COVID-19 One Year on Community Response to the New Norms among Malaysians

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Abstract

The global community has struggled with COVID-19 for a year. However, the ability to comply with strict preventive measures for many more months to come should be strictly monitored. The study aimed to assess COVID-19 preventive practices and knowledge among the Malaysian public after a year of the COVID-19 pandemic. This was a questionnaire-based study performed on adults in Malaysia, assessing both practices and knowledge of COVID-19 preventive measures. A total of 2558 respondents were included. The average practice score was 7.9±0.99 (maximum possible score=9). Overall, when leaving the house, the most common type of mask used were medical masks (n=1792, 70.1%). A majority admitted that they always wore masks (n=2284, 89.3%), approximately half (n=1325, 51.8%) only sometimes sanitized their hands, whilst 1456 (56.9%) always complied with the one-meter social distancing rule. The average mask knowledge score was 11.1±1.9 (maximum possible score=15). The average score for other preventive measures was 5.7±0.7 (maximum possible score=6). There was a significant positive association between practice and overall total knowledge of prevention measures (ρ=0.1, 95% CI=0.02-0.01, p=0.03), in which an increase in prevention practices was observed with an increase in overall knowledge score. This study demonstrates that even after a year of struggling with the new norms of COVID-19, there is still a need to continuously educate the public on COVID-19 preventive measures among Malaysians. In addition, further steps must be taken to improve the current practice of preventive measures, which includes targeting behavioral changes.

Keywords: Coronavirus, COVID-19, Infection, Pandemic, Prevention, Virus

INTRODUCTION

State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results. (Times New Roman-9) The global novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), termed coronavirus disease 2019 (COVID-19) pandemic is spreading at an alarming rate [1-3]. The current infection rate stands at 60 million cases with over a million deaths worldwide [4]. It has an estimated incubation period of 1 to 14 days, with mild clinical manifestations of cough, fever, and shortness of breath, observed in about 80% of those infected [5]. Severe conditions are observed in 15% of those infected with the virus, with 5% requiring critical care treatment [5]. In seriously ill patients, symptoms may include severe respiratory problems, kidney failure, or death [5]. Because of the rapid and disruptive diffusion of COVID-19 infection as well as the current lack of pharmacological treatment, managing COVID-19 infected patients has become a challenge.

Preventive measures have become the mainstay of COVID-19 management, which includes wearing a medical mask in public and crowded places. The use of medical masks by the general public during severe pandemics could provide a partial protective effect, reducing virus transmission [6]. Since the outbreak, the use of face masks has become ubiquitous in many Asian countries such as Malaysia, China, South Korea, and Japan. In Malaysia, the government has enforced compulsory face mask policies in public areas, to aid in controlling and reducing virus spread [7]. This has led to a substantial increase in face masks used in the community settings, exacerbating the global shortage of face mask supplies. Combined with soaring prices, the current situation risks supply constraints to both frontline healthcare professionals as well as the general public [8].

As a consequence, in some regions, the public has opted for makeshift alternatives such as repeated usage of disposable

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medical masks or reusable cloth masks [9]. Very few studies have looked into the efficacy of alternative masks in general. In preventing influenza-like illness among healthcare personnel, cloth masks were found to be least effective when compared to a standard practice involving the use of medical face masks [10]. Newer data suggests that cloth masks can be used, although fabrics with tight weaves and low porosity, such as those found in cotton sheets with high thread count were preferable [11]. As such, with the current COVID-19 pandemic, WHO has initiated a piece of advice on the use of masks for the general public, in which a three-layer non-medical or fabric mask can be used by the general public if medical masks are not available [12]. However, it should be noted that medical masks are recommended for vulnerable populations such as the elderly and immunocompromised [13]. The guidance on the proper way to wear, take off, and dispose of masks should also be communicated to the public. Improper use of face masks, such as not changing disposable masks, or not cleaning cloth masks, could jeopardize the protective effect and even increase the risk of infection. Despite the compulsory need to wear masks, WHO clearly states that it can also give people a false sense of security, leading them to neglect other measures [13].

