

TECHNICAL REPORT

Knowledge, Practice and Perception

of Infection Control During COVID-19
Outbreak in Malaysia.

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Institute for Public Health, Ministry of Health, Malaysia

**Knowledge, Practice And Perception Of Infection Control During COVID-19 Outbreak In Malaysia
NMRR-20-559-54367, NMRR-20-571-54388, NMRR-20-1052-55093**

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Published by the Institute for Public Health, National Institutes of Health (NIH),
Ministry of Health, Malaysia

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Malaysia. Kuala Lumpur.

ISBN: 978-967-18159-9-1

Suggested citation:

Institute for Public Health (IPH), National Institutes of Health, Ministry of Health Malaysia. 2020. Knowledge,
Practice And Perception Of Infection Control During COVID-19 Outbreak In Malaysia

Disclaimer:

The views expressed in this report are those of the authors alone and do not necessarily represent the opinions
of other investigators participating in the survey, nor the views or policy of the Ministry of Health.

Acknowledgements

The authors would like to thank the Director General of Health Malaysia for his permission to publish this report. Our sincere appreciation to the Deputy Director General (Research and Technical Support), our Directors of the Institute for Public Health and Institute for Health Behavioural Research, for their unwavering support, guidance and technical advice throughout the various stages of the survey that led this project to fruition. Our appreciation is extended as well to Dr. Norazah Ahmad, Clinical Microbiologist & Head of Infectious Diseases Research Centre, Institute for Medical Research, Dr. Feisul Idzwan Dato' Mustapha, Consultant Public Health Physician & Deputy Director of Non-Communicable Disease Section and Mr. Azman Abdul Rashid, Health Education Officer, Health Education Division for their technical advice.

Knowledge, Practice and Perception of Infection Control During Coronavirus Disease 2019 (COVID-19) Outbreak in Malaysia, was accomplished with support by the National Institutes of Health, Ministry of Health Malaysia. The authors also thank all parties who assisted in the implementation of the survey, from the supervisors, data collectors and research team members, without whom the survey would not have been a success.

Finally, our sincere appreciation is extended to all respondents who had participated in and contributed their valuable time and precious information towards the survey. It is our hope that these findings will help program leaders and policy makers to better run the various health and other services available and handling the COVID-19 pandemic in Malaysia.

Executive Summary

This project was carried out to determine the knowledge on Coronavirus Disease 2019 (COVID-19) disease and its symptoms, practice of preventive measures of COVID-19 and perception of effectiveness of these prevention measures in Malaysia. Understanding the level of knowledge and preventive measures practised is not only important to identify the key areas of public health and health literacy to strengthen, but also essential in enforcing the correct practices among public. The knowledge and practice among health care workers (HCW) is also crucial as they are the frontliners against this disease and need to be able to protect themselves, and facilitate in educating patients regarding disease prevention measures.

This project was conducted in three phases, during the initial period of Movement Control Order (MCO), the phone call survey among public and web-based survey among Ministry of Health (MOH) staff was conducted from 23rd March 2020 to 24th April 2020. A web-based survey focusing specifically on Physical distancing was conducted during Recovery Movement Control Order (RMCO) from 19th June to 19th July 2020. For the phone survey, randomly generated numbers were dialled using Computer Assisted Telephone Interview (CATI) method by trained Research Assistants. All MOH staff, with valid official email address, were invited to join the web survey via email from the MOH postmaster. The web-based survey on physical distancing applied non-probability sampling; unrestricted, self-selected and snowballing method. The link for the web-based survey was shared through social media platforms.

Generally, the public knowledge of COVID-19 was found to be moderate, with around 80% of people able to identify the major symptoms of this disease. The practice of various recommended preventive measures went undertaken by most of the people, each between 70% to 95%, highest being avoidance of any travelling, and lowest being the use of public hand sanitizers. Only 6% of people reported not taking any preventive measure.

Over 80% of the MOH staff had good general knowledge on the disease and its transmission, but lower knowledge on the main symptoms of COVID-19. Majority of the MOH staff practiced recommended COVID-19 preventive measures, ranging between 88.8% to 99.7%, highest being avoidance of social gathering and physical distancing of 1 meter and lowest wearing mask at public places. This is similar to the findings of their perception of the preventive measure effectiveness, whereby most of the items scored more than 80% by the respondents, with the used of hand sanitiser reported the least.

Most of the respondents, both among the general public and MOH staff reported positively to practices of preventive measures should they have any symptoms of COVID-19, ranging between 87% to 99%. High scores were also found similarly on the perception on preventive measures effectiveness, as reported by most of the MOH staff, should they have any symptoms of COVID-19. However, we noticed that there were gaps between the practices and perception of its effectiveness should they have any symptoms of COVID-19. This gap should be tackled with targeted and specific health messages so that the importance of these practices are well understood and will continue to be practiced in future.

More than 95% of public were aware of the practices and have positive attitude towards the importance of practising physical distancing. More than 90% agree physical distancing measures help to reduce the risk of COVID-19 transmission in community, however only 68% agree that it helps to avoid loss of life. Almost all the respondents answered that they practiced physical distancing measures as advised by MOH but more than 50% had difficulties to practice physical distancing at certain public places like wholesale or wet market, shopping malls, supermarket/hypermarkets and grocery stores.

Education on COVID-19 must continue to be carried out and intensified for all, including MOH staffs. Clear information on COVID-19 must be given to both the general public and healthcare workers to avoid confusion. Physical distancing must continue to be emphasized with procedures in place in common areas to enable it. These education measures are not only important in reducing the transmission of the disease, but also reduce the fear and anxiety among public.

Table of Contents	Page no.
Acknowledgements	iii
Executive Summary	iv
1.0 Introduction	1
2.0 Methodology	2
2.1 Study Design and population	2
2.2 Sample Size	2
2.3 Sampling Method	2
2.4 Method of Data Collection	3
2.4.1 Questionnaires	3
2.4.2 Definitions	3
2.5 Data Collection	3
2.6 Statistical Analysis	4
2.7 Ethical Approval	4
3.0 Results	5
3.1 Phone Survey on General Population	6
3.1.1 Sociodemographic characteristics of the respondent	6
3.1.2 Knowledge about COVID-19	6
3.1.3 Practice of COVID-19 preventive measure	6
3.1.4 Practice on COVID-19 preventive measure if respondent develop COVID-19 symptoms	6
3.2 Web-Based Survey on Ministry of Health Staff	11
3.2.1 Sociodemographic characteristics of the respondent	12
3.2.2 Knowledge about COVID-19	12
3.2.3 Practice and perception of COVID-19 preventive measure	12
3.2.4 Practice and perception on COVID-19 preventive measure if respondent develop COVID-19 symptoms	12
3.3 Online Survey on Physical Distancing	17
3.3.1 Sociodemographic characteristics of the respondent	18
3.3.2 Knowledge on physical distancing	18
3.3.3 Practice of physical distancing	20
3.3.4 Circumstances to stop practising physical distancing	20
3.3.5 When to practice physical distancing	21
3.3.6 Reasons on difficulties to practice physical distancing	21
3.3.7 Locations identified as difficult to practise physical distancing	21
3.3.8 Perception and attitude on practice of physical distancing	21
3.3.9 Intention to practice 3W (Wash, Wear and Warn)	22
4.0 Discussion	24
5.0 Conclusion	26
References	27

1.0 Introduction

Coronavirus Disease 2019 (COVID-19) was first reported in Wuhan City, Hubei Province of China in December 2019[1] and was declared as a pandemic on 11th March 2020 by the World Health Organization (WHO). This disease is highly contagious and has spread very quickly throughout China and subsequently to many countries[2]. Based on reports from WHO, this pandemic has affected millions of people, including a high toll of deaths globally[3]. More than half of the world's population had been forced under a lockdown and movement control. In Malaysia, the first reported COVID-19 case was on 24th January 2020, and as of early April 2020, there were about 5603 total confirmed cases with 95 total deaths[4]. Movement control order was introduced in Malaysia on 18th March 2020, given prediction that the peak number of COVID-19 cases will occur in Mid-April[5].

