

ORIGINAL ARTICLE

KNOWLEDGE, ATTITUDE AND PRACTICES (KAP) THEORY TOWARDS PREVENTIVE MEASURES AMONG MALAYSIANS IN EARLY OUTBREAK OF COVID-19

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ABSTRACT

Many efforts are currently underway around the world to improve public awareness about preventive measures and to disseminate appropriate information about COVID-19 in curbing the spread of the disease. This study aims to see if there is a link between people's awareness on preventing and controlling the spread of the COVID-19 towards their knowledge, attitude, and adoption of protective practices among population in Malaysia at the beginning of the outbreak. A cross-sectional study was conducted among 355 participants in between March 30th to May 21st, 2020. A set of questionnaires that consists of five main themes: (1) socio-demographics, (2) awareness, (3) knowledge, (4) attitudes, and (5) practices towards prevention and controlling COVID-19 were distributed via google forms. The overall Knowledge, Attitude and Practice (KAP) scores were analyzed based on Bloom's cut-off point of 80%. The results of this study show that Malaysians' awareness highly influence their knowledge ($r=0.702$, $P=0.000$), attitude ($r=0.606$, $P=0.000$), and practices ($r=0.684$, $P=0.000$) in preventing and controlling COVID-19 spread. Therefore, this KAP theory needs to be modified to include awareness in assessing people's thoughts towards the disease prevention measures. It was also recommended that further efforts be taken to continuously raise awareness while also removing any stigma and negative attitude, so that Malaysia is capable of minimizing the COVID-19 infections in the country.

Keywords: Attitude, Awareness, COVID-19, Knowledge, Practice, Preventive Measures

INTRODUCTION

COVID-19 (Coronavirus Disease, 2019 & SARS-CoV-2) is the newly discovered emerging respiratory disease that poses a severe threat to public health. The COVID-19 cases and deaths have continued to rise globally, putting the entire world in a state of emergency that is claiming thousands of lives every day. This phenomenon subsequently gives negative impact on the social, economic, political, and health status of the affected countries. The battle against COVID-19 in Malaysia has just entered its third wave. Cumulatively, as of 27th of May 2021, the number of COVID-19 cases has raised up to 541, 224 in Malaysia with approximately 8,000 new confirmed cases have been registered daily¹. In light of flattening the COVID-19 curve, Malaysia government authorities have announced a three-phase nationwide lockdown with a "total lockdown" on 25th June, 2021.

Although there are various efforts such as movement restrictions have been taken by Malaysian authorities in combating this serious outbreak, the number of new daily COVID-19

infections is still growing at an alarming rate during the data collection of this study. Even though, lockdown helps to reduce the current number of cases, this full or partial lockdowns cannot be sustained in the long run due to the difficulty of balancing numerous health, social, and economic issues. Furthermore, according to the World Bank forecasts, the global recession as a result of COVID-19 is the worst since World War II, with millions of people losing their jobs and slipping into poverty². In fact, the World Health Organization (WHO) has warned that premature lifting of lockdowns could lead to a resurgence of infections and even more serious, long-term economic damage³. Therefore, the success or failure of measures taken by government is largely dependent on people's awareness on the disease and if the spread is not well managed on time, it will affect Malaysia's economy extensively.

There are numerous studies being conducted to investigate the KAP levels during the spread of COVID-19 but, there are still limited studies on KAP based on people's awareness in preventing and controlling the COVID-19. Lack of awareness (due to a knowledge gap, false attitudes/beliefs,

and wrong practices followed) among the people about precautionary measures for transmission prevention and/or lack of sensitization about the seriousness of the situation has been identified as one of the factors contributing to higher rates of infection and mortality⁴. As a result, the general public's practices influence the pandemic's control, which is in turn influenced by knowledge and attitude. Yet, it remains unclear to see if there is a link between people's awareness on preventing and controlling the spread of the virus towards their knowledge, attitude, and practices and to see whether socio-demographic characteristics of people are affected by the level of awareness of individuals. The purpose of this study is to assess the public awareness about the COVID-19 and, gain deeper insights into current public perceptions and practices toward preventive measures. Thus, it will help in identifying whether awareness can be a part from KAP theory that helps in assessing the public's adoption of healthy practices and behaviours. Furthermore, identifying gaps and taking steps to strengthen ongoing prevention efforts is critical.