Apart from the use of masks, other preventive measures are also highly recommended to ensure a reduction in transmission of the virus, such as ensuring physical distancing and hand hygiene [13, 14]. Ensuring appropriate physical distancing, hand hygiene as well as the use of masks together, have managed to reduce the impact of COVID-19 [15]. However, despite various measures in educating the public on these methods, a significant proportion does not strictly observe hand hygiene [16]. The lack of hand hygiene was observed despite appropriate knowledge of preventative measures during COVID-19 [16].

Therefore, in ensuring the control of COVID-19 spread, appropriate dissemination of information is vital. Although Malaysia imposes strict guidelines on the use of masks, physical distancing, and hand hygiene, little is known with regards to the knowledge and practice of the general public a year into the pandemic. Various methods have been used to disseminate information towards the public, including regular updates through text messages, social media, television and radio reminders, and daily reminders by the Ministry of Health during COVID-19 during press conferences. Earlier studies during the first few months of the COVID-19 outbreak demonstrated that approximately half of Malaysians did not wear masks although the majority admitted to following hand hygiene recommendations [17]. However, ensuring that preventive measures are maintained in the long-term is also vital as the world continues the struggle towards reducing infection rates. Because of the need to assess compliance to preventive measures continuously, as well as the limited work looking into the knowledge and practice on the appropriate preventive measures a year into the COVID-19 pandemic in Malaysia, this work aims to focus on the public knowledge and practice of COVID-19 preventative

measures. This is to identify whether appropriate information is currently reaching the general public, having observed the need for improvement during the first few months of COVID-19 [17].

MATERIALS AND METHODS

Study Design
This was a prospective, cross-sectional study performed between November to December 2020 among the public in Malaysia. The study was questionnaire-based and performed among adults >18 years old, able to read and write in English or Malay with informed consent. Incomplete questionnaires were excluded from the study. Data was collected using a validated questionnaire which was disseminated online via email and other social media to minimize face-to-face interaction. A snowball sampling technique was used by identifying potential respondents online. These respondents were then asked to recruit others by forwarding the questionnaire to other potential subjects. This snowball sampling technique was repeated until the number sample size was achieved. However, respondents were made aware that they did not need to recruit others if they chose not to.

Ethical Approval
The study was approved by the appropriate institutional and national research ethics committee and was performed following the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. Ethical approval was obtained from the University Kebangsaan Malaysia Research Ethics Committee (JEP 2020-654) and the Ministry of Health Medical Research and Ethics Committee (NMRR-20-2328-56946).

Sample Size
The sample size required for the study was 384 respondents (5% margin error and 95% of confidence error), based on a population of 20 million adults in Malaysia [18]. Therefore, a minimum of 500 respondents was targeted to allow for possible exclusions and sub-analysis of data.

Questionnaire
The questionnaire was divided into 4 sections. The first section includes socio-demographics of respondents such as age, gender, ethnicity, presence of chronic illness, whether respondents were healthcare personnel, and types of masks used when leaving the house. Information on the practice of COVID-19 prevention measures was also assessed based on three questions: Do you wear a mask when you leave the house? Do you sanitize your hands frequently when you are out? Do you comply with the one-meter social distancing? Responses to these questions were based on a three-point Likert scale; 3-Always, 2-Sometimes, and 1-Never. The sum of the Likert scales was then calculated with a higher score showing better practice. Additional Yes/No questions were also asked: Do you face these problems when you wear a face

mask?: always touching your mask, headache, difficulty breathing, facial skin irritation, rash, dermatitis, facial acne, difficulty communicating, and discomfort.

The second section assessed knowledge on the use of masks among the public based on the WHO best practice guidance on mask management [12, 13]. This included fifteen statements that covered ways to use masks during the COVID-19 pandemic. Responses were based on three categories, true, unsure, and false. Correct answers were given a score of 1, whilst an incorrect or unsure response was scored as 0. The scores were then summed with a higher score demonstrating better knowledge.

Knowledge of other COVID-19 prevention measures based on the WHO guideline [14] was assessed in the third section. This was based on six statements with three possible responses; true, unsure and false. Correct answers will be given a score of 1. Incorrect or unsure responses were scored as 0. The scores were then summed with a higher score demonstrating better knowledge.

