



UNIVERSITI PUTRA MALAYSIA

***AWARENESS AND PREPAREDNESS OF CORONAVIRUS (COVID-19)
AMONG GENERAL PRACTITIONERS IN KLANG VALLEY***

GROUP 34

**TAY WEI JIE
NADIRA BINTI IZANI
SHNEHA SHAANTHINEE SARAVANAKUMAR**

**Ip
FPSK1 2020 31**

ABSTRACT

Tay, W.J.¹ Izani, N.¹ Shaanthinee, S.¹ Taib, N.M.² Jamaluddin, T.Z.M.T.²

¹ Second Year Medical Student, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

² Department of Medical Microbiology and Parasitology, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

Introduction: Coronavirus (COVID-19) is the current pandemic that has been affecting many lives worldwide. The virus that has been causing COVID-19 is from the same family of viruses that cause Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). Many countries are affected by this illness and the rate of cases and deaths are increasing day by day. Healthcare workers are adapting into the new way of working and treating patients. Hospitals and screening centers for COVID-19 are opened to ensure the accessibility of patients to get screened and treated.

Aim: This study aimed to assess the level of awareness and preparedness of general practitioners during Coronavirus (COVID-19) pandemic. It also aimed to evaluate the association between the level of awareness and preparedness of general practitioners in Klang Valley with sociodemographic factors and working experience.

Methods: A cross-sectional study involving general practitioners from private healthcare institutions in Klang Valley was conducted. Self-administered online questionnaires were distributed via proxies to each respondent consisting of 3 sections, namely general information, assessment of preparedness of general practitioners and assessment of awareness of general practitioners. Data was analysed using IBM SPSS version 25.0. The

non-parametric Fishers' Exact Test was used to test the association between age, gender, race and working experience with the level of awareness and preparedness of general practitioners when dealing with the COVID-19 pandemic.

Result: Majority of respondents were Malay, male and around 40-49 years old. Working experience during an endemic has a significant association with the level of awareness of COVID-19 among general practitioners in Klang Valley. On the contrary, age, gender, ethnicity and working experience during epidemic and pandemic are not significantly associated with the level of awareness and preparedness of COVID-19.

Conclusion: This research revealed that working experience during an endemic has a significant association with the level of awareness of COVID-19 among general practitioners in Klang Valley. This study may serve as a knowledge to plan and prepare for future pandemic.

TABLE OF CONTENT

Introduction

1.1 Background

1.2 Problem Statement

1.3 Significance of Research

1.4 Research Question

1.5 Objectives

1.5.1 General Objectives

1.5.2 Specific Objectives

1.6 Hypothesis

Literature Review

2.1 Definition of Coronavirus

2.1.1 Definition of COVID-19

2.2 Prevalence of COVID-19

2.3 Role of General Practitioners in Combating COVID-19

2.4 Awareness & Preparedness of General Practitioners in COVID-19

2.4.1 Definition of Awareness and Preparedness

2.4.2 Source of Information

2.5 Factors associated with the Awareness & Preparedness of General Practitioners in COVID-19.

2.5.1 Sociodemographic factors

2.5.2 Working experience

2.6 Importance of Awareness and Preparedness to General Practitioners

2.6.1 Resource Allocation

2.6.2 Dissemination of Information

2.7 Challenges and Responsibilities of Doctors during an Outbreak

2.8 Conceptual Framework

Methodology

3.1 Study Location

3.2 Study Design

3.3 Study Duration

3.4 Sampling

3.4.1 Study Population

3.4.2 Sampling Population

3.4.3 Selection Criteria

3.4.3.1 Inclusion Criteria

3.4.3.2 Exclusion Criteria

3.4.4 Sampling Frame

3.4.5 Sampling Unit

3.4.6 Sample Size

3.4.7 Sampling Method

3.5 Data Collection

3.5.1 Study Instruments

3.5.2 Questionnaire Design

3.5.3 Data Collection

3.6 Validity and Reliability of Instruments

3.7 Pre-Testing of the Questionnaire

3.8 Questionnaire Distribution

3.9 Data Analysis

3.10 Study Ethics

3.11 Study Variables

3.11.1 Independent Variables

3.11.2 Dependent Variables

3.12 Operational Definition

3.13 Expected Outcome

3.14 Work Plan

Data Analysis

4.1 Response Rate

4.2 General Characteristics

4.3 Level of Awareness of COVID19 among General Practitioners in Klang Valley

4.3.1 Association between Sociodemographic Factors and Working Experience with Awareness of General Practitioners in Klang Valley

4.4 Level of Preparedness of COVID19 among General Practitioners in Klang Valley

4.4.1 Association between Sociodemographic Factors and Working Experience with Level of Preparedness of General Practitioners in Klang Valley

Discussion

5.1 Response Rate

5.2 General Characteristic

5.3 Level of Awareness of General Practitioners and Its Association with Sociodemographic Factors and Working Experience

5.4 Level of Preparedness of General Practitioners and Its Association with Sociodemographic Factors and Working Experience

Conclusion

6.1 Conclusion

6.2 Limitations

6.3 Recommendations

Reference

Appendix



CHAPTER 1: INTRODUCTION

1.1 Background

According to van der Hoek (2004), Coronaviruses, a genus of the Coronaviridae family, are enveloped viruses with a large plus-strand RNA genome.