LITERATURE REVIEW

The knowledge and awareness on COVID-19 play a critical role in breaking the transmission chain in the community. The terms, knowledge, and awareness may sound similar, but they are actually not^{5, 6}. Knowledge by definition is the recall of facts, information, and skills gained through practice or education⁷. Meanwhile, perceiving, knowing, feeling, or being aware of events, objects, thoughts, emotions, or sensory patterns is known as awareness⁸. Here is the difference between knowledge and awareness. "Have you ever heard of Parkinson's disease?" The expectation of the answer here might not have to be associated with any further knowledge. This has been referred to by⁹ as general awareness. Do you know the COVID-19 mode of transmission? This example is clearly referring to knowledge that leads to action. The knowledge mode of transmission in this context can be implicit (as with practical skill or expertise) or explicit (as with the theoretical understanding of a disease) or less formal ("justified true belief")¹⁰. In simple terms, knowledge is a fact, while awareness is the perception of knowledge and its application in everyday life¹¹.

In this study, the original Knowledge-Attitudes-Practices (K-A-P) theory proposed¹² previously has been modified in conjunction with the importance of awareness based on several systematic reviews^{5, 13-19}. The theoretical framework in Fig. 1 posits public awareness regarding the COVID-19 pandemic could be measured by direct influence of the general public practices, which is influenced by the knowledge and its attitude. In addition, the socio-demographic factors may also exert some influence on the people's behaviour. The original K-A-P model is based on the

cognitive-affective-behaviour theory in social psychology¹², which suggests an increase in knowledge will affect attitude and consequently practices. In other words, the existing model suggested is based on the increasing personal knowledge, which will influence the behavioural change among public¹².

The original K-A-P model aims to elicit what is known (knowledge), believed (attitude), and done (practiced) in the context of the topic of interest^{20, 21}. However, public awareness is believed as a key driver of personal behavioural change^{4, 22}. Thus, it can be hypothesized that participants' knowledge about COVID-19 prevention may influence the way they will develop certain attitudes and practices regarding the prevention of COVID-19. Furthermore, it is believed that the people's awareness is essential for establishing prevention beliefs, fostering positive attitudes, and promoting good practices²³. The proposed model illustrates that social awareness is not only important in managing the spread of infectious diseases but also develops sense of responsibility, which reflects people's understanding about COVID-19 (awareness), what does it mean to them (understanding/ knowledge), and what to do with the information (action). The existing K-A-P model is only used for understanding and analysing human responses to particular phenomena, especially in the field of health studies but has not taken into account, the effect of social awareness on infectious diseases. Therefore, this original K-A-P theory need to be modified to include awareness in assessing people's thoughts towards the disease prevention measures. This study aims to see if there is a link between people's awareness of preventing and controlling the spread of the COVID-19 towards their knowledge, attitude, and adoption of protective practices among public in an early phase of the pandemic.

METHODS

Study Design and sampling

A cross-sectional survey has been conducted among 355 participants in Malaysia between 30th March and 21st May 2020 using convenience sampling approach. The questionnaire was designed in accordance with previously published literature^{22, 30} and the survey was pre-tested for validation among healthcare providers. The study was approved by institution ethic committee. All participants were requested to sign a consent form before filling the questionnaire to register their willingness to participate. The survey was prepared in both Malay and English language versions and took about five minutes to be completed. The questionnaires were distributed online using google forms. The questionnaire consists of five main themes: (1) socio-demographics (8 items), (2) awareness (5 items), (3) knowledge (16 items), (4) attitudes (5 items),