The overall total score on the knowledge of COVID-19 preventive measure was then analyzed by adding the score of the knowledge on mask use and the score of other preventive measures. A higher score demonstrated better knowledge.

The questionnaire was developed based on the COVID-19 WHO advice for the public [13, 14]. Face and content validation of the questionnaire was undertaken by a panel of five hospital pharmacists. Feedback was gathered to improve the questionnaire presentation, clarity, and congruency in meaning. Modifications were made, and a pilot test was performed among 40 respondents. The Cronbach's alpha for knowledge of mask use and COVID-19 preventive measure were 0.72 and 0.82, respectively.

Statistical Analyses

All analyses were performed using SPSS version 23.0 (IBM Corp, Armonk, NY, USA). Demographic characteristics, prevention practice, knowledge of mask use, and other COVID-19 preventive measure was assessed using descriptive statistics. A student T-test, ANOVA, Chi-squared tests, and Pearson correlations were used to evaluate the differences and associations between sociodemographic characteristics, practices, knowledge of masks, and other COVID-19 preventive measures. In all statistical analyses, $p<0.05$ was considered to be statistically significant.

RESULTS AND DISCUSSION

Socio-Demographic Data

Avoid extensive citations and discussion of published literature. (Times New Roman- 10) A total of 2558 respondents were included in the study **(Table 1)**. The respondent's ages ranged between 18-90 years of age. A majority of the respondents were female (n=1841, 72%),

Malay (n=1819, 71.1%) and did not have a chronic illness (n=2214, 86.6%). There was a fair distribution between those that were healthcare personnel (n=1127 44.1%), and non-healthcare personnel (n=1431, 55.9%).

Table 1. Socio-demographics of the study population (n=2558)

Data	Value/Mean	%/SD
Age, years	34.5	±11.9
Gender		
Male	717	28.0
Female	1841	72.0
Ethnicity		
Malay	1819	71.1
Chinese	42	16.5
Indian	143	5.6
Others	175	6.8
Chronic illness		
Yes	344	13.4
No	2214	86.6
Healthcare personnel		
Yes	1127	44.1
No	1431	55.9

COVID-10 Prevention Practices

Prevention practices of COVID-19 are as shown **(Table 2)**. The average practice score was 7.9±0.99 (score range=3-9, maximum score=9). Overall, when leaving the house, the most common type of mask used were medical masks (n=1792, 70.1%). A majority admitted that they wore masks at all times (n=2284, 89.3%), although approximately half (n=1325, 51.8%) only sometimes sanitized their hands. A total of 1456 (56.9%) always complied with the one-meter social distancing rule. The most common problem faced by respondents when wearing a mask was discomfort (n=1361, 53.2%), followed by always touching the face (n=1132, 44.3%). Other problems include foggy glasses (n=68, 2.7%), ears hurt (n=18, 0.7%), runny nose (n=13, 0.5%), facial sweat (n=12, 0.5%), mask does not fit or moves when talking (n=9, 0.4%), masks are expensive (n=3, 0.1%), nausea (n=2, 0.08%) and dry lips (n=1, 0.04%).

Table 2. Practice of COVID-19 prevention of the study population (n=2558)

Data	No.	%
Type of mask used		
Cloth	105	4.1
Medical	1792	70.1
Cloth and Medical	648	25.3
None	13	0.5
Do you wear a mask?		
Always	2284	89.3
Sometimes	266	25.6
Never	8	0.3
Do you sanitize hands?		
Always	1226	47.9
Sometimes	1325	51.8
Never	7	0.3
Do you comply with social distancing?		
Always	1456	56.9

Sometimes	1100	43.0
Never	2	0.1
Problems with wearing the mask		
Always touching face	1132	44.3
Headache	90	3.5
Difficulty breathing	822	32.1
Facial skin irritation	657	25.7
Facial acne	714	27.9
Difficulty communicating	825	32.3
Discomfort	1361	53.2
Others*	126	4.9

*Foggy glasses, ears hurt, runny nose, facial sweat, a mask does not fit or moves when talking, masks are expensive, nausea and dry lips.