Four of the seven known coronaviruses that sicken people cause only mild to moderate disease while three can cause more serious, even fatal, disease (National Institute of Allergy and Infectious Diseases, 2020). SARS coronavirus (SARS-CoV) emerged in November 2002 and caused severe acute respiratory syndrome (SARS). That virus disappeared by 2004. MERS coronavirus (MERS-CoV) causes Middle East respiratory syndrome (MERS). Transmitted from an animal reservoir in camels, MERS was identified in September 2012 and continues to cause sporadic and localized outbreaks. SARS-CoV-2 is the third novel coronavirus to emerge in this century. It causes coronavirus disease 2019 (COVID-19), which emerged from China in December 2019 and was declared a global pandemic by the World Health Organization on March 11, 2020.

In January 2020, a novel coronavirus, SARS-CoV-2, was identified as the cause of an outbreak of viral pneumonia in Wuhan, China. The disease was named as coronavirus disease 2019 (COVID-19), subsequently spread globally. In the first three months after COVID-19 emerged, nearly 1 million people were infected, causing 50,000 people dead.

National Institute of Allergy and Infectious Disease (NIAID) COVID-19 research efforts build on earlier research on severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS). Research evidence suggests that SARS-CoV and MERS-CoV originated in bats, and it is likely that SARS-CoV-2 did as well. SARS-CoV then spreads

from infected civets to people, while MERS-CoV spreads from infected dromedary camels to people. Scientists are trying to determine how SARS-CoV-2 spread from an animal reservoir to people.

Based on the Health Ministry of Malaysia, there are 3 designated hospitals and 61 screening centres for COVID-19 in the Klang Valley area. Emergency and Trauma Department (ETD) are required to accept walk-in patients, referred patients for Screening Purpose and referred patients for Admission Purpose.

General practitioners (GP) are engaged in diagnosing and treating patients, meanwhile educating the public and guiding the community in the fight against the outbreak (Donald & Shanzhu, 2020). The main challenges for all healthcare workers, especially general practitioners, are the overwhelming numbers of patients, the hazardous working environment including exposure to infectious risks, the uncertainties and unknowns about the trajectory of the disease, and coping with panic and fears in the population.

General practitioners' roles include guarding the checkpoints to curb the spread of virus, detecting COVID-19 cases at fever clinics, providing treatment to the critically ill patients, and rendering continuity of care to discharged and chronically ill patients.

1.2 Problem Statement

The Ministry of Health of Malaysia have updated the real-time COVID-19 cases every day hosted by Datuk Seri Dr. Noor Hisham bin Abdullah, the Director-General of Health. COVID-19 Cases in Malaysia as of 12:00pm, May 2nd, 2020 has reached 6176 positives where 4326 have been discharged and 31 are in the ICU. The number of deaths has reached 103.

The Government has decided to implement a nationwide Restriction of Movement Order beginning 18th of March (Prime Minister's Office of Malaysia, 2020). This Order is enforced under the Control and Prevention of Infectious Diseases Act 1988 and the Police Act 1967.

Complete restriction of movement and assembly nationwide, including religious activities, sports, social and cultural events have been implemented. To enforce this restriction, all houses of worship and business premises are forced to close, except supermarkets, public markets, sundry shops and convenience stores selling essential goods to maintain resident daily lives. Specifically, for Muslims, the suspension of all religious activities in mosques and Suraus, including the Friday prayers, is in line with the decision of the Special Muzakarah Committee that convened on the 15th of March 2020.

Besides, a complete travel restriction for all Malaysians going overseas. For Malaysians returning home from foreign countries, they are required to undergo health checks and voluntary self- quarantine for 14 days. A complete restriction of foreign visitors and tourists into Malaysia is also implemented.

In 25 March 2020, News Straits Times had reported that a man denied his exposure to a COVID-19-positive person. As a result, all healthcare workers in close contact with him were obliged for swab tests and being quarantined.

General practitioners are the frontliners in facing the COVID-19 challenges. Knowledge and awareness on COVID-19 are greatly required among general practitioners in order to provide better health care services to the public, meanwhile protecting themselves from being infected.

1.3 Significance of Research

This research is conducted across the Klang Valley and it focuses on assessing the level of preparedness and awareness of General Practitioners towards the growing COVID-19 pandemic. The study is done to evaluate the knowledge of general practitioners towards key information about the disease, and how they react when faced with a pandemic. This study is also conducted in order to discover and bring light upon any misconceptions or discrepancies among the general practitioners that may hinder their work in treating their patients effectively. This study will also be able to bring out and establish a reference level to show the preparedness and awareness of the general practitioners to this emerging disease. This study will serve as a ground for assessing and predicting the level of awareness and preparedness of general practitioners in a state of emergency or in case of pandemic in the future. The outcome of this study can be used to establish procedures to better prepare our frontliners.

1.4 Research Question

1. What is the level of preparedness of general practitioners in Klang Valley regarding the Coronavirus (COVID-19)?
2. What is the level of awareness of general practitioners in Klang Valley regarding the Coronavirus (COVID-19)?
3. What is the association between the sociodemographic factors and working experience with the level of awareness and preparedness of Coronavirus (COVID-19) among general practitioners in the Klang Valley?

1.5 Objectives

1.5.1 General Objective

1. To assess the level of awareness and preparedness of Coronavirus (COVID-19) among general practitioners in Klang Valley.

1.5.2 Specific Objectives

1. To describe the socio demographic status (age, gender and ethnicity) and characteristics of general practitioners practicing in Klang Valley.
2. To assess the level of awareness and preparedness of general practitioners in Klang Valley when dealing with a pandemic.
3. To determine association between the sociodemographic factors and working experience with the level of awareness and preparedness of coronavirus among general practitioners.