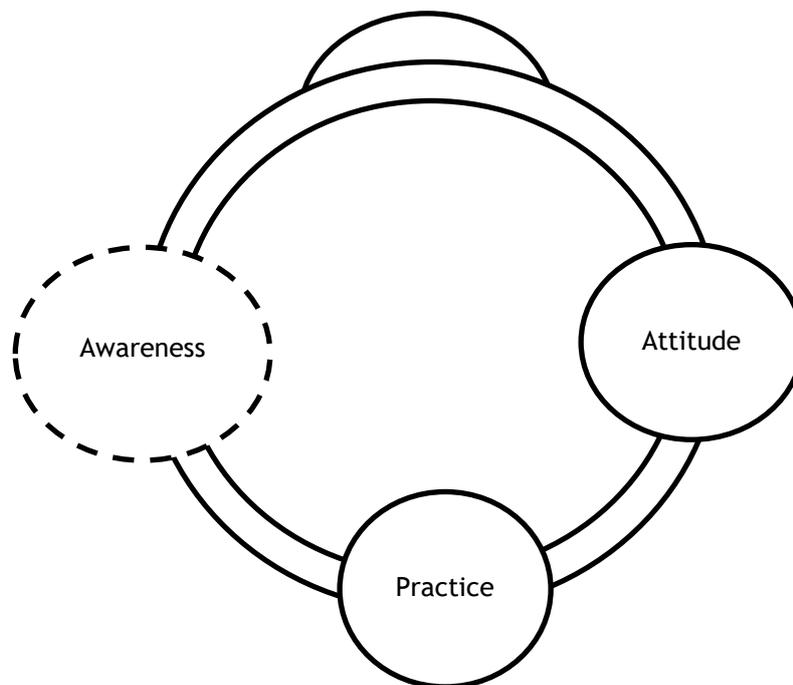


Figure 1: Proposed theoretical framework of an enhancement of KAP theory with awareness

and (5) practices towards prevention & controlling COVID-19 (8 items). The total scores for knowledge, attitude, and practice were categorized into good/positive or poor/negative based on Bloom's cut-off 80% point out of the total expected score for each theme³¹.

Statistical analysis

Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) v.16.0 (SPSS, Inc., Chicago, IL, USA). All the categorical variables were presented as frequencies and percentages while Mean \pm Standard Deviation (SD) were used for all the continuous variables. In order to compare the mean differences of KAP scores, Independent sample T-test and One Way ANOVA was used. Correlation was analysed using Pearson correlation coefficient to describe the strength and direction of the relationship among knowledge, attitudes, and practices. The value of correlations were interpreted using the following criteria: 0-0.30=very weak correlation, 0.30-0.5=low correlation, 0.5-0.70=moderate correlation, 0.70-0.9=strong correlation and 0.90-1.00=very strong correlation³². All statistical tests were two-tailed, and the statistical significance level was set at P-value < 0.05.

RESULTS

Socio-demographic characteristics of the respondents

A total of 355 participants have completed the survey. Out of 355, 71.0% of the respondents were female (252/355) and 29.0% were male (103/355). The majority of respondents were Malaysians, representing 99.44% and the rest were non-

Malaysians. Most of the respondents were single (61.1%). While in terms of age groups, half of the respondents were less than 24 years old which is 50.1%, followed by 25-44 years and 45 years old representing 21.7% and 20.8% respectively. Majority of the participants from this study are Malay (94.6%). The highest education level of the respondents is undergraduate (Diploma & Degree) which represents 72.4%. More than half of the respondents (51.8%) were students, followed by employed either in the private, government or business sectors for which 35.8%. Most of the participants (61.4%) are from urban areas. Table 1 shows the summary of the socio-demographic characteristics of the respondents.

The level of awareness on preventing and controlling COVID-19

The overall mean awareness score was 23.05 ± 3.24 . It was found that the level of awareness of Malaysia regarding the measures taken to preventing and controlling COVID-19 was high with an overall correct rate of 92.2% ($23.05/25 \times 100$). Majority of respondents (97.1%) are aware of the current outbreak of this virus, where it is more fatal than normal flu which show the highest percentages. Besides, 96.9% of them are aware that the task of breaking the COVID-19 network is a responsibility of everyone by following the pre-cautionary steps that government has been taken for this critical disease condition. In addition, 85.0% of them realize a good knowledge about COVID-19 is the best method of disease prevention. On the other hand, majority of participants (75.5%) are aware of the importance of getting medical treatment immediately if any infection symptom appears (Table 2).

