacted in panic and confusion. Aside from panic buying, people crowded public transportation hubs to travel back to their hometowns, potentially increasing the risk of infection to other parts of the country⁷. At the same time, in some countries, mass gatherings are still organized and public assemblies have proven a hotbed for the virus

to spread, as witnessed in the recent religious gathering in Malaysia where at least 680 people were infected³¹. While these sort of reactions to the movement control order (MCO) was not unexpected, it raises questions regarding the level of understanding and attitudes toward COVID-19 among Malaysians⁸.

A recent study in Malaysia suggested that the population have still not grappled with the seriousness of the current pandemic. This could be due to their lack of knowledge which leads to an 'I won't be affected' attitude and the vast amount of misinformation, disinformation, and false news circulating the social networks regarding the essence of COVID-19 disease^{25,30}. This does not only amplifies confusion to the general public's understanding of the disease, allowing room for misconduct against the COVID-19 protocols but also exaggerates the presence of an immeasurable gap in their knowledge about the disease.

2. Methods

Study design

This was an online cross-sectional study conducted via Google form during the MCO 3.0, from 14th June 2021 until 27th June 2021. The target sample size was 300, determined after identifying the smallest acceptable size of a demographic subgroup with a $\pm 5\%$ margin of error and a confidence level of 95.0 %. Since it was carried out by random sampling technique, this meant that the response sampling was wholly voluntary.

The willing respondents eligible for this study were social media users in Malaysia above the age of 15, irrespective of their COVID-19 infection status. Respondents who did not meet the above inclusion criteria were considered ineligible and were thus excluded from the study.

The researchers utilised several strategies in order to reach as many respondents as possible from all over the country within the allocated two weeks period of data collection. This included relying on researchers' private social media and of family members', friends', friends of friends, and close acquaintances' using four main platforms; Facebook, Instagram, WhatsApp, and Telegram.

Study instruments

The questionnaire was prepared in two languages; English and Bahasa Malaysia. Organised into four sections, the questionnaire included socio-demographic questions,

knowledge regarding COVID-19 (eight items), attitudes toward COVID-19 (four items) and practices relevant to COVID-19 (four items).

In order to measure knowledge on COVID-19, respondents were given 'true' or 'false' options for each statement regarding COVID-19's common clinical symptoms, ways and places of easily spread, preventive measures, high-risk groups, mode of transmissions, and guidance for close contacts. A correct response was assigned one point, while an incorrect or blank response was assigned zero points. Each respondent was allocated a total score of 33. Those with a score of more than 80.0 % were considered as having good knowledge.

The attitudes of the respondents toward COVID-19 were assessed in two parts, in terms of their perceived risk of getting COVID-19 infection and the severe form the disease, and their efficacy beliefs on the COVID-19's standard operating procedures (SOPs) as part of the preventive measures, respectively. They were simply asked to rate the statements from one (very low/strongly disagree) - five (very high/strongly agree) using the Likert scale. Respondents who scored four and five were considered as showing good attitudes.

As for practices, respondents were assessed on their frequency in adhering to WHO's proposed avoidance of the 3Cs and in practicing WHO's proposed 3Ws, as well as in recording their details whenever entering public places. They were given the options of 'never', 'sometimes' and 'always'. Respondents who answered 'always' to all questions were considered as showing good practices.

Before starting the survey, respondents were informed of the purpose of carrying out the survey, the ensured anonymity, and the instruction to leave the questions blank in case they were unsure.

Data analysis

The responses of the respondents were then analysed using Statistical Package for the Social Sciences (SPSS), version 28. We measured the frequencies and percentages of their socio-demographic characteristics, knowledge, attitudes, and practices as well as the mean scores of each item. These were then compared to the socio-demographic characteristics of the respondents by using the chi-square test.

3. Results and Analyses

3.1 Socio-demographic Characteristics

The total number of responses received through Google form was 307. The response rate was 0.98 (300 responses). However, seven of the responses were excluded due to their incomplete socio-demographic section, leaving a total of 300 valid responses. A considerable number of the respondents (86.7 %) were between the ages of 15 and 47 years (young age group). More than half of the respondents (65.0 %) were female. The highest number of respondents (86.7 %) was Malay and single (62.0 %). The respondents either had secondary level of education (49.3 %) or tertiary level of education (48.7 %) Less than half (37.7%) of the respondents were students. Nearly half (44.0 %) of the respondents were from the B40 group. The socio-demographic characteristics of the respondents were shown in Table 1.

Table 1: Socio-demographic characteristics of the respondents (n = 300)

	Characteristics	Frequencies	Percentages (%)
Age	15 - 47 (young age group)	260	86.7
	48 - 63 (middle age group)	37	12.3
	Above 64 (elderly group)	3	1.0
Gender	Male	105	35.0
	Female	195	65.0
Ethnic	Malay	260	86.7
	Bumiputra Sabah/Sarawak	5	1.6
	Indian	30	10.0
	Non-Malaysian	5	1.6
Marital status	Single	186	62.0
	Married	111	37.0
	Divorced	3	1.0
Education	Primary	6	2.0
	Secondary	148	49.3
	Tertiary	146	48.7
Employment status	Private sector	84	28.0
	Government sector	52	17.3
	Self-employed	35	11.7
	Housewife	16	5.3
	Student	113	37.7
Income*	B40 (Less than RM4,850)	132	44.0
	M40 (RM4,851 - RM10,970)	52	17.3
	T20 (More than RM10,971)	13	4.3
	No income	103	34.3

* Based on Department of Statistics Malaysia, Prime Minister's Department

3.2 Knowledge on COVID-19

The average knowledge score of the respondents was 27.6 of the total score of 33, with the scores ranging from eight to 32. Generally, most of the respondents (83.0 %) obtained good knowledge on various aspects of COVID-19 disease.