1.6 Hypothesis

- I. There is no significant association between sociodemographic factors (age, gender and ethnicity) of general practitioners and their preparedness and awareness when dealing with an outbreak.
- II. There is no significant association between working experience of general practitioners and their preparedness and awareness when dealing with an outbreak.



CHAPTER 2: LITERATURE REVIEW

2.1 Definition of Coronavirus

According to the World Health Organization, Coronaviruses are classified as a wide family of viruses which causes illness in humans or animals. Specifically in humans, Coronaviruses are known to cause respiratory infections. Coronavirus-caused respiratory infections can be as mild as common cold to as severe as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). (World Health organization [WHO], 2020). Coronaviruses have surfaces with crown-like spikes hence the term Coronavirus. There are several subtypes of Coronaviruses which can cause disease in humans. Among the most common subtypes that cause human illness include 229E & NL63 (alphacoronavirus) and OC43 & HKU1 (betacoronavirus). These are said to be common because at some point of life, several of these viruses infect individuals at least once or more. MERS-CoV, SARS-CoV and finally the most recent one; SARS-CoV-2 are beta coronaviruses. The signs and symptoms and transmission of all these viral subtypes infection may be identical and overlapping but the managements may vary. (Centers for Disease Control and Prevention [CDC], 2010) Coronaviruses that have recently been identified or we also called as novel Coronavirus, cause the COVID-19 pandemic that has been going around right now since December 2019. (CDC, 2020)

2.1.1 Definition of COVID-19

COVID-19 is the most recently identified disease caused by the novel coronavirus SARS-CoV-2. The disease was first discovered in Wuhan, China around December 2019. The official name of this disease was announced by the World Health Organization announced on 11th February 2020. The SARS-CoV-2 is a betacoronavirus that originates from bats, although the exact source of this virus is still unknown. (CDC, 2020)

Many countries worldwide are affected by this outbreak. The World Health Organization's latest update on 8 May 2020 shows as many as 215 countries, regions and territories affected with almost 4 million cases identified and more than 200,000 confirmed deaths. The number of cases and deaths remains on the rise. (WHO, 2020)

The Ministry of Health Malaysia has stated that COVID-19 is an acute respiratory infection. To ensure someone is infected with COVID-19, certain criteria must be met. The patient should have sudden onset of respiratory infection with at least shortness of breath, cough or sore throat with or without fever. The patient should also have a history of travel or residing in a foreign country within 14 days before illness onset. If the patient has not recently travelled anywhere, another criteria that needs to be considered is whether the patient has any close interaction with someone infected with COVID-19 or attended an event associated with COVID-19 outbreak. (Ministry of Health [MOH], 2020)

The transmission of SARS-CoV-2 is almost identical to other Coronavirus subtypes. The disease spreads by tiny respiratory droplets, from person to person. These small droplets are spread when a patient infected with COVID-19 is sneezing, coughing, speaking or anything that may cause small droplets from spreading. Since those infected with COVID-19 can exhibit only mild symptoms such as fever and fatigue, it is possible to catch COVID-19 from

someone who does not appear too ill. People who breathe in these droplets from an infected person may be infected with the virus as it enters the lungs. The virus may enter a person's body through his or her eyes, nose and mouth. As a result, if the droplets containing the virus land on surfaces and objects, and a healthy person touches those objects and then touches their eyes, nose and mouth, they can become infected. The viruses are present on surfaces that are commonly touched by people such as door knobs, handrails and packages.

Although the virus has recently been detected in an asymptomatic person, the study indicates that people are most contagious when they are showing symptoms, therefore CDC recommends that these patients should be isolated. The period of quarantine is 14 days from the date of exposure since the incubation period for the virus is 2 to 14 days. This is why it is very important to stay at least 1 meter away from people, particularly those who show signs and symptoms of COVID-19 infection. It is also important to always wash your hands with soap and water or to use alcohol-based hand sanitizer especially after a person touches any surfaces (CDC, 2020).

COVID-19 generally affects older people and those with underlying diseases such as cancer, hypertension and diabetes mellitus more severely than healthy and young people. However, evidence suggests that severe cases can still occur in this age group. Children and young people should follow the same guidelines on self-quarantine and self-isolation if they are at risk of having COVID-19 or they show signs and symptoms of being infected (WHO, 2020).

Based on a research, it has been estimated that COVID-19 patients are asymptomatic around 25 per cent or more. Roughly 80 per cent of the many patients infected with COVID-19 recover without needing hospitalization or intensive care. Even then, 1 in 5

people who have COVID-19 become seriously ill and have trouble breathing. Elderly people and those with chronic conditions such as high blood pressure, cardiovascular disease or compromised immune systems may be at greater risk of developing a more severe disease. Kids and adolescents are much less affected and have small cases of COVID-19 in general, which constitutes about 2 per cent. In what has been called the "cytokine storm", other scholars have theorized that the virus triggers the immune system to overreact in ways similar to HIV. In addition, COVID-19 can attack and hurt the central nervous system, eyes, nose, lungs, heart, blood vessels, livers, kidneys and intestines. One proposal for the respiratory problems could be "silent hypoxia", or the collapse of alveoli in the lungs. Newer evidence has also shown that blood clotting can happen, wherein loads of small clots in the lungs will detach and migrate to the brain or heart, causing a stroke or heart attack.