Further analysis was performed between socio-demographics and prevention practices. There was a significant difference between the type of masks used and age (F=17.9, df=3, p<0.001). Those that were younger preferred both medical and cloth masks or medical masks only (33.0±13.0 years; 34.6±11.4 years, respectively), while respondents that used cloth masks or no masks at all were significantly older (39.4±10.6 years; 51.0±20.4 years, respectively). Chinese (n=105, 24.9%) and Malays (n=495, 27.2%) were more likely to prefer medical and cloth masks compared to other ethnicities (n=23, 13.1%) (χ2=24.9, df=9, p=0.003). Respondents with a chronic illness (n=26, 7.6%) were more likely to prefer cloth masks compared to those without a chronic illness (n=79, 3.6%) (χ2=40.5, df=3, p<0.001). Healthcare personnel (n=855, 75.9%) were more likely to prefer medical masks compared to non-healthcare personnel (n=937, 65.5%) (χ2=35.8, df=3, p<0.001).

Those that always wore masks were significantly older (34±11.9 years) than respondents that never wore masks (28.5±9.4 years) (F=21.5, df=2, p<0.001). Males were more likely to never wear a mask (n=3, 0.42%) compared to females (n=5, 0.27%) (χ2=14.9, df=2, p<0.001). Healthcare personnel were more likely to sometimes wear a mask (n=141, 12.5%) compared to non-healthcare personnel (n=125, 8.7%) (χ2=9.8, df=2, p=0.007). Those with a chronic illness were more likely to never wear a mask (n=3, 0.87%) compared to respondents without a chronic illness (n=5, 0.23%) (χ2=19.0, df=2, Fisher exact; p<0.001). Respondents that always sanitized their hands were significantly older (35.2±11.7 years) than respondents that never sanitized their hands (28.9±8.1 years) (F=21.5, df=2, p<0.001). Respondents with a chronic illness (n=2, 0.58%) were also more likely to not comply with the 1-meter social distancing rules compared to respondents with no chronic illness (n=0, 0%) (Fisher's exact; p=0.002).

Knowledge on the Use of Masks

Knowledge of the use of masks is shown (**Table 3**). The majority (n=2507, 98.0%) knew that masks should only be used by one person and that they must cover the mouth and nose, and gaps minimized between the face (n=2470, 96.6%). Few (n=714, 27.9%) respondents were aware that cloth masks should be washed at the highest temperature permissible.

Table 3. Knowledge on the use of masks among the study population (n=2558)

Statements	Response rate, n (%)		
	True	Unsure	False
Clean hands before putting on the mask	2394 (93.6)	128 (4.9)	36 (1.4)
Mask must cover the mouth and nose, and gaps minimized between the face and the mask.	2470 (96.6)	53 (2.0)	35 (1.4)
Do not touch the mask when wearing it.	2204 (86.2)	197 (7.6)	157 (6.1)
When removing, remove the front of the mask and then untie the back*	1002 (39.2)	593 (23.2)	963 (37.6)
After removing the mask, hands must be cleaned.	2421 (94.6)	102 (4.0)	35 (1.4)
Replace all damp masks with new dry ones.	2427 (94.9)	70 (2.7)	61 (2.4)
Do not re-use single-use masks.	2434 (95.2)	67 (2.6)	57 (2.2)
Dispose single use masks immediately upon removal.	2321 (90.7)	129 (5.0)	108 (4.2)
Cloth masks should be three layers – inner, internal, and outer layer.	2129 (83.2)	351 (13.7)	78 (3.0)
The internal layer of a cloth mask should not readily absorb water droplets.	1262 (49.3)	680 (26.6)	616 (24.1)
The external layer of a cloth mask should easily absorb liquid.	663 (25.9)	726 (28.4)	1169 (45.7)
Masks should only be used by one person	2507 (98.0)	21 (0.8)	20 (1.2)
Cloth masks should not be washed after each use.	302 (11.8)	178 (7.0)	2078 (80.2)
Cloth masks should be washed at the highest temperature permissible.	714 (27.9)	1016 (39.7)	828 (32.4)
Cloth masks should be washed with soap at room temperature.	1589 (62.1)	747 (29.2)	222 (8.7)

*Marks were reverse scored.