To date, there are still no vaccine or treatment available for this disease; thus, good hygiene and other public health measures are essential in preventing and controlling this disease. Based on media reports, certain places are still crowded, with people seen not applying the correct preventive measures, such as good hygiene and physical distancing. This continues to be seen despite extensive media and public education measures taken by authorities.

Understanding the level of knowledge and preventive measures practiced is not only important to identify the critical areas of public health and health literacy to strengthen, but also essential in enforcing the correct practices among the public. Apart from highlighting on importance of proper handwashing and wearing mask, another seriously advocated measure is the practice of physical distancing. These preventive measures are not something that is new, whereby during the 2009 flu pandemic, WHO had advocated physical distancing measure combined with good hygiene and hand washing as an effective way to reduce and delay the pandemic[6]. These measures are now deemed to be the new norm of life during COVID-19 public have to adapt to.

At the same time, we can describe that there is an ongoing infodemic regarding this disease; the symptoms of the disease, the transmission routes and the preventive measures to be practiced, being shared via social media to and by the public. This however also results in false news and misinformation. People have been urged to follow the advice by healthcare staff and national and local

public health authorities, as they are best placed to advise the public and also have the most updated information on COVID-19 in the local setting[7]. Therefore, well-informed health care staff is also a critical component as they will be not only able to protect themselves but also able to provide optimal care and facilitate in educating the public regarding disease preventive measures[7].

Since healthcare workers are the frontliners against this disease, it is essential that they understand, have the knowledge and have the correct perception and practice of preventive measures of COVID-19. Apart from having a higher risk to this infectious disease, they also pose a threat as a source of transmission to the more vulnerable population in the community if they were to be infected. Based on the previous studies, healthcare staffs have been shown to have a lack of knowledge and practice towards infectious diseases such as SARS and MERS CoV [8,9].

The COVID-19 preventive measures, based on WHO guidelines, include frequent handwashing with soap and water or alcohol-based sanitiser, physical distancing for at least 1 meter between people, appropriate used tissue disposal and to seek immediate medical attention if having symptoms of fever, cough and difficulty in breathing[7]. Other measures include postponing or reducing mass gatherings that bring people together and have the potential to amplify disease, restrict the sharing of personal devices, the use of a medical mask as much as possible if being infected by COVID-19 to prevent the spread of infectious droplets from an infected person and advices against the application of travel or trade restrictions to countries experiencing COVID-19 outbreaks [7,10].

This project was carried out to determine the knowledge of COVID-19 disease and its symptoms, the practice of preventive measures of COVID-19 and perception of the effectiveness of these prevention measures in Malaysia. This study also provides better view for stakeholders on how public understands physical distancing and attitude and practice of this measure in their daily life and the barriers to practicing this measure. The findings will be used in planning of right message to public on importance of continuing to adhere to the recommendations for an effective control measure outcome.

2.0 Methodology

2.1 Study Design and Population

This study was conducted in 3 parts. A phone call survey was carried out among the general public and a web-based survey on the Ministry of Health (MOH) personnel was conducted from 23rd March 2020 to 24th April 2020. Furthermore, a web-based survey focusing specifically on physical distancing was conducted among the general public during Recovery Movement Control Order (RMCO) from 19th June to 19th July 2020.

For the telephone survey, the target population were all residents in Malaysia and mobile-cellular device users, 18 years of age and above. The interview was conducted on the user of the device when the call was made. This was a representative sample as over 97.5% of Malaysians age 15 years and above are mobile phone users.

For the online web-based survey, the target population were all MOH staffs in Malaysia who have a valid official email address. The survey invitation was shared via the uniform resource link (URL) provided in the email.

The study samples for the online survey on physical distancing were Malaysian internet users aged 18 above and the sampling method used were non probability sampling; unrestricted, self-selected survey and snowballing method.

2.2 Sample Size

Sample size was calculated using sample size calculation formula for a prevalence study.

$$n_{\text{SRS}} \geq \frac{z_{\alpha/2}^2 P(1-P)}{e^2}$$

The sample size calculation was based on reported prevalence of precautionary measures taken on avoiding social activities (64.3%), avoiding crowded places (88.1%), washing hands (95.1%) and wearing mask (99.0%). Calculation is done with a margin of error of 0.05 and Type 1 error determined at 5%. The largest sample size obtained was 352 respondents for the surveys. For the web-based survey, the minimum sample size requirement after considering the non-response rate of 30% was 490 for the web-based surveys.

2.3 Sampling Method

For the telephone survey, sampling was done proportional to prefix of mobile-cellular numbers. There was only one stage of sample selection as the survey adopted simple random sampling (SRS). The sampling frame for the study was based on randomly generated numbers matching the mobile-cellular number of all providers in Malaysia. The random numbers were generated using Microsoft Excel 2015. A generated 8-digit random number was attached to a prefix of "01" to match the mobile-cellular number format utilized in Malaysia. As these numbers were random generated, there was no information regarding the respondent before the calls were made.

Universal sampling was used for data collection of the web survey. All MOH staff, with an official email address were invited to join the survey via email from the MOH Malaysia postmaster.

Online survey on physical distancing used non probability sampling method whereby unrestricted, self-selected survey and snowballing method was applied. Anyone browsing through may choose to participate in the survey or opt out. The snowballing sampling procedure also was used in this study whereby participants who had participated in the survey will be requested to pass the online survey to others in order to increase the number of respondents. The link for the online survey was shared through social media platforms such whatsapp, facebook and National Institutes of Health and MOH Malaysia official email.

2.4 Method of Data Collection

2.4.1 Questionnaires

Structured questionnaire was used to collect data on the scopes of the survey. The questionnaire was in Malay language.

The questionnaire was tested for face validity among staff in National Institute of Health (NIH) Malaysia prior to the survey. A total of 20 staff were interviewed to determine the face validity and changes were made as per feedback received from the respondents of the pilot study.

The questionnaire consists of four sections: demographics, knowledge, practice and perception. It consisted of participant demographic characteristics (8 items), three components on knowledge; [knowledge on COVID-19 main symptoms (5 items; yes or no option), general knowledge on COVID-19 (4 items; yes, no or I don't know options), knowledge on transmission route of COVID-19(4 items; yes, no or I don't know option)], practice on COVID-19 preventive measure (11 items, yes or no option), and practice if respondent develops COVID-19 symptoms (12 items, yes or no option).

For the web-based survey among MOH staff, additional questions were included whereby they were asked of their perception on COVID-19 preventive measure (11 items, 5-point Likert scale; strongly not effective, not effective, neither effective nor not effective, effective, strongly effective), and perception of effectiveness of measures if respondent develops COVID-19 symptoms (12 items, 5-point Likert scale; strongly not effective, not effective, neither effective nor not effective, effective, strongly effective).

For the physical distancing web-based survey, the questionnaire was partially adapted from an online survey on physical distancing carried out in Wisconsin, USA [11]. The questionnaire was translated to Malay language, pretested and validated, and both English and Malay version were used during data collection. The survey had several sections measuring one or more specific constructs of Physical Distancing Behaviour; understanding, practice, perception, attitude and barriers towards practicing physical distancing as well as their intention to practice the new norms of wash, wear and warn (3W).

2.4.2 Definitions

Each component of knowledge was reported by the percentage of respondents who answered each question correctly and also by those who answered all questions pertaining the component correctly. For practice, the percentage was reported for each item of practice on COVID-19 preventive measures and practice if the respondent develops symptoms of COVID-19.

Meanwhile for perception, a positive response was taken if the respondent chose 'Effective' or 'Strongly effective' to

rate the effectiveness of the particular COVID-19 preventive measure, and if the respondent develops COVID-19 symptoms. Subsequently, each component of perception was reported by the percentage of respondents who answered positively for each question and also by those who answered all questions pertaining the component positively.

2.5 Data Collection

All eligible individuals, using mobile-cellular device, were invited to join the telephone survey whereby the question was programmed into a Survey Creation System. If one device had more than one user, the main user was interviewed. Only individuals age 18 years and above were included in the survey. The respondents were contacted by a survey team member to inform them about the survey, obtain informed verbal consent for the interview and subsequently conduct the interview.