Based on what WHO suggested, common COVID-19 clinical symptoms are fever, dry cough, fatigue, loss of taste or smell, nasal congestion, conjunctivitis, sore throat, headache, muscle or joint pain, skin rashes, nausea & vomiting, diarrhoea, and chills³⁷. Most of the respondents (97.7 % and 94.0 %) correctly identified fever and sore throat, respectively while a considerable number of the respondents (96.4 %) also correctly identified loss of taste and smell which has been recently included, as one of the common COVID-19 symptoms. However, there was a noticeable misperception in the respondents' knowledge on difficulty breathing, with most of them (97.8 %) considered it as one of the common COVID-19 symptoms.

Coughing and sneezing are two of the commonest ways that COVID-19 can spread to other individuals³⁷. These were recognized by most of the respondents (99.5 % and 99.0 %), respectively. In terms of the possible places that the virus tends to be more easily spread, the majority of the respondents (99.3 % and 97.5 %) opted for closed and confined settings such as lifts and Movie Theatre, correspondingly. However, more than half (57.3 %) of the respondents also selected recreational park which is not a closed and confined setting, as one of the possible places of easily spread.

The majority of the respondents were aware of COVID-19 preventive measures in reducing the spread of the viruses. Almost all of the respondents (99.5 %) agreed to stay at least one meter away from each other, 98.7 % agreed to avoiding touching surfaces especially in public places, and 98.5 % agreed to frequent hand washing as part of the preventive measures.

Certain groups of people are generally more susceptible to COVID-19 viruses³⁷. Almost all of the respondents (99.8 %) were aware of the elderly people as one of the groups of people at risk of getting COVID-19 whereas the majority (93.0 %) were also aware of people with chronic diseases, such as diabetes as another group of susceptible people. According to WHO, children are at a lower risk of getting COVID-19 disease³⁹. A considerable number of the respondents (83.5 %) however, believed children as one of the high-risk groups of people.

In relation to COVID-19 viruses' mode of transmission, a decent number of the respondents (82.9 %) acknowledged the viruses' ability to exist in droplets while the majority (91.9 %) were also aware of the much recent fact that the viruses were also proved to be airborne³⁸.

Another notable finding was the excellent knowledge of the correct actions to do in case the respondents have been in close contact with someone who'd been found to be COVID-19 positive. All agreed to immediately seek medical attention if they are symptomatic while almost all (99.0 %) opted to refrain themselves from going out for any outdoor activities. A considerable number of the respondents (80.0 %) however, considered moving out of their current residence, which was an inappropriate action to do.

Regarding the knowledge of when the respondents will be considered as close contact, most of them agreed that this would be the case when their roommate (98.7 %), officemate (94.3 %), and family members in the same household (97.4 %) were found to be COVID-19 positive. The Respondents' knowledge of COVID-19 is shown in Table 2.

Table 2: Respondents' knowledge (n = 300) on COVID-19

Questions		True		False	
		Frequencies	Percentages (%)	Frequencies	Percentages (%)
1. Common clinical symptoms of COVID-19 are	Loss of taste and smell	288	96.4	10	3.6
	Difficulty breathing	290	97.8	8	2.3
	Sore throat	277	94.0	20	6.1
	Dry cough	264	88.1	31	12.0
	Fever	293	97.7	6	2.4
2. COVID-19 viruses can spread between people during	Coughing	298	99.5	1	0.6
	Sneezing	295	99.0	4	1.0
	Speaking	250	84.1	46	16.0
	Singing	171	57.0	115	43.0
3. COVID-19 viruses are more easily spread in	Shopping malls	282	95.9	13	4.1
	Lifts	294	99.3	3	0.8
	Recreational parks	150	57.3	129	42.7
	Movie theatre	285	97.5	10	2.5
4. How can one reduce his/her chance at getting COVID-19?	Staying at least one meter away from each other	298	99.5	2	0.5
	Shaking hands	32	12.2	247	87.8
	Avoiding touching surfaces especially in public places	295	98.7	3	1.3
	Washing hands	293	98.5	5	1.6

frequently					
Table 2: Respondents' knowledge (n = 300) on COVID-19 – cont'd					
5. Who are at risk of developing COVID-19 infection?	Elderly people	297	99.8	1	0.3
	People with diabetes	272	93.0	18	7.0
	Children	237	83.5	51	16.6
	Adults	189	65.4	93	34.7
6. How does COVID-19 viruses spread?	Food and water borne	80	29.6	189	70.5
	Airborne	264	91.9	28	8.2
	Droplets	240	82.9	46	17.2
	Vectors/mosquitoes	52	28.9	216	71.2
7. What to do if you have been in close contact with someone who'd been found COVID-19 positive?	Move out of your current residence	52	20.0	221	80.1
	Refrain from going to mosques or other places of worship	265	92.9	25	7.2
	Immediately seek medical attention if you have any symptoms	297	100.0	0	0
	Refrain from going out for any outdoor activities	292	99.0	4	1.0
8. You are considered a close contact when:	Your roommate is found to be COVID-19 positive	292	98.7	3	1.4
	Your officemate is found to be COVID-19 positive	279	94.3	16	5.8
	You have been to COVID-19 hotspot areas	89	32.7	186	67.4
	One of your family members in the same household is found to be COVID-19 positive	290	97.4	6	2.7