The average score for the knowledge on the use of masks was 11.1±1.9 (score range=0-15, maximum score=15). On further analysis, total scores were higher among females (11.2±1.9) compared to males (10.9±2.0) (t=3.9, df=2556, p<0.001). Healthcare personnel had a higher score (11.4±1.9) compared to non-healthcare personnel (10.9±1.8) (t=-7.5, df=2556, p<0.001). No other significant findings were demonstrated between socio-demographic characteristics and knowledge of mask scores.

Knowledge of Other COVID-19 Preventive Measures

The majority of the respondents were aware that they should maintain at least one metre between others (n=2530, 98.9%)

(Table 4). A few respondents (n=286, 11.1%) were not aware that crowded places should be avoided.

Table 4. Knowledge of other COVID-19 prevention measures among the study population (n=2558)

Statements	Response rate, n (%)		
	True	Unsure	False
Regularly clean your hands with an alcohol-based hand rub or wash them with soap and water.	2493 (97.5)	22 (0.9)	43 (1.7)
Maintain at least one metre between yourself and others.	2530 (98.9)	15 (0.6)	13 (0.5)
Crowded places should not be avoided.	203 (7.9)	83 (3.2)	2272 (88.8)
Avoid touching eyes, nose, and mouth.	2499 (97.7)	17 (0.7)	42 (1.6)
Cover mouth and nose with your bent elbow or tissue when you cough or sneeze.	2379 (93.0)	97 (3.8)	82 (3.2)
Stay home if you have a cough, headache, mild fever until you recover	2438 (95.3)	24 (0.9)	96 (3.8)

The average score for other preventive measures was 5.7±0.7 (score range=0-6, maximum score=6). Female respondents scored significantly higher marks (5.76±0.57) in the knowledge of prevention measures compared to males (5.60±0.84) (t=5.33, df=2556, p<0.001). No other significant findings were observed between other preventive measure scores and socio-demographic characteristics.

A correlation between the prevention practice scores and the overall total score on the knowledge of COVID-19 preventive measures was analyzed. There was a significant positive association between practice and knowledge of preventive measures (Rho= 0.1, 95%CI=0.02-0.01, p=0.03). An increase in prevention practices was observed with an increase in knowledge of preventive measures score.

A year into the COVID-19 pandemic has shown that cases continue to rise around the world, as well as locally [4]. Despite strict measures imposed in Malaysia, recent cases have spiked [4]. At present, mitigating COVID-19 spread is through various preventive measures that are recommended among the public, which has been termed the new norm [7, 15, 16]. Many countries approach similar methods, based on the use of masks, hand hygiene, and social distancing, although the level of compliance towards preventive measures differs [15, 16]. Although prevention strategies are available, identifying compliance of the public towards COVID-19 preventive measures is vital to facilitate appropriate steps to improve the current practices. There is limited data on Malaysian practices and knowledge of prevention practices of COVID-19 prevention measures a year into the pandemic, with most work focusing on the first one to two months of the COVID-19 [17]. As such the aim of the current work was successful in determining that the level of compliance towards practice and knowledge of prevention measures among Malaysians, a year into the pandemic could be markedly improved.

Masks have been the mainstay of management during the COVID-19 pandemic, to limit droplet spread among the community [18]. Malaysia has made mask-wearing mandatory when in public or crowded areas, with strict guidelines on when and where it should be used [7]. Despite this, the use of masks is not practiced by everyone within the study population, despite being continuously reminded by the government [7], with about a quarter admitting that they only sometimes wore a mask when leaving the house. The frequent side-effects reported in previous work [19], as well as the respondents in the current work, are possible reasons for non-compliance. Although the exact reasons for non-compliance are not fully known, a nuanced understanding of demographics was observed, similar to previous reports [20, 21]. It was found that the younger male respondents were found to be less likely to wear a mask than older respondents. However, although older respondents were more likely to wear masks, cloth masks were more preferred over the use of medical masks. The use of cloth masks has been controversial, with very few studies demonstrating its effectiveness. Notwithstanding, to address the possible limited supply and cost of medical face masks [22], the use of cloth masks made of a minimum of three layers of tightly-woven material for filtration efficacy can be used [12]. The present work. However, demonstrates that although a significant portion of the population used cloth masks, very few understood the strict requirements of using an effective non-medical grade mask. The need for educating the public on the types of cloth masks should be increased as many were unaware of the need for the requirements of the three different layers of non-medical masks.