Their participation in the study was on voluntary basis. The respondent had the right to refuse or withdraw from the study at any point of time during the survey. At least 3 calls were made if a call was unanswered. Each call was carried out at a different time of the day.

The web-based surveys used the Google Form platform to collect data from the respondents. When respondents first received the email and clicked on the link to the web-based survey, the policy for using the collected data and protection of personal information was displayed. Only those who agreed and consented were invited to answer the questionnaire. The data collected from the survey was only saved and sent to the server once the respondent clicks the "Submit" button at the end of the survey form. If the respondent refused or stopped answering the questions at any point of the survey, all the details of the respondent, as well as any response given thus far was not saved.

The link for the web-based surveys was also shared through social media platforms such WhatsApp, Facebook and official group emails whereby anyone browsing through these platforms can participate. Participants who had participated in the survey were also requested to pass the online survey to others at the end of the survey, to increase the number of respondents who participated in this survey.

2.6 Statistical Analysis

The Statistical Package for the Social Sciences (SPSS) version 23.0 was used to analyse data. Descriptive analysis was reported as frequency and percentage for the knowledge, practice and perception towards Covid-19 and physical distancing.

2.7 Ethical Approval

Our study (NMRR-20-559-54367, NMRR-20-571-54388 and NMRR-20-1052-55093) was approved by the Medical Research Ethics Committee (MREC), National Institute of Health (NIH) Malaysia, Ministry of Health, Malaysia. Respondent's anonymity and confidentiality was ensured during the course of the study. Consent for the study was obtained before the respondents agreed to join the surveys.

Results

Phone Survey on General Population



3.0 Results

3.1 Phone Survey on General Population

3.1.1 Sociodemographic characteristics of the respondent

A total of 715 people were contacted by phone call for this study, with 337 respondents agreeing to participate in the phone survey. Of these, a further 20 respondents were not eligible for the study, resulting in a response rate of 45.6% for this study. Thus, a total of 317 respondents answered the questionnaire of this Coronavirus Disease 2019 (COVID-19) telephone survey.

The respondents consists of respondents from all the 16 states and federal territories in Malaysia. The mean age of the respondents was 37.0 ± 13.0 years, ranging from 18 to 80 years of age. Almost an equal number of males and females responded to this study, with 52.4% males and 47.6% females. A total of 63.7% of the respondents were Malays, with 5.4% of the respondents consisting of those from other ethnicities and foreigners. Table 1 presents the socio-demographic characteristics of the respondents involved in this study.

3.1.2 Knowledge about COVID-19

Most of the respondents, between 85% to 90% of the respondents, were able to identify that fever, cough and shortness of breath were the main symptoms of COVID-19. A total of 78.9% identified all 3 of these symptoms as the main symptoms for COVID-19.

Overall, the respondents had a good knowledge of the disease. For each item, a total of 80% to 92% of the respondents answered correctly to the questions in the survey, with a total of 69.1% of the respondents answering correctly to all 4 questions on knowledge of COVID-19. Similarly, a total of 76% to 94% of the respondents answered correctly on the questions on transmission of COVID-19, with 71.6% of respondents answering correctly to all 4 questions on COVID-19 transmission.

Figure 1 presents item analysis and percentage of correct response for each of the question, as well the overall percentage by each component of knowledge tested in the survey.

3.1.3 Practice of COVID-19 preventive measure

During the telephone interview, respondents were asked to choose one as the main preventive measure they had undertaken to prevent COVID-19 infection. Both wearing mask in public places and washing hands with soap and water received the highest response, both at 27.8% among the respondents. However, 19.2% reported avoiding crowded places, 12.6% reported practicing 1 metre distancing and only 4.1% report avoiding social gatherings as the main preventive measure practiced.

This is concurrent with the findings of their perception of the most important preventive measure, whereby 20.5% reported that avoiding crowded places to be the most important preventive measure, while 18.3% reported wearing mask in public places, 17.0% reported practicing 1 metre distancing and 16.7% reported washing hands with soap and water. Only 3.2% reported avoiding social gatherings to be the main most important preventive measure.

Respondents were also asked on each preventive measure they are practicing against COVID-19. Over 90% of the respondents reported practicing most of the preventive measures, however using own hand sanitizers and using public hand sanitizers were reported only by 77.6% and 71.6% of respondents respectively. Only 6.3% of the respondents reported not practicing any preventive measure. The responses recorded are presented in Table 2.

3.1.4 Practice on COVID-19 preventive measure if respondent develop COVID-19 symptoms

The respondents were asked a hypothetical question of the actions they would practice should they have any symptoms of COVID-19. Most of the respondents answered positively to the statements provided, ranging between 86% to 97%. Using hand sanitizers had the lowest response, at 86.8%. Wearing mask all the time and covering their mouth when coughing and sneezing was reported by 93.7% and 94.3% respectively. Avoid going out of house and keeping 1 metre physical distancing had the highest responses with 97.5% and 96.8% respectively. A total of 96.5% of respondents said they would seek treatment in clinic and hospital if they developed symptoms of COVID-19. The responses recorded are presented in Table 3.

Table 1: Sociodemographic characteristics of respondents (n=317)

Sociodemographic Characteristics		Frequency	Percentage (%)
State	Johor	24	7.6
	Melaka	7	2.2
	Negeri Sembilan	17	5.4
	Selangor	96	30.3
	KL	26	8.2
	Putrajaya	2	0.6
	Perak	22	6.9
	Kedah	17	5.4
	Pulau Pinang	22	6.9
	Perlis	3	0.9
	Kelantan	16	5.0
	Terengganu	6	1.9
	Pahang	20	6.3
	Sabah	20	6.3
	Sarawak	17	5.4
Labuan	2	0.6	
Gender	Male	166	52.4
	Female	151	47.6
Ethnicity	Malay	202	63.7
	Chinese	51	16.1
	Indian	16	5.0
	Bumiputera Sabah and Sarawak	31	9.8
	Others	17	5.4
Education	No formal education	5	1.6
	Completed primary school	24	7.6
	Completed secondary school	140	44.2
	Diploma	65	20.5
	Degree and higher	79	24.9
Occupation	Government	26	8.2
	Private	135	42.6
	Self-employed	67	21.1
	Retiree	13	4.1
	Student	27	8.5
	Homemaker	43	13.6