* The figures in bold indicate correct responses

The chi-square analyses were performed to demonstrate the relation of the level of knowledge of the respondents to several socio-demographic characteristics, which were age, gender, ethnicity, marital status, current employment status, income category, and level of education. The mean knowledge scores were found to be not significantly different (p-value were more than 0.05) with all characteristics except for the level of education (P-value <.001). The mean knowledge score of respondents with tertiary education was also found to be statistically different to the mean knowledge scores of respondents with primary and secondary education. The level of knowledge of the respondents as per socio-demographic characteristics is shown in table 3.

Table 3: Level of knowledge of the respondents (n = 300) as per socio-demographic characteristics

Characteristic		No. of Respondents	Knowledge score (mean \pm standard deviation)	Chi-Square value	df	Asymptotic Significance (2-sided)
Age	15 - 47 (young age group)	260 (86.7 %)	27.65 \pm 2.958	21.24	28	.82
	48 - 63 (middle age group)	37 (12.3 %)	27.59 \pm 2.500			
	Above 64 (elderly group)	3 (1.0 %)	28.00 \pm 1.732			
Gender	Male	105 (35.0 %)	27.49 \pm 2.527	8.99	14	.83
	Female	195 (65.0 %)	27.73 \pm 3.070			
Ethnic	Malay	260 (86.7 %)	27.68 \pm 2.945	25.44	42	.98
	Bumiputra Sabah/Sarawak	5 (1.6 %)	26.60 \pm 2.702			
	Indian	30 (10.0 %)	27.40 \pm 2.647			
	Non-Malaysian	5 (1.6 %)	28.20 \pm 1.483			
Marital status	Single	186 (62.0 %)	27.52 \pm 2.950	22.34	28	.77
	Married	111 (37.0 %)	27.87 \pm 2.806			
	Divorced	3 (1.0 %)	26.67 \pm 2.082			
Education	Primary	6 (2.0 %)	22.33 \pm 7.581	73.95	28	<.001
	Secondary	148 (49.3 %)	27.59 \pm 2.480			
	Tertiary	146 (48.7 %)	27.92 \pm 2.785			
Employment status	Private sector	84 (28.0 %)	27.32 \pm 3.074	55.69	56	.49
	Government sector	52 (17.3 %)	28.06 \pm 2.355			
	Self-employed	35 (11.7 %)	27.49 \pm 2.560			
	Housewife	16 (5.3 %)	28.13 \pm 3.074			
	Student	113 (37.7 %)	27.67 \pm 3.051			
Income	B40 (Less than RM4,850)	132 (44.0 %)	26.92 \pm 3.278	48.28	42	.23
	M40 (RM4,851 - RM10,970)	52 (17.3 %)	28.56 \pm 2.388			
	T20 (More than RM10,971)	13 (4.3 %)	28.31 \pm 2.213			
	No income	103 (34.3 %)	28.02 \pm 2.441			

3.3 Attitudes toward COVID-19

The average attitude score of the respondents was 3.77, which was below the score of four. Thus, the respondents were considered to display poor attitudes toward COVID-19. While the respondents showed very poor attitudes toward the perceived risks of getting COVID-19 and the severe form of the disease with an average score of 2.72, the respondents however showed better attitudes toward the efficacy beliefs on COVID-19's preventive SOPs with an average score of 4.82.

Regarding the respondents' answers to their perceived likelihood of getting COVID-19, most (37.3 %) were uncertain (neither low nor high) about their likelihood of getting the disease while some (17.7 %) of the respondents rated themselves as very low risk, which seemed appropriate as most respondents are young adults with low risk of getting the disease. A similar finding was observed when the respondents' were asked about their perceived likelihood of getting the severe form of the disease with most (40.3 %) of the respondents were uncertain. The attitudes of the respondents toward COVID-19 in terms of perceived risk are shown in Figure 1.

In terms of the attitudes toward COVID-19 SOPs, a large number of the respondents (84.0 %) strongly agreed to the use of face masks and practices of hand hygiene as effective. The majority of the respondents (87.3 %) also strongly agreed to social distancing such as avoiding crowds as an effective way of reducing the risk of getting the infection. The attitudes of the respondents toward COVID-19 in terms of efficacy belief are shown in Figure 2.