Individuals can be asymptomatic for up to 12 days but still shed the virus. Viral shedding is a long process. The duration of the symptom onset can be for about 22 days in mild to moderate cases. In more extreme cases, it took around a week to show symptoms such as dyspnoea. In a study that has been conducted, there are different proportions of individuals with severe cases who need intensive treatment (ICU). For example, In Nanchang, China, ICU treatment was needed for approximately 23 (77 per cent) out of 30 people with serious cases. Higher viral loads of the virus were also related to severe cases, with the median viral load as much as 60 times greater than mild cases. Death rates differ with several variables: population, demographics, healthcare access and so on. Global death rate has been estimated to be 1-2 percent of total cases (Bryn Gay, 2020).

Reproductive number for COVID-19 is calculated in a research. Reproductive number (R_0) is an indication of a virus' transmissibility, which represents the average number of new

infections in a totally naïve population generated by an infectious person. Based on a research, the estimated mean R_0 for COVID-19 was discovered to be about 3.28, with a median of 2.79 and an IQR of 1.16, which would be significantly higher than that of the approximation of 1.95 for the WHO. Latest estimates of R_0 for COVID-19 are possibly biased due to inadequate information and short startup time. Depending on these concerns, it is expected that R_0 for COVID-19 will be around 2–3 which is largely consistent with the estimate of the WHO (Ying Liu, et al., 2020).

2.2 Prevalence of COVID-19

In the United States, as of June 19, 2020, over 2.2 million COVID-19 cases have been reported consisting of more than 118,000 deaths. The United States seems to have more identified illnesses since around March 26, 2020 than any other countries in the world like China and Italy. From 22 January to 30 May 2020, a total of 1,761,503 cases of COVID-19 were reported in the United States ultimately resulting in 103,700 fatalities. The cumulative new cases for every 100,000 people was 403.6 cases. Based on the data, cases of females are higher compared to males with a median age of 48 years. According to age-based incidence, most cases come from adults aged 80 years or older at about 902 cases per 100,000 population, and that is 8.7 percent of overall cases. Lowest cases come from the age group 9 years or younger at about 51.1 cases per 100,000 population, and that is 1.4 percent of overall cases. According to race-based incidence, the highest number of cases come from non-Hispanic white at 26 per cent compared to the lowest number of cases which is from non-Hispanic Native Hawaiian or other Pacific Islander at less than 1 percent of cases. Reported outcomes mentioned that hospitalization among patients infected with COVID-19 is

at 14 percent and the percentage can increase up to 6 times in patients with underlying diseases. Intensive care unit admission is at 2 percent of cases. Mortality rates are 5 per cent of cases and the percentage can increase up to 12 times in patients having underlying conditions. It has been concluded that all of these rates are higher in male patients. From the same research, mortality rates by age were also measured. Patients who are 80 years or older had the highest mortality rate at 29.8 percent and the lowest mortality rate came from children who are 9 years or younger at about 0.1 per cent. Those rates are only applicable if they do not have underlying conditions. The percentage of mortality rate will increase in patients with underlying diseases. (Stokes, et al., 2020)

COVID-19-related fatalities in China affected primarily elderly people more than 60 years old and patients with serious underlying diseases. At the Conference on Retroviruses and Opportunistic Infections (CROI) meeting on 10 March 2020, Dr Zunyou Wu of the CCDC presented a study describing information in China, which included the latest update on epidemiology and clinical presentation. COVID-19 was recorded to be the most aggressive in elderly people, but a significant male predominance was no more observed. Nearly 40 per cent of cases were “mild” with no symptoms of pneumonia. Another 40 per cent with symptoms of viral pneumonia were “moderate,” 15 percent were severe, and 5 percent were critical. During the course of the disease, 10 to 12 percent of cases that were originally identified as mild or moderate progressed to extreme. Also, 15 to 20 percent of severe cases gradually became more serious. The average time or the symptoms to show up after initial exposure to the infection was 5-6 days. Patients who exhibit milder cases appear to heal within 2 weeks, whereas patients who have more severe infections may need up to 3-6 weeks to heal. Deaths were reported from 2-8 weeks after the onset of symptoms. COVID-19 Infection that is totally non-symptomatic despite following thorough symptom evaluations

was uncommon at about less than 1 per cent. Huang et al reported that out of 41 patients infected in Wuhan, 78 per cent were male and 32 per cent had some kind of underlying conditions. (Cennimo, 2020)

As of 17 April 2020, the Ministry of Health (MOH) in Malaysia reported that there were 5,251 COVID-19 cases which include 86 fatalities and 2,967 recovery cases. Selangor had the highest number of reported cases of COVID-19 which was 1,338. The government has announced that 56.5 per cent from the 5,251 positive cases of COVID-19 recovered. The government declared 27 districts as red zones, such as Lembah Pantai at 592 cases, Hulu Langat at 446 cases, Petaling Jaya at 366 cases and others. The number of confirmed cases of COVID-19 developed fairly slowly in March 2020 until a religious event occurred at Sri Petaling, Kuala Lumpur, which resulted in a rapid increase in cases. A few weeks after the event, Malaysia recorded the highest number of positive cases of COVID-19 in South East Asia. The number of positive cases increased beyond 553 cases on the 16th March 2020, and the Prime Minister of Malaysia announced a Movement Control Order (MCO). On the 17th March 2020, Malaysia confirmed 2 COVID-19 related deaths. The MOH to date has reported 29 virus clusters throughout Malaysia. Malaysia experienced the largest increment of positive COVID-19 cases in South East Asia, several weeks after that religious event. On 16 March 2020, the number of positive cases increased to about 553 cases which resulted in the announcement of the Movement Control Order (MCO) by the Malaysian prime minister. Malaysia had 2 deaths associated with COVID-19 on 17th March 2020. The MOH has reported 29 virus clusters all across Malaysia. (Elengoe, 2020)

2.3 Role of General Practitioners in Combating COVID-19

General practitioner is defined as a physician whose practice is not oriented to a specific medical specialty but instead covers a variety of medical problems in patients of all ages (The American Heritage® Medical Dictionary, 2007) . They are also called family doctor.