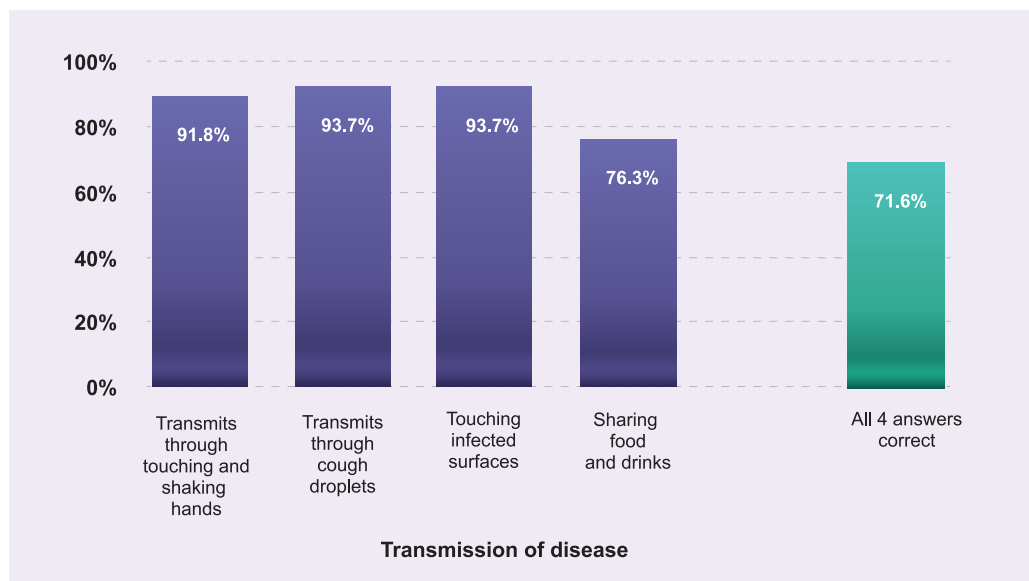
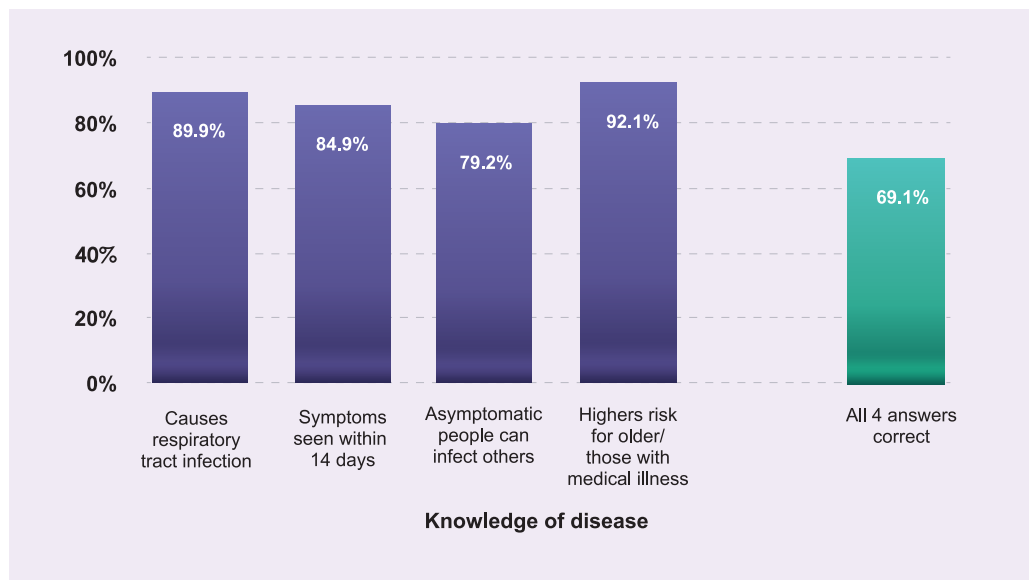
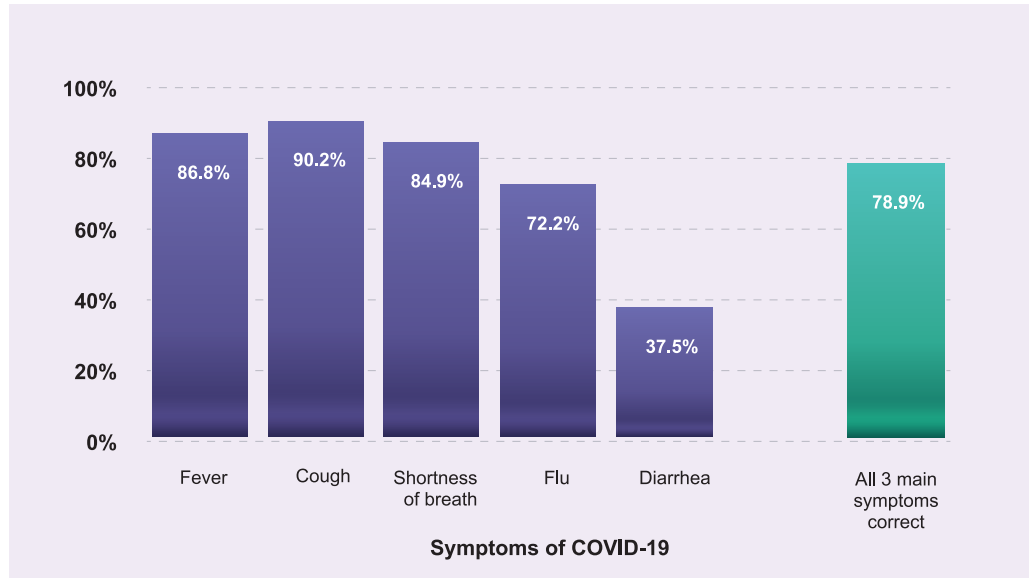


Figure 1: Percentage of correct answer by item and overall correct answer by respondents on knowledge of COVID-19

Table 2: COVID-19 preventive measures practiced by respondents (n=317)

Preventive measure practiced	Percentage (%)
Refrain from travelling	96.5
Avoid social gathering	95.3
Wash hands with soap and water	95.3
Avoid crowded places	94.6
Wearing mask in public places	93.7
1 metre distancing	92.4
Avoid sharing food and drinks	91.8
Brings and uses own hand sanitizers	77.6
Uses public hand sanitizers	71.6
Did not practice any preventive measure	6.3

Table 3: Practice if found to have symptoms of COVID-19 by respondents (n=317)

Practice if having symptoms of COVID-19	Percentage (%)
Avoid going out of house	97.5
Keep a 1 metre physical distancing	96.8
Avoid public places / social gathering	96.5
Seek treatment in clinic / hospital	96.5
Wash hands regularly with soap	96.2
Throw used tissue in bin	96.2
Avoid sharing toiletries	95.0
Cover mouth when coughing / sneezing	94.3
Wear mask all the time	93.7
Avoid sharing food / drinks	92.1
Use hand sanitizer	86.8

Results

Web-Based Survey on Ministry of Health Staff



3.2 Web-Based Survey on Ministry of Health Staff

3.2.1 Sociodemographic characteristics of the respondent

A total of 104,747 email survey invitations were sent to all Ministry of Health (MOH) staff and 1,719 MOH staff completed the questionnaire. The respondents consist from all the 16 states and federal territories in Malaysia. The mean age of the respondents was 36.1 ± 7.6 years, ranging from 22 to 59 years of age. The majority of the respondents were females. A total of 75.2% of the respondents were Malays. Table 4 presents the socio-demographic characteristics of respondents involved in this study.

3.2.2 Knowledge about COVID-19

More than half of the respondents, between 66.1% to 68.9% of the respondents, were able to identify that fever, cough and shortness of breath were the main symptoms of COVID-19. A total of 65.3% identified all 3 of these symptoms as the main symptoms for COVID-19. The respondents were generally had a good knowledge of the disease. For each item, a total of 92.3% to 99.8% of the respondents answered correctly to the questions in the survey, with a total of 86.4% of the respondents answering correctly to all 4 questions on knowledge of COVID-19. Similarly, a total of 86.7% to 99.1% of the respondents answered correctly on the questions on transmission of COVID-19, with 83.4% of respondents answering correctly to all 4 questions on COVID-19 transmission.

Figure 2 presents item analysis of correct response for each of the question, as well the overall percentage by each component of knowledge tested in the survey.

3.2.3 Practice and perception of COVID-19 preventive measure

Respondents were asked on each preventive measure they are practicing against COVID-19. Over 90% of the respondents reported practicing most of the preventive measures, except for using hand sanitiser at public places, using own hand sanitizers and wearing mask at public places were reported only by 89.9%, 89.0% and 88.8% of respondents respectively. This was similar to the findings of their perception of the preventive measure effectiveness, whereby most of the items scored more than 80% by the respondent except for using hand sanitiser at public places and wearing mask at public places were reported only by 76.4% and 77.8% respectively. A total of 7.1% of the respondent did not practices any preventive measures. The responses recorded are presented in Table 5.

3.2.4 Practice and perception on COVID-19 preventive measure if respondent develop COVID-19 symptoms

The respondents of the web-based survey were asked a hypothetical question of the actions they would practice should they have any symptoms of COVID-19. Most of the respondents answered positively to the statements provided, ranging between 89.8% to 99.7%. Wearing mask all the time had the lowest response, at 89.8%. Washing hands regularly with soap and keeping a 1 metre physical distancing had the highest responses with 99.7% and 99.5% respectively. A total of 96.0% of respondents said they would seek treatment in clinic and hospital if they developed symptoms of COVID-19.

For the findings of their perception of the preventive measure effectiveness should they have any symptoms of COVID-19, most of the items scored more than 90% by the respondent except for throwing used tissue and mask in bin, which was reported only by 88.5%. The responses recorded are presented in Table 6.