Table 1: Socio-demographic characteristics of respondents

Characteristics	n=355	Percentage (%)
Gender		
Male	103	29.0
Female	252	71.0
Nationality		
Malaysian	353	99.4
Non-Malaysian	2	0.6
Marital Status		
Single	217	61.1
Married	138	38.9
Age Group		
< 24 years	178	50.1
25 - 44 years	77	21.7
>45 years	74	20.8
Race		
Malay	336	94.6
Chinese	13	3.7
Indian	6	1.7
Education Level		
Postgraduate (Phd & Master)	51	14.4
Undergraduate (Diploma & Degree)	257	72.4
School (Primary & Secondary)	47	13.2
Occupation		
Employed	127	35.8
Unemployed/Retired	30	8.5
Student	184	51.8
Others	14	3.9
Place of Residence		
Rural	135	38.0
Urban	218	61.4

Table 2: Awareness about preventing and controlling COVID-19 (n=5 items)

Item No.	Items description	SA & A		Not sure		SD & D	
		n	Percentage (%)	n	Percentage (%)	n	Percentage (%)
E1	I am aware that the current outbreak of this virus is more fatal than normal flu	145	97.1	2	0.6	8	2.3
E2	I am aware that the task of breaking the COVID-19 network is everyone's task	344	96.9	4	1.1	7	2
E3	I aware of the pre-cautionary steps that government has been taken	344	96.9	4	1.1	7	2
E4	I realize a good knowledge about COVID-19 infection is the best method to control and prevention the outbreak	302	85.0	39	11.0	14	4
E5	I realize that I need to get medical treatment immediately if I have the infection symptom	339	75.5	9	2.5	7	2

Note: SA- Strongly agree, A-Agree, SD-Strongly disagree, D-Disagree.

Table 3: Correlation between scores of knowledge, attitude, and practice towards awareness scores

Attribute	Means of awareness scores		
	Mean ± SD	r	P-value
Knowledge	14.23 ± 2.61	0.702	0.000**
Good	23.55 ± 1.80		
Poor	19.22 ± 7.09		
Attitude	22.97 ± 3.02	0.606	0.000**
Positive	23.57 ± 2.22		
Negative	18.34 ± 6.13		
Practice	36.55 ± 3.03	0.684	0.000**
Good	23.50 ± 2.25		
Poor	18.35 ± 6.65		

** Correlation is significant at the 0.01 level (2-tailed)

Relationship between awareness and KAP scores

The relationship between awareness scores and KAP are demonstrated in Table 3. The overall mean of COVID-19 knowledge scores is 14.23 (SD: 2.61, range: 0-16), corresponding to 88.9% (14.23/16*100) correct rate on this knowledge assessment. In addition, the mean attitude score is (22.97±3.02) with an overall correct rate of 91.9 % (22.97/25*100). Meanwhile, the mean practice score of the participants is 36.55±4.69 with an overall correct rate of 91.4% (36.55/40*100). It is found that there are statistically significant strong

positive relationships between awareness and knowledge (r=0.702, P=0.000), awareness and attitude (r=0.606, P=0.000), and awareness and practices (r=0.684, P=0.000). This result indicate that Malaysians' awareness is highly influenced by their knowledge, attitude and practices towards preventing and controlling COVID-19 outbreak.

Relationship between awareness with respect to socio-demographic characteristics

The comparison between socio-demographic characteristics and awareness scores are demonstrated in Table 4. The mean awareness

score of the female respondents (23.43±2.59) is slightly higher than males (22.14±4.32) (P=0.001), urban residents (23.48±2.49) have a significantly higher mean score compared to rural residents (22.79 ±3.60) (P=0.034). On the other hand, there are statistically significant differences between

the mean of awareness and race (P=0.030), where the highest mean of awareness scores obtained for Indian (23.83±1.94), it followed by Malay and Chinese for which (23.13±3.11) and (20.77±5.60) respectively.