The Malaysian healthcare system primarily consists of the public and private health services (Kenny et al., 2017). One of the prominent private healthcare services are offered in the General Practitioner's (GP) Clinic. The private sector health care services are dominantly located in urban with highly economic activities providing mainly curative care and diagnostic through physician clinics often referred as private general practitioners (GPs) and private hospitals. General practices often operate in solo practices, and some are in group practices, mostly by non-specialist medical practitioners.

In 2016, there are a total of 50051 doctors in Malaysia, and 13684 of them working in private sector (Malaysia Health at a Glance, 2020). There are also 7335 private health clinics in Malaysia, which will be the target of the current research. Till Health Facts 2015 has stated that there are a total of 1246 general practitioners in private sectors in Klang Valley. General practitioners are the gatekeepers and health promoters by empowering the community to build a firewall against the virus.

General practitioners play roles in guarding the checkpoints to curb the spread of virus, detecting COVID-19 cases at fever clinics, providing treatment to the critically ill patients, and also rendering continuity of care to patients discharged.

The first role of general practitioners is guarding the checkpoints to curb the spread of viruses (Donald & Shanzhu, 2020). Airports, bus stations, railway stations and highways are the red spots where viruses can spread, so these places are the front gates to prevent imported cases. They verify personal information, conduct health checks for travellers, refer suspected

cases to hospitals for follow-up and assist epidemiological investigations. General practitioners also keep the close contacts of confirmed cases and commuters entering regions under surveillance. They provide psychological support, conduct daily health monitoring, provide advice to individuals under quarantine or medical surveillance on how to disinfect their homes and properly process their domestic waste.

General practitioners possess skills to empower patients, and patients felt that they are better helped and more understood. They are in excellent positions to translate national guidelines into public health education for patients to put into practice in their daily lives. Hence, they are vital in improving the health literacy of the community on infection control. For instance, general practitioners in Hong Kong played this role during SARS. The Hong Kong Medical Association has established Doctors' Network amongst general practitioners in different districts to support the local communities (Lee & Chuh, 2010). Their role in providing psychosocial support and counselling to the community during health crises is crucial.

The next role of general practitioners is to detect cases at the health clinics. General practitioners are the first to detect suspected cases and provide information to the authorities for contact tracing. All general practitioners should become familiar with corona-like illness case definitions and appropriate laboratory investigation (Collins et al., 2006). During the novel coronavirus outbreak, they are seen everywhere from community health service centres to secondary and tertiary hospitals conducting their duties in tracking and tracing patients. Meanwhile, they have to take a series of infection control measures and patient flow directions to reduce the risk of cross infections.

The fourth role of general practitioners is to provide continuous care to discharged patients and the chronically ill patients (Health Careers, n.d.). Take China for example,

contracted general practitioners provide continuous care to patients recovering from the infections in their 14 days of rehabilitation and home care period after discharge (Donald & Shanzhu, 2020). They monitor the patient's health condition by visiting them twice a day. They continue to manage their existing morbidities as well as ease their anxiety through counselling. Support is given to the patients' families and neighbours. During the outbreak, chronically ill patients have to endure many inconveniences in their daily lives. General practitioners help them overcome many of those barriers by individual, personalised services catered to their needs. For example, general practitioners used to issue 1-month prescriptions but now they issue 3-month supplies instead so the patients do not need to return frequently for medication.

2.4 Awareness & Preparedness of General Practitioners in COVID-19

2.4.1 Definition of Awareness & Preparedness

Merriam-Webster Dictionary has defined awareness as the quality or state of being aware or knowledge and understanding that something is happening or exists. General practitioners should be well aware of the information of pandemics like COVID-19, including the epidemiological trend, signs and symptoms, clinical diagnosis, management, infection prevention and control (IPC) of the pandemics.

A retrospective survey on the evaluation of the knowledge, attitude, practices (KAP) and sources of information relating to SARS among physicians who staffed the SARS fever hotline service was conducted using a self-administered postal questionnaire. Participants of the survey were physicians who staffed a SARS hotline during the SARS epidemic in Taipei, Taiwan from June 1 to 10, 2003 (Deng et al., 2005). The response rate of the survey was

83%, and most (n=37, 88%) were male, and the majority of respondents (n=31, 74%) had graduated from medical school at least 15 years earlier. Most respondents (n=34, 79%) have rated their knowledge of SARS as either very good (n=6, 14%) or good (n=25, 58%). Respondents with very good and good knowledge of SARS were regarded as well aware of the pandemics, which the p-value is 0.72.