Table 4: Sociodemographic characteristics of respondents (N=1719)

Sociodemographic Characteristics		Frequency	Percentage (%)
State	Johor	81	4.7
	Melaka	53	3.1
	Negeri Sembilan	37	2.2
	Selangor	474	27.6
	KL	321	18.7
	Putrajaya	121	7.0
	Perak	119	6.9
	Kedah	74	4.3
	Pulau Pinang	61	3.5
	Perlis	2	0.1
	Kelantan	88	5.1
	Terangganu	23	1.3
	Pahang	98	5.7
	Sabah	87	5.1
	Sarawak	67	3.9
Labuan	12	0.7	
Gender	Male	404	23.5
	Female	1315	76.5
Ethnicity	Malay	1292	75.2
	Chinese	202	11.8
	Indian	88	5.1
	Bumiputera Sabah and Sarawak	132	7.7
	Others	4	0.2
Education	Secondary School	287	16.7
	Diploma	421	24.5
	Degree, Master, PhD	1011	58.8
Occupation	Doctor	188	10.9
	Dentist	277	16.1
	Pharmacist	212	12.3
	Nurse/MA	296	17.2
	Hospital Attendant	215	12.5
	Administrative	252	14.7
	Others	279	16.2

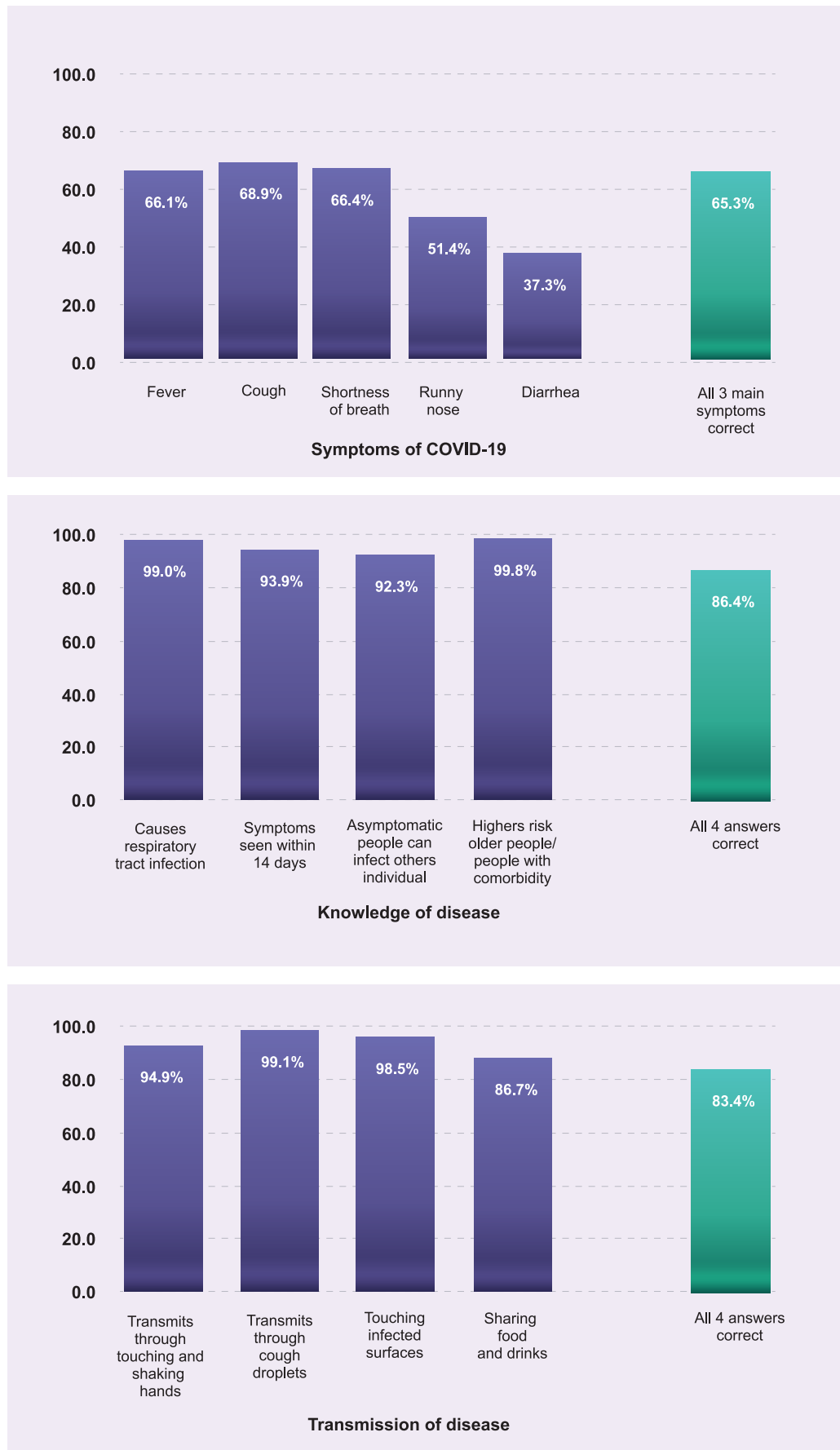


Figure 2: Percentage of correct answer by item and overall correct answer by respondents on knowledge of COVID-19

Table 5: COVID-19 preventive measures practice and perception of effectiveness by respondents (n=1719)

Preventive measure	Percentage (%)	Perception(%)
Avoid social gathering	99.7	98.4
1 metre distancing	99.7	86.1
Wash hands with soap and water	99.6	98.0
Refrain from travelling	99.5	96.6
Avoid sharing personal items	98.4	92.4
Avoid crowded places	97.6	96.0
Avoid sharing food and drinks	96.5	85.6
Uses public hand sanitizers	89.9	76.4
Brings and uses own hand sanitizers	89.0	87.7
Wearing mask in public places	88.8	77.8
Did not practice any preventive measure	7.1	16.1

Table 6: Practice and perception if found to have symptoms of COVID-19 by respondents (n=1719)

Practice and perception if having symptoms of COVID-19	Practice (%)	Perception(%)
Wash hands regularly with soap	99.7	97.9
Keep a 1 metre physical distancing	99.5	94.0
Washing cooking utensils with soap and water	99.2	92.7
Cover mouth when coughing / sneezing	99.1	95.2
Avoid sharing toiletries	98.9	95.8
Avoid going out of house	98.3	92.9
Avoid public places / social gathering	98.3	98.9
Use hand sanitizer	97.7	94.5
Avoid sharing food / drinks	97.1	92.8
Seek treatment in clinic / hospital	96.0	93.1
Throw used tissue and mask in bin	93.1	85.5
Wear mask all the time	89.8	90.0

Results

Online Survey on Physical Distancing



3.3 Online Survey on Physical Distancing

3.3.1 Sociodemographic characteristics of the respondent

A total of 3489 respondents responded to the survey online and 3460 completed the questionnaire, indicating 99.2% response rate. The respondents consist from all the 16 states and federal territories in Malaysia. Majority of the respondents, 71%, were females and of Malay ethnicity at 76.6%. Most of the respondents were within the age group of 36-45 years old at 35.7%, followed by age group 26-35 years old at 30.5%. Majority of the respondents, 62.8%, have tertiary education level; Degree or higher and working either at Government or Private sector at 85%. Table 3.3.1 presents the socio-demographic characteristics of respondents involved in this study.

3.3.2 Knowledge on physical distancing

Knowledge of public on physical distancing shows majority of the respondents, more than 95% are aware the practices required in this preventive measures. Survey finding shows more than 99% agrees physical distancing requires a person to keep at least 1 metre away from someone, to avoid crowded public places, mass gathering and avoid physical touch when greeting people. The respondents are aware as well that physical distancing doesn't prohibit communication whereby 93.0% agrees to this statement. The responses reported in Figure 3.