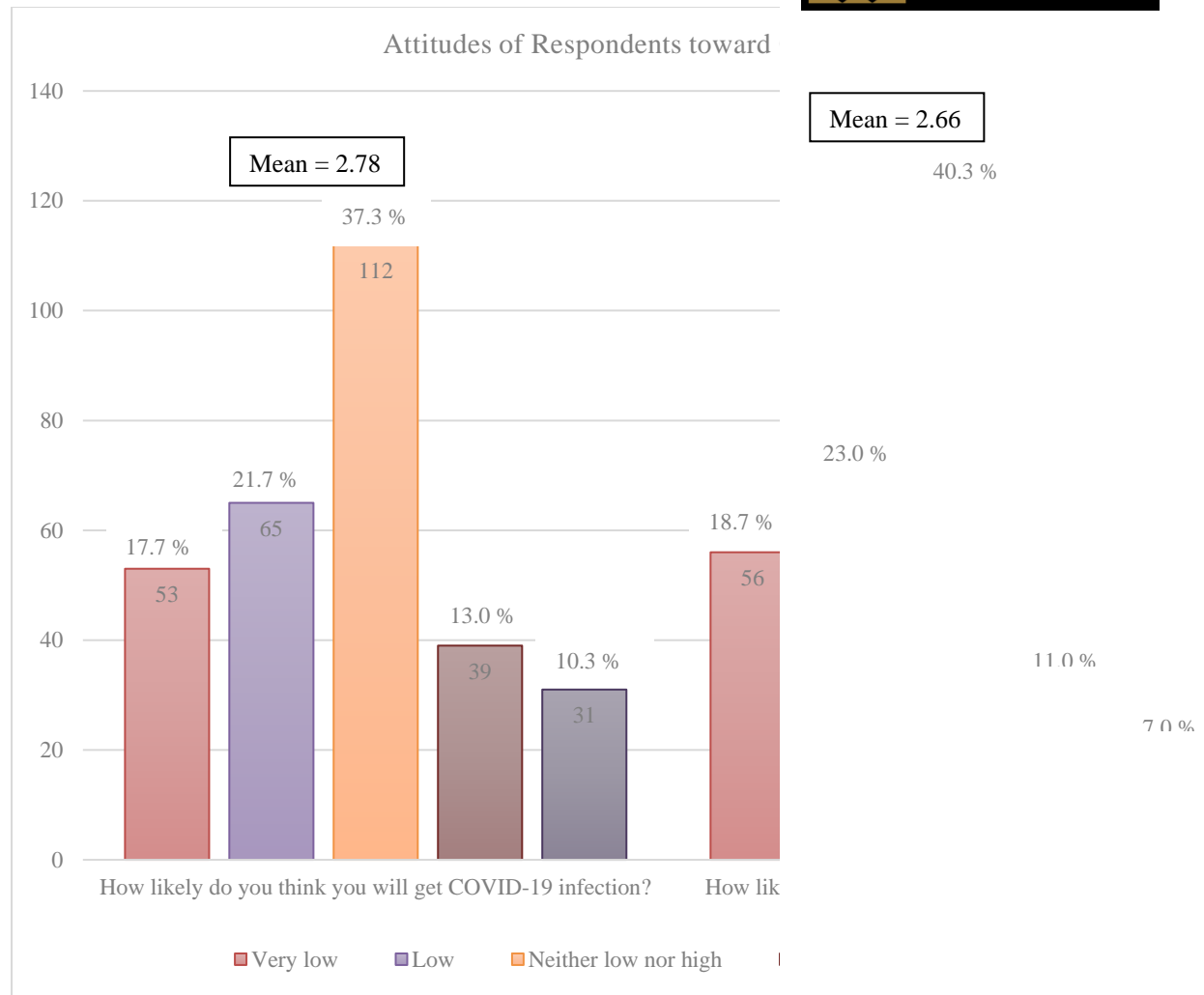


Figure 1: Perceived risk of the respondents (n = 300) toward COVID-19 infection

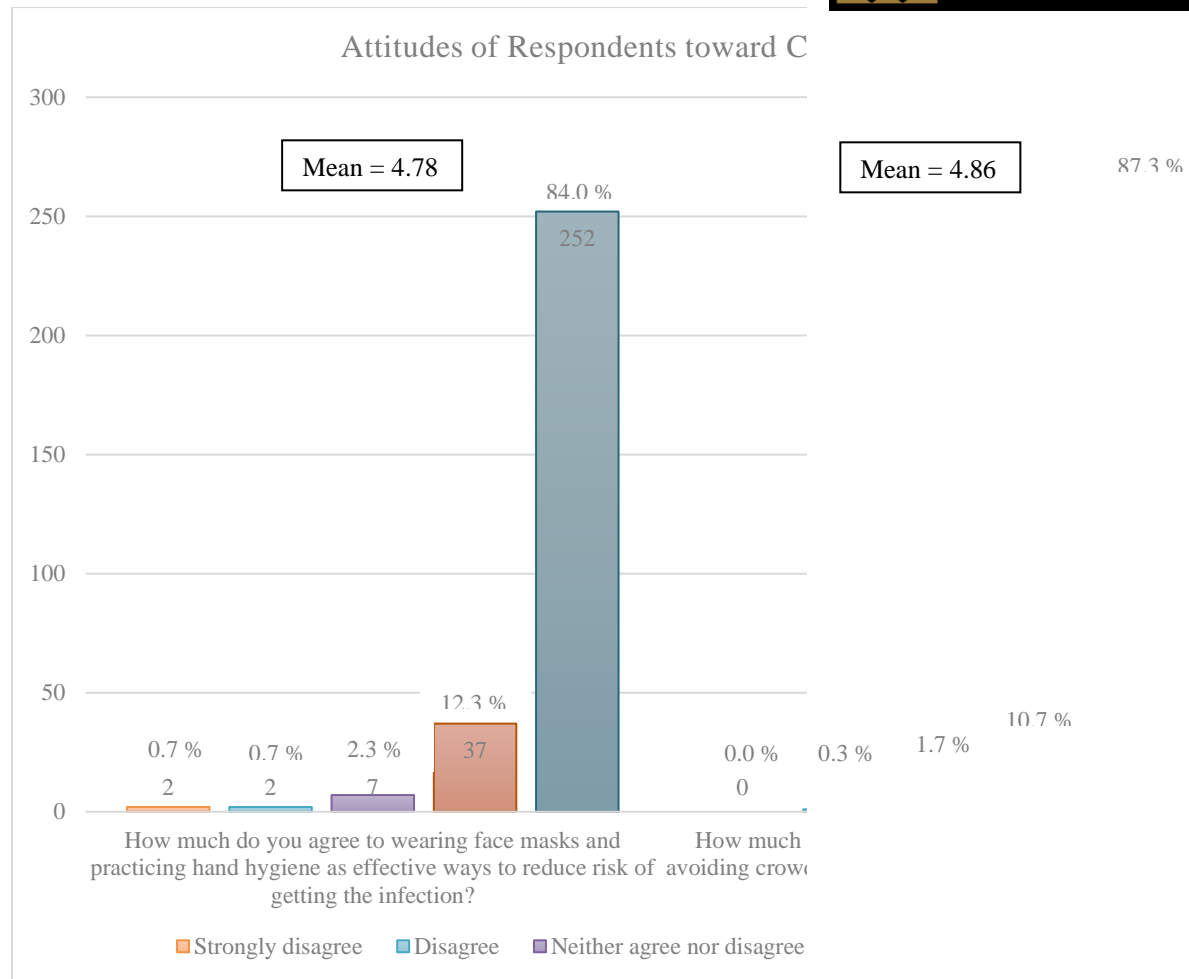


Figure 2: Efficacy beliefs of the respondents (n = 300) regarding COVID-19 preventive measures

3.4 Practices toward COVID-19 SOPs

Generally, the respondents shown excellent practices toward COVID-19 preventive measures with the majority of the respondents (83.0 %) answered ‘always’ to all questions.

In relation to the respondents’ adherence to the 3Cs and the 3Ws guidelines, 83.0 % of the respondents always avoided crowded places such as weddings, nearly all of the respondents (98.3 %) wore face masks at all-time, while 88.3 % always practised proper hand hygiene using hand sanitiser. Moreover, almost all of the respondents (97.3 %) always utilised their MySejahtera application or recorded their details whenever entering public places on guestbooks that have been provided by the premises.

Unfortunately, the fact that 8.7 % of the respondents reported never avoid visiting crowded places such as weddings was worrying, to say the least. Even though the percentage seemed trivial in this study, it didn’t mean that it can be overlooked as it can easily represent the general public in Malaysia given the right study population sample. The practices of the respondents toward COVID-19’s preventive SOPs are shown in Figure 3.