Table 4: Comparison of awareness with socio-demographic characteristics

Characteristics	Awareness	
	Mean ± SD	P-value
Gender		
Male	22.14 ± 4.32	0.001**
Female	23.43 ± 2.59	
Age Group		
<24 years	22.81 ± 3.15	0.378
25-44 years	23.28 ± 3.17	
>45 years	23.05 ± 4.07	
Marital Status		
Single	23.04 ± 3.24	0.210
Married	24.00 ± 0.00	
Nationality		
Malaysian	14.23 ± 2.62	0.679
Non-Malaysian	15.50 ± 0.71	
Race		
Malay	23.13 ± 3.11	0.030**
Chinese	20.77 ± 5.60	
Indian	23.83 ± 1.94	
Education Level		
Postgraduate (PhD & Master)	23.20 ± 3.38	0.762
Undergraduate (Degree & Diploma)	23.08 ± 3.32	
School (Primary & Secondary)	22.74 ± 2.57	
Occupation		
Employment	23.30 ± 3.39	0.689
Student	22.86 ± 3.10	
Unemployment	23.10 ± 3.91	
Others	23.29 ± 1.90	
Place of Residence		
Rural	22.79 ± 3.60	0.034**
Urban	23.48 ± 2.49	

** Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION

Since initial outbreak of COVID-19 disease in China, it has spread widely to various countries around the world. In the present study, awareness, socio-demographic, knowledge, attitudes, and practices towards COVID-19 were evaluated among Malaysians. The result from this study shows that awareness level of Malaysia society regarding COVID-19 in the early spread of pandemic was high with the score obtained more than 80%. This result is consistent with the previous works^{18, 19, 24, 30, 33-35}. This rate shows high level of awareness among Malaysia citizens in the early COVID-19 outbreak, which is not surprising. At the beginning of the outbreak, Malaysians were actively seeking information on this contagious disease from various channels of information either from local or international news, and majority of them were aware that COVID-19 virus is more fatal than normal flu. In general, it is found that most of the participants in this study are knowledgeable about COVID-19 and they expected more detailed information, particularly on how to prevent the spread of this infectious disease. Through the assessment of the general knowledge on COVID-19, it was discovered that there are a few misconceptions among participants about the mode of COVID-19 transmission that need to be addressed^{4, 30}.

Many studies reported the importance of awareness towards knowledge, attitude and practice of society to reduce the spreading rate during pandemics¹³⁻¹⁶. Furthermore, lack of awareness contributes to bad knowledge, undesirable attitudes and practice, which leads to negative impacts on infection-control²⁵. Based on our findings, the respondents' awareness on COVID-19 is significantly correlated with the knowledge, practice and attitudes. In this context, it is believed that knowledge about pandemic, its cause, how it spreads, and significant impact on awareness and practice of preventive measures in this pandemic period. In addition, previous studies have also shown that transmission of the disease is associated with inadequate awareness of infection prevention practices^{36, 37}. This is in line with a previous study, which found that a lack of awareness contributes to negative attitudes²⁵ that concurrently limit the people's knowledge about the disease, and subsequently limit their understanding of practices for the prevention of COVID-19 spread. Evidence also suggests that public awareness and preventive behaviours are important in prevention and control of this disease. This study shows that changing people's behaviours and responses during disease outbreaks can reduce the size of the outbreak. Lessons learned from previous pandemics, such as SARS in 2003, the H5N1 epidemic, Swine Flu, and H1N1 in 2009, suggest that good public knowledge, attitudes, and practices are critical for successful control and outbreak prevention²⁶⁻²⁹.