Figure 3: Percentage of correct answer by item on knowledge of Physical Distancing

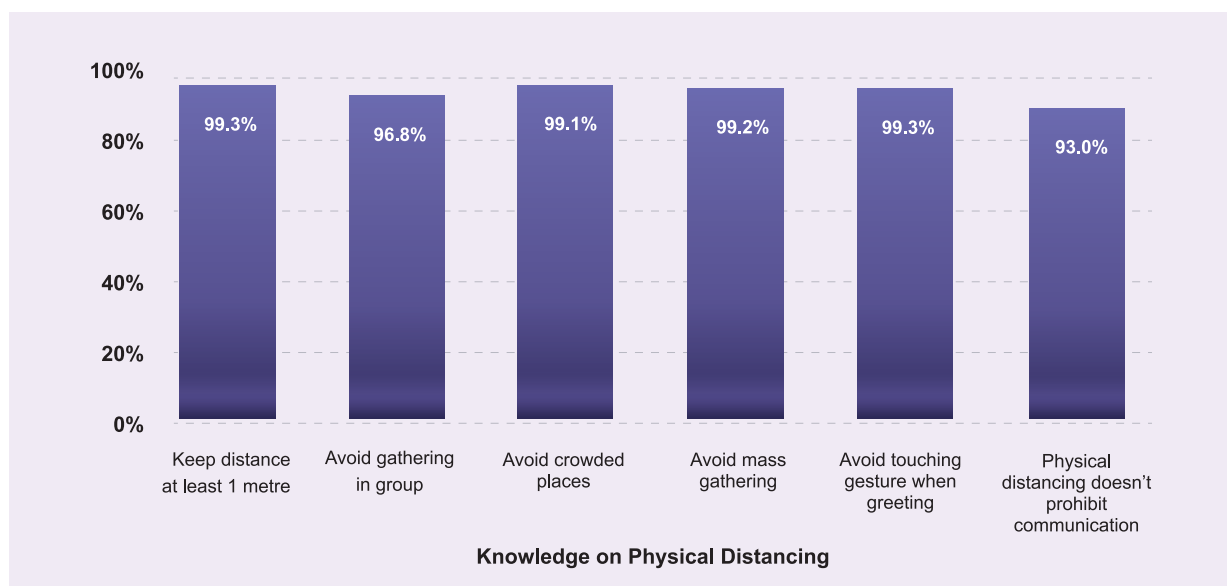


Table 7: Sociodemographic characteristics of respondents (n=3460)

Sociodemographic Characteristics		Frequency	Percentage (%)
State	Johor	236	6.8
	Melaka	98	2.8
	Negeri Sembilan	122	3.5
	Selangor	794	22.8
	KL	270	7.7
	Putrajaya	363	10.4
	Perak	215	6.2
	Kedah	251	7.2
	Pulau Pinang	149	4.3
	Perlis	10	0.3
	Kelantan	179	5.1
	Terengganu	123	3.5
	Pahang	180	5.2
	Sabah	146	4.2
	Sarawak	307	8.8
Labuan	17	0.5	
Gender	Male	1004	29.0
	Female	2456	71.0
Age	18-25	205	5.9
	26-35	1070	30.5
	36-45	1235	35.7
	46-55	708	20.3
	56 & above	222	6.9
Ethnicity	Malay	2674	76.6
	Chinese	302	8.7
	Indian	158	4.5
	Bumiputera Sabah	159	4.6
	Bumiputera Sarawak	134	3.8
	Others	33	0.9
Education	No formal education	2	0.1
	Completed primary school	8	0.2
	Completed secondary school	323	9.3
	Diploma	936	26.8
	Degree and higher	2191	62.8
Employment Status	Working (Public & Private)	2965	85.0
Status	Self-employed	128	3.7
	Retiree	81	2.3
	Student	157	4.5
	Not working	129	3.7

3.3.3 Practice of physical distancing

The online survey assessed respondent's current practice of physical distancing whereby 98.8% reported practising physical distancing measures as advised by Ministry of Health, Malaysia (MOH) and 77.5% intends to continue practising even after the Recovery Movement Control Order (RMC0).

Respondents also answered their self-reported physical distancing practices. The main three highly reported practices; 97.3% reports they keep at least 1 metre distance away from others at public places, 94.4% reports they avoided visiting crowded places and 93.5% reports they avoid physical touch when greeting someone. Other reported practices are 82.4% reports practice of physical distancing at workplace, 81.4% avoid using crowded public transports and 84.3% avoid bringing out at risk family members. However only 48.7% of respondents reported they avoid meeting and socializing with relatives or friends. The responses are presented in Figure 4.

3.3.4 Circumstances to stop practising physical distancing

The survey assessed as well respondent's response on when they would stop practising physical distancing. Majority of them, nearly 60% reported they will stop practising when there is no more COVID 19 cases reported whereas 50.7% of respondents don't intend to stop practising it. Apart from this main two responses, 20.7% of respondents agreed they will stop physical distancing practices when their chances of getting COVID 19 infection is low, 15.1% don't practice physical distancing when being around close acquaintances, whereas 12.5% and 9.1% of respondents agreed they won't practice physical distancing when people around wear face mask and look healthy with no symptoms. Around 3% of respondents agree they stop practising physical distancing when people around don't practice. The responses are presented in Figure 5 Respondents were also asked the length of time they can tolerate physical distancing, whereby majority of them, 56.8% responded they will continue practicing as long as it is directed by authorities.