Merriam-Webster Dictionary has defined preparedness as the quality or state of being prepared especially in case of war. General practitioners should be well prepared to handle COVID-19 cases since they are considered as the frontliners of pandemics in the community. General practitioners should also be well prepared by putting the authorised guidelines and policies into practice. Collaboration of general practitioners with other health care workers are the key to make a better preparation to combat with COVID-19.

In late 2003 and early 2004 the Australian Capital Territory (ACT) Division of General Practice and the ACT Health have conducted a survey designed to identify biothreat preparedness of Australian Capital Territory (ACT) general practitioners around severe acute respiratory syndrome (SARS) (Herceg et al., 2005). The response rate for the individual GP survey was 48% (184/381) while the response rate for the practice organisation survey was 54% (74/136). Of the general practitioners who responded to demographic questions, 54% were female and 69% were in the 41–60 years age group. The Australian Government SARS Infection Control Guidelines for General Practice were accessed by 46% of respondents. Respondents who have accessed the guidelines were regarded as well prepared for the pandemics, which the p-value is 0.46. The majority of respondents felt adequately informed about SARS during the 2003 outbreak, but many did not follow the national guidelines on telephone screening of patients, warning signs and having infection control kits available. Nonetheless, the majority of practices reported that they had policies or procedures in place

to isolate potentially infectious patients from others in the waiting room. In short, general practitioners should be familiar with flu-like illness case definitions and appropriate laboratory investigations.

A cross-sectional study aimed to analyse the knowledge, practices, and attitudes (KAP) regarding COVID-19 among healthcare workers (HCW) in Henan, China was conducted from February 4th to February 8th, 2020 (Zhang M. et al., 2020). This study involves a total of 1357 healthcare workers across 10 hospitals in Henan, China. Of 1357 respondents, 89% of healthcare workers had sufficient knowledge regarding COVID-19 and 89.7% followed correct practices of COVID-19 (p -value=0.89). Other than knowledge level, some risk factors including educational attainment, work experience and job category influenced healthcare workers' attitudes and practice concerning COVID-19 are also studied.

2.4.2 Source of information

A retrospective survey on the sources of information relating to SARS among physicians who staffed the SARS fever hotline service postal questionnaire in Taiwan (Deng et al., 2005) have shown a variety of sources were used to obtain information about SARS. Hospital guidelines (33/43, 79%) and the news media (79%) were the most frequently cited information sources. The centre of disease control (CDC-TW) and World Health Organisation (WHO) websites were used by 65% (28/43) and 49% (21/43) of respondents respectively. However, only one-third of respondents (15/43, 35%) obtained information from medical journals and articles. The survey has concluded that physicians were equally likely to obtain medical information about SARS from non-medical sources and medical sources.

Health websites, public health broadcasts, television channels, radio segments, newspaper articles, and social media are all currently used by medical professionals to convey health messages.

The government has the responsibility to oversee pandemic planning and can authorise any legislative powers required during an outbreak. Professional bodies must be invited to advise on these processes. For instance, the Royal Australian College of General Practitioners (RACGP) is involved in government planning for a pandemic in Australia (Collins et al., 2006). The RACGP has a pandemic preparedness group and can identify issues pertaining to quality, education, standards and communicate strategies to general practitioners.

2.5 Factors associated with Awareness & Preparedness of General Practitioners in COVID-19

2.5.1 Sociodemographic Factors

The first factor is age. Majority of older employees in the workplace today are very different from what it was when they just started their career (Bown-Wilson, 2011). A person's age more or less affects his thinking, decision-making and maturity. Age may be a factor in influencing the awareness and preparedness of general practitioners in COVID-19 by having different kinds of ways to obtain information and updates regarding the pandemics.

The second factor is gender. The concerns about physicians' career advancement tend to be raised in terms of gender, because women presently constitute a majority of the medical students in most western societies. Lifestyle choices rather than merely career advancement influence both female and male medical career plans (Riska, 2010). The barriers or the concrete support that women and men experienced in making their career decisions can be

family concerns. Generally, family demands have hampered women's career plans, while men were less influenced by family concerns. The association of the proportion of gender in general practitioners with their awareness and preparedness in handling COVID-19 will be studied in this research.

The third factor is ethnicity. Race has a strong effect on occupation, particularly in South Africa, where formal discrimination and denial of opportunities during the apartheid era has left a legacy of racially-embedded inequalities (United Nations, 2016). The association between the ethnicity among general practitioners with their awareness and preparedness in COVID-19 will be studied in this research.

2.5.2 Working experience

National Institute of Allergy and Infectious Diseases (NIAID) has stated that COVID-19 research efforts are built on earlier research on severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS), which also are caused by coronaviruses. SARS, MERS and COVID-19 are grouped under coronavirus. Their morphology, pathogenic mechanism, transmission mode, diagnosis, treatment, and preventive measures are in some extent similar.

The former Minister of Health Malaysia, Dato' Chua Jui Meng declared that Malaysia is free of SARS in the WHO global meeting on SARS on 17 June 2003. After the WHO issued a Global Alert on SARS on 12 March 2003, Malaysia acted swiftly by stepping up public health surveillance and instituted barrier nursing and enhancing hospital infection control measures in all clinics (including both public and private clinics) and hospitals nationwide the very next day. The universal protection system was fully implemented, our SARS National Operations Centre began functioning on 16 March 2003. National Committee

for SARS Control, consisting of representatives from 16 Ministries, agencies and organisations, has been established to set policies and directions to ensure a coordinated and consistent approach in fighting SARS. 21 designated hospitals have been identified to handle suspected and probable SARS cases.