During the COVID-19 pandemic, proper hand hygiene also plays an important role in preventing transmission. Hand hygiene with soap and an alcohol-based hand rub is one of the most effective and simple procedures widely used against infection transmission [23]. Microorganisms are killed by soap, detergent, or alcohol that relies on the disruption of the lipophilic membrane of the enveloped viruses [24]. Alcohol rubs with at least 60% ethanol have been proven effective for hand hygiene [23], although the WHO recommends an ethanol or isopropanol content of 80% or 75% respectively, during the COVID-19 pandemic [25]. A large majority of the study population were aware of the need for strict hand hygiene, although only half of the respondents admitted that they always complied with the hand hygiene requirements. Similar findings were also observed in earlier work [17] and among adults in Poland, with only half of the respondents reporting compliance towards hand hygiene during COVID-19 [16]. Very often, compliance towards hand hygiene is also affected by wearing masks, which may very much give a false sense of security [12].

In addition to both face masks and hand hygiene, other measures such as social distancing, as well as avoiding large

crowds, and covering the mouth when coughing and sneezing are all important methods in mitigating COVID-19 spread [14, 25]. The combination of these preventive measures is optimized when practiced together rather than as a single method of prevention. Generally, the respondents were aware of the need for these prevention methods, although only half complied with the one-metre social distancing rules. The reason for not complying with the one-metre distancing rule is not fully understood, and although females were more likely to comply with these preventive measures, other reasons that may lie beyond demographic characteristics not studied in the current work may lead to the current practice. The basis of physical distancing is based on how droplets are emitted during the speech, or more forcefully when coughing or sneezing [26]. The physical distancing of at least one metre demonstrated a reduced transmission risk although this would considerably vary with setting, occupancy level, contact time, and whether face coverings are worn [27].

To that end, given that these preventive measures are imposing significant lifestyle changes on the general public for many months and possibly years to come, the facilitators and barriers of such measures should be understood. This is especially vital given that based on the earlier months [17], as well as the current work, a year into the pandemic, still demonstrates that preventive practice seems to be somewhat lacking despite the majority identifying correct preventive measures. The positive association between practice and knowledge further highlights the need for continuous education. Malaysia has an organized method of distributing information towards the public, with the government sending frequent text messages through mobile phones and awareness campaigns continuously posted in social media, television, and radio, which may account for the good response towards knowledge of preventive measures. However, ensuring the proper practice remains difficult to impose and lies in the individual responsibility of the public. The low compliance towards these preventive measures may well put the country at high risk of further surges of infection soon [28, 29].

To the best of our knowledge, this is the first study that assesses practice and knowledge of COVID-19 new social norms a year into the COVID-19 pandemic among Malaysians. However, as with all questionnaire-based work, there are a few limitations. The results of the study are dependent on the honesty of the respondents. Furthermore, the use of convenient sampling, which recruited respondents on social media as well as homogeneity of sample characteristics, which were predominantly female, may affect the generalizability of our findings. Individuals without access to the internet and social media platforms may not have been well represented. It should also be noted that only a few socio-demographic characteristics of the respondents were addressed and other measures such as behavior, facilitators, and barriers were not evaluated. Therefore, the generalizability of the study should be done with caution.

CONCLUSION

Adapting to the new social norms is essential to minimize COVID-19 transmission. With the risk in COVID-19 cases, further steps must be taken to improve the current practice of preventive measures. Based on these findings, future interventions are recommended to support a more positive behavioral approach towards COVID-19 preventive methods. This may include strategies that highlight compassionate attitudes and stress implications of not complying with preventive measures. Given the complex and multifactorial reasons for not following public health recommendations, there is a need for continuous assessment and education to ensure the long-term effectiveness of preventive measures.

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