In this study, a substantial number of socio-demographic factors significantly affect participants' awareness scores towards prevention and controlling of the disease such as gender, race, and location of current resident, which were quite similar with a study conducted in USA and found that women had better awareness compared to men^{30, 38}. This is in concordance with previous studies where, men with lower risk perceptions and self-efficacy in preventing infection are less likely to follow the COVID-19 prevention guidelines^{24, 35}. Several literatures also suggest that the place of residence (i.e., rural, urban) is one of the factors that influence the public understanding. The results of the present study are in line with other previous studies where those who live in an urban area provide adequate knowledge, positive attitude and good practices rather than those in rural residence^{30, 39-41}. It is suggested that access to information, dissemination and illustration of preventive behaviours, and sanitary educational measures are critical, particularly in rural areas, among the elderly, and in poorer neighbourhoods or communities, where these categories of people may have difficulty accessing information or face financial or resource barriers to putting preventive measures in place⁴².

The wide spread of COVID-19 epidemic is primarily due to common routes of transmission such as travel, social interactions, and infectious transmission. A public health approach to implement effective infection prevention and control practices at all levels is the most important strategy for dealing with a communicable disease (like COVID-19). Therefore, it is important to empower people by educating and effectively communicating accurate information about the correct preventive measures. Among the recommended measures are frequent hand washing, maintaining social distance, isolation, using alcohol-based hand cleaning products, covering the mouth and nose with disposable tissues while coughing and sneezing or properly covering the mouth⁴³. In addition, high-touch surfaces such as doors, toilets, switches, and so on, should be disinfected with household disinfectants on a regular basis. This is particularly important for self-quarantined patients at home^{43, 44}. SARS-CoV-2 has been shown in recent studies to last for several hours to several days on various surfaces, such as 4-5 days on wood and less than 8 hours on latex gloves⁴⁴. Temperature and humidity have also been shown in studies to have no effect on the number of cases unless people adhere to all health regulations. As a result, it is critical to adhere to sanitary standards, which can help to reduce the virus's spread. Furthermore, the WHO advises that disinfection procedures be followed correctly and consistently⁴³.

As the number of COVID-19 cases continues to rise, WHO has advised the public to seek COVID-

19 information only from reliable sources (such as national public health authorities)⁴³. The media can be used as a platform for spreading authentic knowledge, increasing confidence, and confirmed practices required to prevent COVID-19 infection. New information is being generated on a daily basis as researchers continue to study the COVID-19 pathogenesis. Thus, it is suggested by MOH to regularly update the new information found via their website. The influx of misinformation in the media could negatively affect a person's mental health due to the continuous fear of being infected⁴⁵. This indicates that information plays a large role in shaping knowledge, attitudes, and general practices during the COVID-19 pandemic. An analysis on countries and regions in Asia Pacific and Europe, done by⁴⁶ has identified five prerequisites for easing COVID-19 lockdowns and restrictions: knowledge of infection status, community engagement, adequate public health capacity, adequate health-system capacity, and border controls.

This study had several limitations. First, the design involved convenience sampling and only includes Peninsular, but not Sabah and Sarawak, and therefore our findings could not be generalised to Malaysian population in other countries. Secondly, this cross-sectional study only investigated the level of awareness in the early outbreak. It is believed that people's knowledge, behaviours and attitudes are always changing in accordance with the awareness on the disease as time goes on. Therefore, it is recommended to assess public awareness and practices related to the coronavirus at every phase of the pandemic to gain deeper insights into current public perceptions and practices.

CONCLUSION

In summary, the present research shows that awareness of the society related to infectious diseases are important to minimize the spread of the virus in the country. The results of this study show that Malaysians' awareness highly influence their knowledge, attitude, and practices in preventing and controlling COVID-19 spread. Therefore, this KAP theory needs to be modified to include awareness in assessing people's thoughts towards the disease prevention measures. It is also recommended for further actions need to be undertaken to continuously raise the awareness level and at the same time to remove any stigma and negative attitude, so that Malaysia is capable of minimizing the COVID-19 infections in the country. In this current pandemic, people should be provided with the most up-to-date information on infection control procedures and how to maintain a hygienic environment, as well as adopt social distance and avoid social gatherings. Increasing public awareness is one potential measure to limit the spread of infectious disease, which will have an impact on the economic, social, and mortality

burdens of any infectious disease. Further comprehensive improvement in the public awareness about COVID-19 should be considered to mitigate the pandemic's negative effects.

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Conflict Of Interest

The authors declare no potential conflict of interest.

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