Measures taken included the screening of air passengers from SARS-affected countries, screening at all international points-of-entry, SARS epidemic control measures in schools, guidelines were issued on prevention and control of SARS in hospitals and clinics, for employers and employees, advisory on wearing masks and respirators, health advisories for prevention of SARS for hotels and service apartments, public transport operators, schools and tertiary institutions, airlines and shipping lines. A total of 5 imported cases have been detected throughout this period (Ministry of Health Annual Report, 2003).

Despite its proximity to China, physically and in economic terms, Taiwan has had extraordinary success in controlling the COVID-19. Efforts may have been helped by the SARS experience (The Guardian, 2020). According to The Guardian, Taiwan was probably the first country to try to stop coronavirus spreading, bringing in checks on travellers from Wuhan at the end of December, after reports of a mystery, pneumonia-like illness in the country. This has brought insights on whether the experience of general practitioners in handling SARS in 2002 will influence their awareness and preparedness in combating COVID-19.

Severe acute respiratory infection (SARI) is defined as an acute respiratory infection with history or measured fever of more than 38 degree Celcius, cough, with onset within the 10 days and requires hospitalization (Malaysia Influenza Surveillance Protocol, 2015). SARI tend to be rapidly progressive respiratory illnesses due to pathogens that have the potential to become a large scale epidemics. At the time of writing, SARS-CoV, MERS-CoV & H7N9

(Avian Influenza) are regarded as SARIs while seasonal influenza, including H1N1 are not considered as SARIs (Winnipeg Regional Health Authority, 2006).

2.6 Importance of Awareness and Preparedness to General Practitioners

2.6.1 Resource Allocation

Medical resources are scarce and the provision of these resources is necessary to enable the actions demanded by various pandemic plans. The health impacts of a moderate-to-severe pandemic such as COVID19 is based on data from China and Italy which states that an infected person with SARS-CoV-2 spreads the virus to at least two others on average and it is estimated that at least 5 percent of the population will become infected within three months.(Tan, Hui Siu, & Tan, 2020). Our current healthcare system priority is to flatten the curve to avoid shortage of beds, address issues in the medical workforce and overcome resource scarcity in geographical areas with a large number of cases. Healthcare workers should be prepared to make immediate decisions to decide which patients require the limited amount of resources available. There are many aspects that need to be considered by the healthcare workers, that are to maximise benefits of available resources, prioritize healthcare workers, to be responsive to evidence and apply the same principles to COVID19 and non COVID19 patients. (Emanuel, Persad, Upshur, et al.,2020). The general practitioners should be well prepared to effectively triage patients even in testing centres to maximise and efficiently utilize the available resources. (Truog, Mitchell, & Daley, 2020).

2.6.2 Dissemination of Information

Another critical aspect in pandemic planning is workforce surveillance, emergency operations and logistics personnel require timely information regarding the status of the disease and any new strategies developed to provide better care for the patients, general practitioners should always be aware as to new developments in SOP and prepared to receive changes and implement them effectively in clinics and testing centres. All GPs should familiarize themselves with the definitions of influenza-like cases and appropriate laboratory investigations. Public health authorities in the state and region provide alerts for reported cases, currently listed by state and territorial regulations. One key difference in planning for a future pandemic is the wider variety of media accessible for information dissemination than was available in past epidemics. (Nick, John & Micheal et al, 2006). During a crisis, consistent messages should be spread, inconsistent messages, although factually correct, could lead to public mistrust of doctors who are handling the pandemic. This could cause a spread of false news and cause panic across the countries. General practitioners should be well informed and be aware of the disease in order to curb dissemination of ambiguous news. Clear, trusted, and coordinated public communication will be essential to avoid unnecessary risk of infection, confusion, anger, and the overwhelming demand for health care. It will also improve the probability for the public to heed directions from the general practitioners

2.7 Challenges and Responsibilities of Doctors during Outbreak

Primary care providers are reminded to keep abreast with epidemiological trends and evolving case definitions in facing the pandemic. The diagnostic challenge of COVID-19 lies in the concurrent outbreak of an endemic local disease such as Dengue fever. The early stages of COVID-19 infections are similar to other common viral infections, with many patients initially presenting with mild and undifferentiated symptoms. For example, fever, myalgia,

leukopenia and thrombocytopenia. Hence, it is vital for early laboratory investigations and serological testing of local endemic conditions to narrow the list of differentials. While these diseases share similar incubation periods with an acute febrile phase, respiratory symptoms of cough and dyspnoea should raise the clinical suspicion and prompt testing for COVID-19.