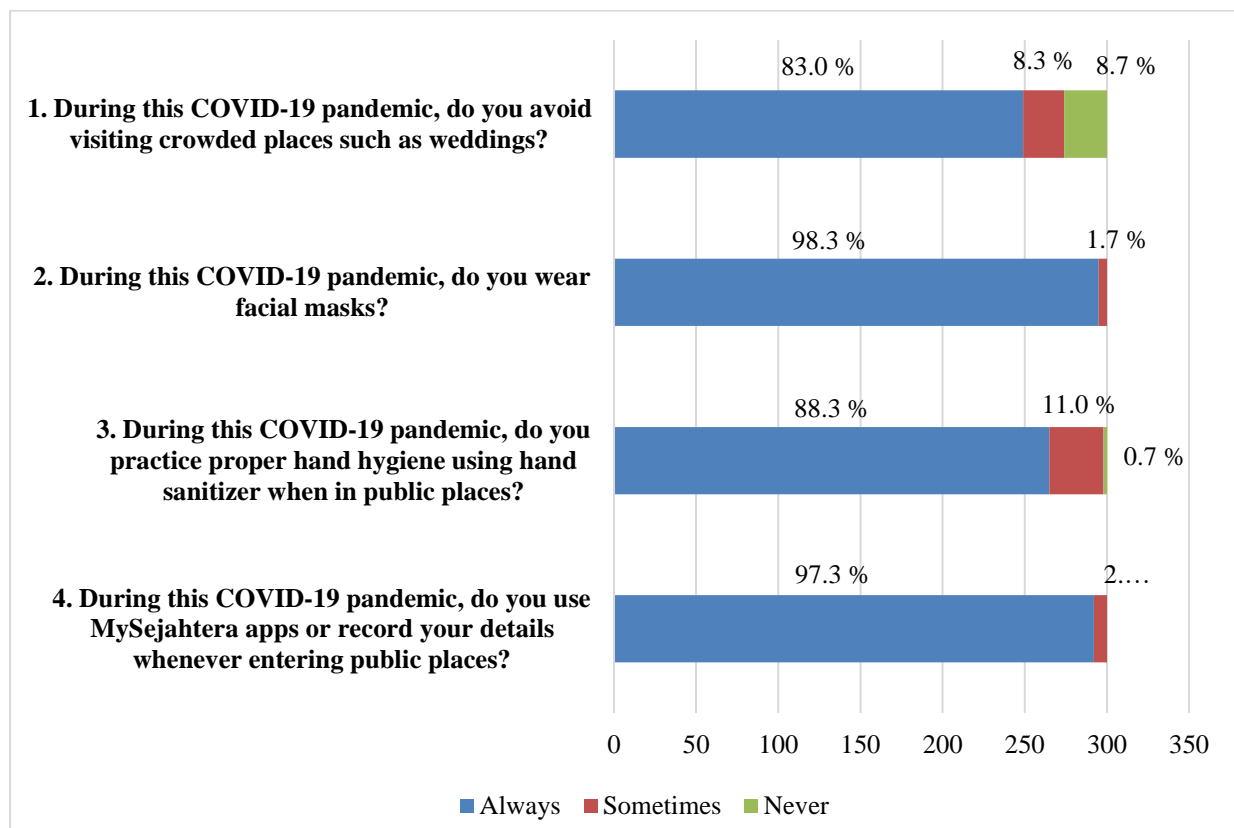


Figure 3: Practices of the respondents (n=300) toward COVID-19 SOPs

Chi-square analyses were performed to demonstrate the relation of the level of practices of the respondents to several socio-demographic characteristics, which were age, gender, ethnic, marital status, current employment status, income category, and level of education. The mean good practice scores were found to be not significantly different (p-value were more than 0.05) with all characteristics, except for the mean score of good practice of proper hand hygiene using hand sanitiser and the mean score of good practice of using MySejahtera app and the recording of details whenever entering public places. The latter was significantly different with ethnicity and marital status while the former was significantly different with marital status, level of education and employment status. The level of practice of the respondents as per socio-demographic characteristics is shown in table 4.

Table 4: Demographic characteristics of respondents (n = 300) and practices toward COVID-19

1. During this COVID-19 pandemic, do you avoid visiting crowded places such as weddings?					
Characteristic		Poor Practice	Good Practice	Chi-Square value	df Asymptotic Significance
Age	Young age group	47	213	1.833	2 .400
	Middle age group	4	33		
	Elderly group	0	3		
Gender	Male	18	87	0.002	1 0.961
	Female	33	162		
Ethnic	Malay	45	215	0.367	3 .947
	Bumiputra Sabah/Sarawak	1	4		
	Indian	4	26		
	Non-Malaysian	1	4		
Marital status	Single	32	154	0.621	2 .733
	Married	19	92		
	Divorced	0	3		
Education	Primary	3	3	4.728	2 .094
	Secondary	24	124		
	Tertiary	24	122		
Employment status	Private sector	17	67	2.566	4 0.633
	Government sector	11	41		
	Self-employed	4	31		
	Housewife	2	14		
	Student	17	96		
Income	B40	25	107	1.767	3 0.622
	M40	10	42		
	T20	1	12		
	No income	15	88		

Table 4: Demographic characteristics of respondents (n = 300) and practices toward COVID-19 - cont'd

2. During this COVID-19 pandemic, do you wear facial masks?						
Characteristic		Poor Practice	Good Practice	Chi-Square value	df	Asymptotic Significance
Age	Young age group	4	256	0.319	2	.852
	Middle age group	1	36			
	Elderly group	0	3			
Gender	Male	2	103	0.056	1	.813
	Female	3	192			
Ethnic	Malay	2	258	16.193	3	.001
	Bumiputera Sabah/Sarawak	0	5			
	Indian	2	28			
	Non-Malaysian	1	4			
Marital status	Single	3	183	0.066	2	.967
	Married	2	109			
	Divorced	0	3			
Education	Primary	0	6	0.297	2	.862
	Secondary	3	145			
	Tertiary	2	144			
Employment status	Private sector	1	83	2.789	4	.594
	Government sector	1	51			
	Self-employed	0	35			
	Housewife	1	15			
	Student	2	111			
Income	B40	2	130	2.096	3	.553
	M40	0	52			
	T20	0	13			
	No income	3	100			

Table 4: Demographic characteristics of respondents (n = 300) and practices toward COVID-19 - cont'd

3. During this COVID-19 pandemic, do you practice proper hand hygiene using hand sanitizer when in public places?					
Characteristic		Poor Practice	Good Practice	Chi-Square value	df Asymptotic Significance
Age	Young age group	35	225	3.964	2 .138
	Middle age group	1	36		
	Elderly group	0	3		
Gender	Male	13	92	0.022	1 0.882
	Female	23	172		
Ethnic	Malay	32	228	1.122	3 .772
	Bumiputera Sabah/Sarawak	1	4		
	Indian	3	27		
	Non-Malaysian	0	5		
Marital status	Single	30	156	10.201	2 .006
	Married	5	106		
	Divorced	1	2		
Education	Primary	0	6	8.830	2 .012
	Secondary	26	122		
	Tertiary	10	136		
Employment status	Private sector	6	78	18.689	4 <.001
	Government sector	2	50		
	Self-employed	3	32		
	Housewife	0	16		
	Student	25	88		
Income	B40	16	116	3.360	3 0.339
	M40	3	49		
	T20	1	12		
	No income	16	87		