Figure 4: Public's Self-Reported Practice of Physical Distancing

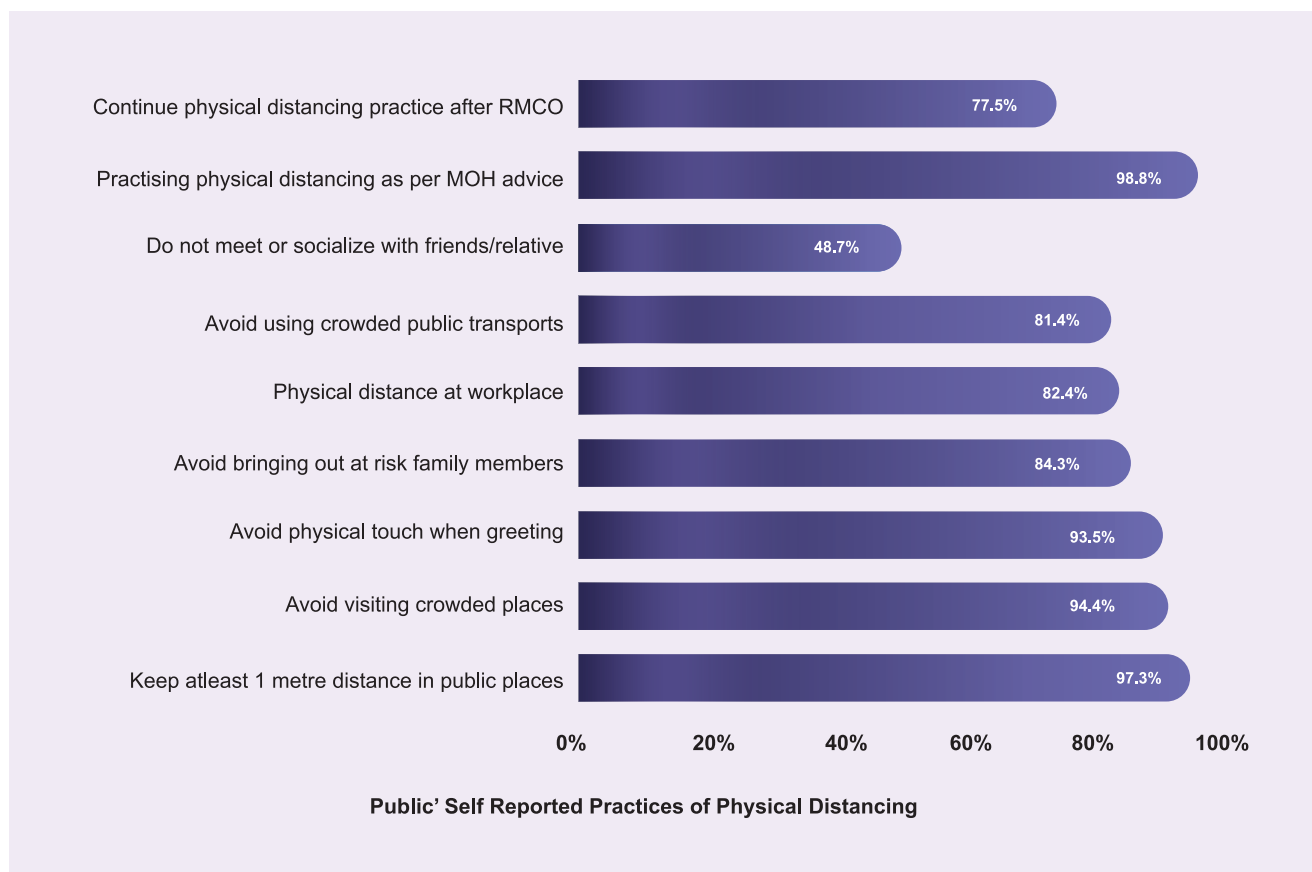
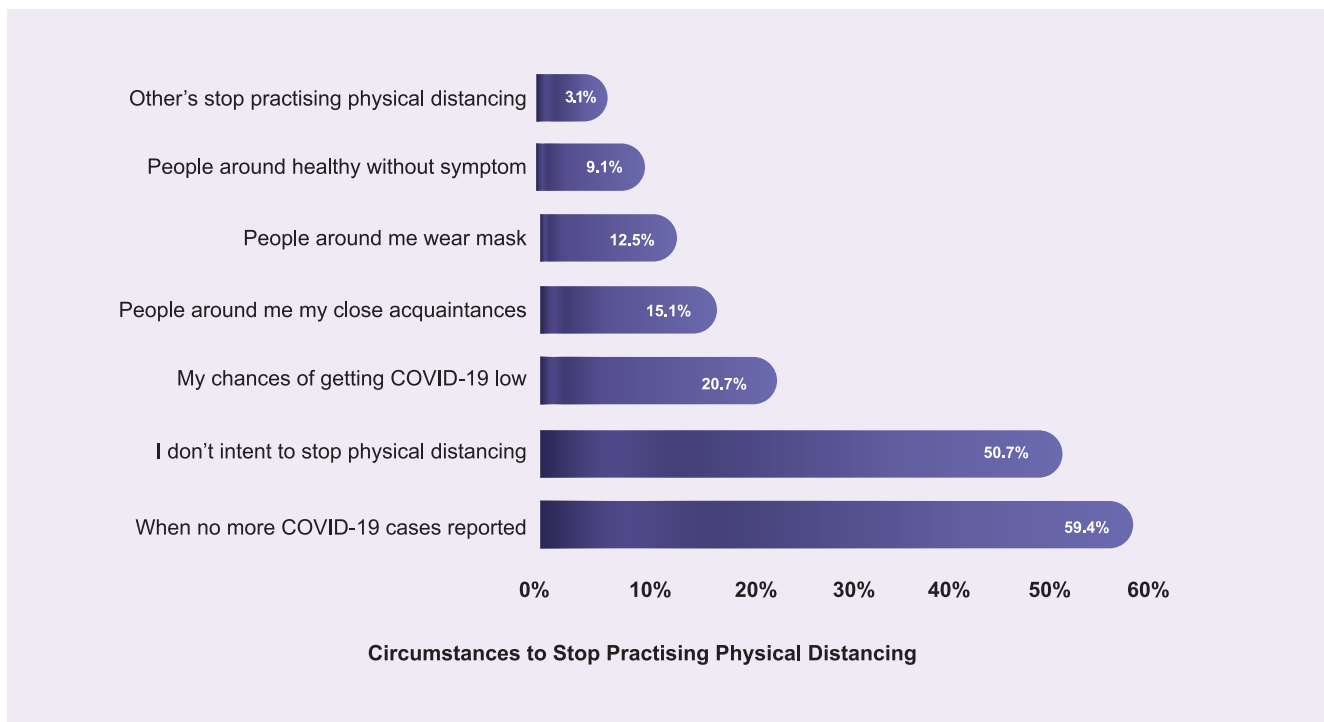


Figure 5: Circumstances to Stop Practice Physical Distancing



3.3.5 When to practice physical distancing

Respondents were assessed on their opinion when physical distancing should be practiced whereby majority of them, 92.9% agreed physical distancing should be practiced at crowded places, followed by 87.6% agreed it should be practiced when queuing for something, 82.1% agreed it should be practiced when meeting someone whom does not live together with them, 76.5% agreed it should be practiced at work place and 75.5% agreed it should be practiced once outside of home.

3.3.6 Reasons on difficulties to practice social distancing

Respondents were asked whether it is difficult to practice physical distancing, whereby majority, 78.4% of respondents stated it's not difficult to practice whereas only 21.6% agreed it is difficult to practice. Out of this 21.6% of respondents (n=747), majority of them agreed physical distancing is difficult to be practiced in crowded public places at 77.2%, confined or limited space in building, location or transport at 76.2%, and when people around don't practice at 62.7%. Other responses to difficulties in practising were the limited practicality of practicing physical distancing, example when choosing items in supermarkets and elsewhere, at 41.5%, when they keep forgetting to maintain the distance at 36.8%, nature of work which requires close interaction with others at 34.5% and worried of offending others when practising physical distancing at 22.4%.

3.3.7 Locations identified as difficult to practise social distancing

To assess locations that are deemed as difficult to practice physical distancing, respondents were asked whether they had visited the listed public places in the questionnaire and based on their own experiences, whether they had difficulties to practise physical distancing in each of these places. Majority of respondents identified four main places; wet/wholesale market at 52.2%, shopping malls/complex at 44.1%, sundry/grocery shop or convenience stores at 42.8% and supermarkets/ hypermarkets at 40.2%.

Respondents were also asked to identify locations they observed others had difficulty to adhere to physical distancing, whereby similar locations were identified, firstly wet/wholesale market at 55.8%, shopping malls/complexes at 50.8%, sundry/grocery shops or convenient stores at 47.1%, supermarket/hypermarkets at 42.9% and restaurants at 42.9%. The responses are reported in Table 8.

3.3.8 Perception and attitude on practice of physical distancing

Respondents were also assessed on their perceived benefit towards practice of physical distancing. Majority of respondents agreed physical distancing practices reduce personal risk of COVID 19 infection at 94.7%, stops the transmission at community level at 91.9%, as a protection for personal health at 82.9% and protection for health of

others around at 82.5%. However, only 67.8% agreed this preventive practice reduces loss of life due to COVID 19.

The overall attitude of public towards physical distancing were positive with more than 95% agreed that this preventive measure is the new norm that needs to be adapted, has to be practiced seriously as everyone are potential to be infected at 97%, it is an effective measure to control the spread of the infection at 95.9% and reduces a person's risk of being infected at 95.8%. About 91.4% of the respondents agreed to the statement they will be tensed if they see others not practicing physical distancing, 92% agreed they will be exposed to health severity if they don't practice and 89% agree law actions should be taken on owner of premises or business operation that doesn't follow Standard Operating Guidelines on physical distancing. However only 82% agreed they will adhere strictly to physical distancing as how they used to do during MCO.

3.3.9 Intention to practice 3W (Wash, Wear and Warn)

In this survey, respondents were assessed on their intention to practice the frequently advocated COVID 19 preventive measures by MOH, the 3 W (Wash, Wear, Warn). Under the component of wash, finding shows majority of respondents, 97.8% intent to wash hands frequently with water and soap, and 89.8% intent to bring own hand sanitizer and use it when necessary. Under the component of wear, 85.2% intent to wear mask. Under the component of warn, 95.6% intent to avoid bringing out at risk family members to public places and 95.1% intent to seek treatment at health facility when develop symptoms. However only 79% responded they intent to avoid going out for leisure activities with friends/relatives.

Respondents were also asked to rank most important COVID-19 prevention practice and majority of them, 49.1% placed personal hygiene at first place, followed by physical distancing at 36.9% and lastly wearing mask at 14%.