Table 4: Demographic characteristics of respondents (n = 300) and practices toward COVID-19 - cont'd

4. During this COVID-19 pandemic, do you use MySejahtera apps or record your details whenever entering public places?					
Characteristic		Poor Practice	Good Practice	Chi-Square value	df Asymptotic Significance
Age	Young age group	8	252	1.264	2 .531
	Middle age group	0	37		
	Elderly group	0	3		
Gender	Male	1	104	1.829	1 .176
	Female	7	188		
Ethnic	Malay	5	255	12.181	3 .007
	Bumiputera Sabah/Sarawak	1	4		
	Indian	1	29		
	Non-Malaysian	1	4		
Marital status	Single	5	181	11.190	2 .004
	Married	2	109		
	Divorced	1	2		
Education	Primary	0	6	2.208	2 .332
	Secondary	6	142		
	Tertiary	2	144		
Employment status	Private sector	1	83	6.922	4 .140
	Government sector	0	52		
	Self-employed	0	35		
	Housewife	1	15		
	Student	6	107		
Income	B40	3	129	0.738	3 .864
	M40	2	50		
	T20	0	13		
	No income	3	100		

4. Discussion

The COVID-19 is considered a highly infectious disease. As well as its recognised mode of transmission via spray droplets, 2019-nCoV strains can also be transmitted when an individual touches a surface where the droplets land, followed by touching of mouth, nose or eyes. A recent discovery has also claimed the viruses to be airborne and thus can be much more easily transmitted. The spectrum of the disease ranges from asymptomatic, mild to moderate, and to severe cases, requiring life support or resulting in multi-organ failure, and death.

The Malaysian government had adopted WHO's simple and concise approach to educate the communities regarding COVID-19's essential preventive measures. The slogan included the 3W's which referred to the practices of hand washing, wearing of facemasks, and the warning instructions towards avoiding shaking of hands, correct coughing and sneezing ethics, disinfection, staying at home, and seeking medical attention if symptomatic. The slogan also included the 3C's which referred to the avoiding of crowded places, confined places, and close conversation.

Three new variants of concern (VOC) were recently discovered in Malaysia, which are delta, alpha and beta strains that are said to be highly virulent with a higher rate of mortality and are much more complex in terms of their detection by using the gold standard lab tests. A few variants of interest (VOI) has also been detected, which are theta, eta and kappa strains. Compared to VOC, VOI is said to be less virulent and more isolated in terms of their transmission. Based on the highly concerning ability of the viruses to continue mutating into new forms, this has undoubtedly shed more light on the severity of COVID-19 disease. Serious attentions are required from the government, so as to implement updated guidelines, for example the wearing of double face masks or with face shield and limiting the time spent outdoor as much as possible, whenever needed.

The country is expected to achieve herd immunity by the end of 2021, once 80.0 % of the population are fully vaccinated. Thus, the mainstay prevention of COVID-19 in the meantime solely rests on the rigid application of the SOPs on a daily basis including the practices of the 3Ws, the avoidance of the 3Ws, and adherence to the correct close contacts guidelines, such as to self-isolate, avoid sharing of home paraphernalia, practices of good home ventilation, and immediate seeking of medical attention if symptomatic.

Almost two years after its emergence in late December 2019, it is clear that the outbreak will continue to pose a threat and there is a general concern about what the future may entail in the long run. The outcome of this pandemic very much depends on the efficacy of the methods of prevention and the behaviour of the general public as a whole. This brings us to the next question of the extent of the general public's

compliance to the COVID-19 SOPs and whether the gaps in their knowledge and perception of the disease if any, are influencing their attitudes and practices.

Thus, the aim of this study was to assess the level of knowledge, attitudes and practices (KAP) of the general public in Malaysia concerning COVID-19. In this case, social media users in Malaysia were selected as representative of the country's general public in determining their level of KAP and whether they differed according to various socio-demographic characteristics.

The study outcomes indicated that most of the social media users (83.0 %) achieved overall good knowledge on COVID-19, which was similar to the finding illustrated in a study conducted by Azlan et al⁸. Although there was a wide dispersal of knowledge levels amongst the respondents in this study, the number of those who scored less than 30.0 % was too small to be counted as significant.

Even so, the knowledge on common clinical symptoms, places of easily spread, high-risk groups, and close contacts guidelines were found to be unsatisfactory. People need to be aware that difficulty breathing is not a common COVID-19's clinical symptom, unlike what majority of the respondents thought, and that it can only be manifested in patients at severe stages of the disease, which are category 3 and above³⁷. There is also the need to address the fact that most of the respondents were still confused with the knowledge that open air spaces is much better compared to closed and confined spaces due to better ventilation³⁸, based on how they perceived recreational parks as one of the possible places of easily spread. Apart from elderly people and those with chronic diseases, children are not considered a high-risk group, unlike what majority of the respondents perceived. WHO revealed that only about 8.5 % of the reported cases involved children under the age of 18, with relatively few deaths, and are mild in severity³⁹. In our findings, most of the respondents considered moving out of their current residence if they were found to be closed contacts, which is not only an inappropriate action to do but is also reckless. Thus, it was worth reiterating that people who are in close contact with COVID-19 patients are to stay at home and self-isolate as a precaution from needlessly spreading the viruses in case they are infected.