Table 8: Locations **difficult for oneself to practice** physical distancing based on own experience (n=3460)

Locations Difficult to Practice Physical Distancing	Yes (%)	No (%)
Shopping complexes	44.1	55.9
Worship place eg. mosque/church/temple	8.9	91.1
Health facilities eg. hospital/clinic/pharmacy	17.3	82.7
Banks/ ATM machines	17.0	83.0
Station & public transport	28.3	71.7
Restaurant/ eating place	32.6	67.4
Wholesale market / wet market	52.2	47.8
Sundry shops /grocery shop/ convenient store	42.8	57.2
Supermarket/hypermarket	40.2	59.8
Service counter at government/private facilities	7.6	92.4
No difficulty practicing physical distancing at all places stated	26.0	74.0
Did not visit any of the places stated above	6.0	94.0

Table 9: Locations **difficult for others to practice physical distancing** based on observation (n=3460)

Locations Difficult For Others to Practice Physical Distancing	Yes (%)	No (%)
Shopping complexes	50.8	49.2
Worship place eg. mosque/church/temple	6.4	93.6
Health Facilities eg. hospital/clinic/pharmacy	12.6	87.4
Banks/ ATM Machines	16.4	83.6
Station & public transport	27.6	72.4
Restaurant/ eating place	42.9	57.1
Wholesale market / wet market	55.6	44.4
Sundry shops /grocery shop/ convenient store	47.1	52.9
Supermarket/hypermarket	42.9	57.1
Service counter at government/private facilities	6.4	93.6
I do not have any difficulties practicing physical distancing at all places	15.2	84.8
I did not visit any of the places stated above	5.5	94.5

4.0 Discussion

In general, we found that only a moderate number of respondents had good knowledge of the main symptoms of COVID-19. As these studies were done during the peak of the pandemic and at the start of the Movement Control Order (MCO), even though it was a new disease, public were made aware of the disease and the government, as well as the social media, were active in educating on the symptoms of COVID-19. Ministry of Health (MOH) staff were also educated on COVID-19 symptoms to protect themselves and enable them to seek treatment early should they themselves be suspected of having COVID-19. A local online study, carried out around the same period of time, reported that 86.7% of Malaysians were able to identify the main clinical symptoms of COVID-19, fairly similar to our study findings [12].

For MOH staff, we found a lower percentage of staff were able to identify the main symptoms correctly compared to public. This might have been due to the changes in MOH guidelines and case definition on COVID-19. Inaccurate information being disseminated via social media from unreliable sources may also have caused confusion to the staff [12-14].

The respondents were also found to have a moderate knowledge of the disease and transmission, with 69% to 71% of the respondents able to answer correctly to all questions. However, item analysis does highlight the needs to enhance public knowledge on the transmission risk from asymptomatic individuals and sharing of items. The knowledge on the disease and its transmission seems to be good among MOH staff compared to the public as more than 80% were able to answer correctly, at 83.4% and 86.4% respectively. These results show that information on the disease was being delivered effectively to the MOH staff.

It was encouraging that wearing mask and hand washing was stated as the main preventive measures practiced by the public [15]. It is however still of concern that avoiding social gather was reported by less than 5% of the respondents. This was also seen whereby only 3% of the respondents reported avoiding social gathering to be the most important preventive measure. Unprotected close exposure to an infected individual is essential for the transmission of this disease [16].

Physical distancing is still the most effective method of controlling this disease, until we are able to find a more effective method [17]. This highlights the need to continue strengthening the message of maintaining physical distancing in Malaysia. A person who underestimates the importance may easily stop practicing physical distancing, when conditions improve, and thus increasing the risk of subsequent waves of the disease.

Despite not being reported as the main preventive measure practiced or the most important preventive measure, over 95% of respondents answered that they practice physical distancing. Other measures were also reported in high ranges, over 90%, with only use of hand sanitizers in the range of 70%. The high reported practice of physical distancing could be attributed to the fear of the disease and enforcement activities during the MCO. However there remains small pockets of people that continue to not practice any preventive measure.

The study conducted on physical distancing also showed similar findings whereby more than 95% of the respondents had high knowledge on the physical distancing measures. A high number, 98.8%, also reported practicing physical distancing as advised by MOH such as keeping at least one metre distance and avoiding crowded places. These findings are concurrent with a local study which also reports that the majority of respondents are aware of the meaning and the practices of physical distancing [18]. This study also showed majority of respondents having positive attitude and perceived benefit of practicing physical distancing as a measure that helps to reduce COVID-19 infection risk and transmission in community, similar to findings of a study conducted in India [20].

Even though the physical distancing survey reports high level of self-reported practices, however 21.9% of respondents stated they had difficulties to practice these preventive measures and the main two reasons cited were limited or confined space in a location, building or public transport and when others around don't practice it. A qualitative study conducted in UK reported responses from respondents regarding high level of self-adherence to physical distancing but observations of non-adherence by others and difficulties in practicing this measure in

public places [20]. The locations reported to be difficult to practices physical distancing was similar to what was found in our study. In another study conducted in Ethiopia, around 40% of participants stated they could not keep a distance of 2 meters from others regularly due to crowding in public and social institutions [21].

Over 90% of the MOH staffs reported practicing recommended preventive measures. However, we have found the least practised preventive measure was wearing mask at public places, which was 88.8%. This was in accordance to the result of perception, as only 77.8% perceived the effectiveness of wearing mask at the public. This result could be explained that at the time of the survey, wearing mask at public places was only recommended for those with symptoms [22].

Besides wearing mask at the public places, the other preventive measures practiced that was reported least by the respondent was used of hand sanitizer. It is important that we continue to emphasize and advocate the use of hand sanitiser as alcohol-based hand sanitiser could prevent the transmission of diseases caused by microorganisms [23].

Most of the respondents, both among the general public and MOH staff reported positively to practices of preventive measures should they have any symptoms of COVID-19, ranging between 87% to 99%. High scores were also found similarly on the perception on preventive measures effectiveness, as reported by most of the MOH staff, should they have any symptoms of COVID-19. However, we noticed that there were gaps between the practices and perception of its effectiveness should they have any symptoms of COVID-19. When there is a gap between perception and practice, it is feared that when the lockdown has ended, the practice of the preventive

measures will decrease. Thus, this gap should be tackled with targeted and specific health messages so that the importance of these practices are well understood and will continue to be practiced in future.

This study findings also showed only around 60% agreed that preventive measures help to avoid loss of life. The lower response to this perception could be attributed to risk aversion towards COVID-19 and due to the lower death rates seen in Malaysia at that point of time during data collection period (Mac - July 2020) due to this disease compared to other countries more severely affected like US, UK, Italy, Brazil etc. Therefore, public may view severity of COVID-19 as an infectious disease but not life threatening [24].

All these surveys involved respondents from all the states and federal territories in Malaysia and has a good distribution of gender, ethnicity and occupational classes. The high number of female respondents seen in the survey among MOH staff would be reflective of the female predominance among healthcare personnel in Malaysia [25]. Together, taking into account a cellular usage of over 95% in Malaysia, as well as use of the official email to contact the MOH staff, these would suggest that the study is representative of the Malaysian population and healthcare workers in Malaysia, with good generalizability of the study findings. Furthermore, the study was done during the implementation of the Movement Control Order, the peak of the COVID-19 pandemic in Malaysia. These studies too were among the first studies done to assess the knowledge and practices during the COVID-19 pandemic in Malaysia. However, we do acknowledge that these studies also have some limitation due to the poor response rates and that there may be reporting bias by the respondents, as they were required to follow the social guidelines in place during that time.

5.0 Conclusion

The findings showed that the symptoms of COVID must continue to be highlighted and be educated among both public and Ministry of Health (MOH) staff. This message should be updated to the latest symptoms of COVID-19, based on available data, and clearly communicated to avoid confusion. Furthermore, even though the preventive measures against COVID-19 is being taken by most of the people, the importance of physical distancing and avoiding gathering must continue to be highlighted in all safety and health promotions. Even though generally finding from the studies show high self-reported physical distancing practiced however reasons of confined spaces in building, public places or transport and others not adhering to physical distancing rules affects the practices. Therefore, strict enforcement of government on Standard Operating Procedures for Physical distancing at public places will enhance the adherence to this practice among public.

These messages must not only be instructive, however be accompanied with clear reasoning to educate the public of its importance, and so that these measures will become a new norm in future, even when the threat of COVID-19 is low. Good public health and social hygiene practices must be emphasized to be the new norms in our communities.

We hope these study findings will provide valuable information about the knowledge, practice and perceptions of the general public as well as the MOH staff during the COVID-19 outbreak, be a benchmark for future studies as well as a guide for further education and intervention towards controlling the COVID-19 pandemic in Malaysia.

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