The study conducted by Azlan et al showed some significant associations between the respondents' knowledge scores and two of the socio-demographic characteristics, which was the age group and monthly income⁸. Whereas in this study, a significant difference can only be seen between the knowledge score of the respondents and the educational level. The respondents with higher levels of education were found to be more knowledgeable compared to those with a lower level of education. In the context of the current outbreak, given the disease's unprecedented emergence, it tends to leave those with lower level of education more confused compared to those already equipped with a certain basic science and health knowledge in coming to terms with the gravity of the situation. People with lower level of education will require much

more time, effort and willingness to process the new piece of information and to educate themselves. Moreover, with the current inconsistent dissemination of information by various parties, and the rampant rate of new discoveries, this will only heighten the general public's confusion and struggles to keep up. Although the respondents with primary education level may seem to demonstrate a poor level of knowledge in this study, the small number of respondents (2.0 %) meant that the finding didn't represent the group as a whole.

In terms of the attitudes of the respondents toward COVID-19, the respondents displayed full faith and confidence in the efficacy of wearing face masks, hand hygiene practices, and social distancing in reducing the spread of COVID-19, which was similar to the findings illustrated in a study conducted by Salam et al³³. This finding was not surprising however, seeing that majority of the respondents were equipped with the necessary knowledge regarding covid-19's mode and risks of transmission. In fact, this positive attitudes allows us to predict the respondents' compliances to the practices of the preventive measures. The attitudes of the respondents towards the perceived risks of getting COVID-19 however seemed inadequate. Most of the respondents were either uncertain or perceived themselves as having a very low chance of getting the disease. This could be due to a lack of adequate risk perception causing them to underestimate the whole situation, thus reducing fear and discouraging them from improving their behaviours toward COVID-19. In the context of this study, however, this finding was deemed fairly logical, since the majority of the respondents were in the young and middle-aged adults groups with a perceptibly low chance of getting COVID-19, according to WHO.

As predicted, this study revealed remarkable practices of the respondents to COVID-19's preventive measures. The majority of the respondents always avoided crowded places, wore face masks, practised proper hand hygiene using hand sanitisers and used the MySejahtera application or recorded their details whenever entering public places. However, we were unable to conclude whether their compliances were due to self-awareness and their willingness to conform to the new normal alone or they were largely the results of the strict enforcement rules which had been put forth by the Malaysian government through CDC act 242, under the emergency ordinance. For example, the compliances to the wearing of face masks, proper hand hygiene, and the use of MySejahtera app could well be due to the fact that most places tend to allocate a person at their entrance, who is in charge at monitoring the general public.

There were a few respondents however who reported to never avoid visiting crowded places such as weddings. This can be put down as their lack of knowledge on the places of easily spread or their unpreparedness to the sudden suspension of cultural ceremonies, which has long been considered as one of the most imperative traditions in the country. This finding was consistent with the resultant reported cases of COVID-19 clusters related to such activities, such as Kolopis cluster in Penampang,

Sri Gaya cluster in Sabah, Kampung Binyu cluster in Sarawak and Kampung Tengah cluster in Negeri Sembilan^{11, 16, 19, 25}.

Additionally, the fact that there was a significant difference in the respondents with good practice of proper hand hygiene using hand sanitisers to the level of education, this further amplifies the need for targeted approach focussing on intensifying the accessibility for people with lower level of education to all the necessary knowledge regarding COVID-19. However, to say that the respondents with a lower level of education in this study were less aware of the consequences of not practising proper hand hygiene is an underestimation. This was due to the small number of respondents representing the lower level of education group in this study and that most of them had shown good practices to other preventive practices.

5. Limitations of the study

Despite the reassuring study outcomes, the present study had some limitations. Since the study population only included social media users and the survey was disseminated online, this meant that people with no internet access, social media accounts, IT knowledge, and electronic devices were not able to participate. On the other hand, the survey was distributed by young adult researchers via social networks to family members, friends, friends of friends, and close acquaintances. These explained why there were an over-representation of young adults' respondents. Another recognized limitation was the survey's exclusive availability in Bahasa Malaysia and the English language. Other language speakers were thus discouraged from taking the survey.

6. Conclusions

The current study was able to give a comprehensive depiction of the level of knowledge, attitudes and practices of the social media users toward the COVID-19 outbreak. They have shown an excellent level of knowledge regarding COVID-19 with an average knowledge score of 82.3 %, and this was manifested in their good attitudes and practices. This in turn will offer a positive outlook to the future and thus lifts the people's spirit in this dire time. There was however, several grey areas of discrepancies in some aspects of the KAP, which need to be addressed in order to initiate further waves of genuine behavioural changes among the general public that does not stemmed from instilled fear towards the law enforcement but their willingness to adapt to the changes brought by COVID-19 as the new normal.

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