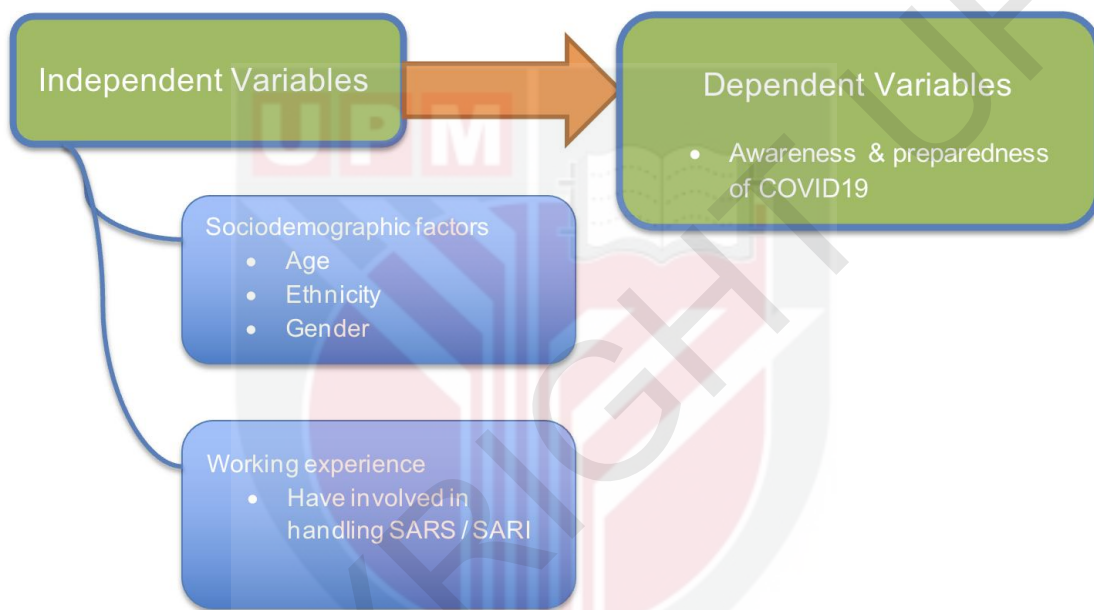
During epidemics, coordination and multidisciplinary management between specialists in infectious diseases (IDs), ICUs, and infection prevention and control (IPC), and also the hospital management, is of utmost importance to provide optimal care to the patients (Peiffer-Smadja et al, 2020). Healthcare professionals are necessitated to adapt in real time to new data and guidelines produced at a fast pace. Education, training and exercises have been regularly raised since the start of the outbreak for frontline HCWs to make sure that all HCWs receive sufficient information and training on personal protective equipment (PPE) and clinical management of the patients.

Staff education must include reception, cleaning teams, and clinical staff. Appropriate triaging, quarantine, specimen storage, and waste disposal must be well clarified. Clinical staff will need to revise their knowledge of pandemics, especially the possible clinical presentations where fever is absent.

In France, psychological support was provided to HCWs taking care of patients, but also to those who felt threatened or anxious. Media pressure about the COVID-19 epidemic such as rumours and global anxiety led to difficulties in recruiting temporary staff who sometimes refused to come to the hospital. The hospital management team had to reassure them and make sure that health care was not disrupted and that doctors were not distracted from their duties.

In conclusion, healthcare workers are highly exposed to the infections. While providing the professional services and reassurance to the patients, their safety, health, emotion and life quality are challenged.

2.8 Conceptual Framework





CHAPTER 3: METHODOLOGY

3.1 Study Location

The study was conducted at private health care institutions across Klang Valley.

3.2 Study Design

A cross sectional study was used in this study.

3.3 Study Duration

The study duration was from 1 June - 9 October 2020.

3.4 Sampling

3.4.1 Study population

The population under study were the general practitioners in the Klang Valley who were willing to participate in the study and fulfilled the inclusion and exclusion criteria.

3.4.2 Sampling Population

The sampling population were the general practitioners in private healthcare institutions in Klang Valley.

3.4.3 Selection Criteria

3.4.3.1 Inclusion Criteria

All General Practitioners including locum doctors in service in private healthcare institutions in Klang Valley.

3.4.3.2 Exclusion Criteria

Non-Malaysian general practitioners in service in private healthcare institutions in Klang Valley.

3.4.4 Sampling Frame

General practitioners who are presently practicing in private institutions in Klang Valley.

3.4.5 Sampling Unit

The sampling unit for the study were the general practitioners practicing in private institutions in Klang Valley.

3.4.6 Sample Size

The survey was carried out at private healthcare institutions across Klang Valley. There were no limitations on the number of healthcare institutions participating in this research. To obtain the minimum sample size for analysis, we used the following formula:

$$n_o = \frac{z_{1-\alpha/2}^2}{d^2} P (1 - P)$$

Sample size adjustment for finite population

$$n = \frac{n_o}{1 + \frac{(n_o - 1)}{N}}$$

$Z_{\alpha/2}$ is the critical value of the Normal distribution at $\alpha/2$ (e.g. for a confidence level of 95%,

α is 0.05 and the critical value is 1.96),

MOE (d) is the margin of error = 5%,

p is the sample proportion = 0.89,

N is the population size = 1246 (Health Facts 2015),

n is the sample size = 135

(Daniel, 1999) (Charan J. & Biswas T., 2013)

This is a cross-sectional study population proportion formula. After an adjustment of 20% considering that as invalid questionnaires, the final sample size is estimated at 162 from literature, P is 0.89) (Zhang M. et al., 2020)

3.4.7 Sampling Method

The sampling method used was convenience sampling

3.5 Instrument and Data Collection

3.5.1 Study Instruments

Online questionnaires and an online consent form prior to questionnaire. This questionnaire was fully in English and was divided into three parts in order to assess the level of awareness and preparedness of General Practitioners in Klang Valley to the coronavirus. Section A was designed to determine the sociodemographic status of the respondents which include, age, gender, and race. This section also determined the working experience in years of the

respondents. Section B was designed to assess the level of preparedness of general practitioners against the coronavirus by assessing if the general practitioners have any experience handling an outbreak or taken any courses to learn to handle the virus. Section C was designed to assess the level of awareness of general practitioners towards the coronavirus.

3.5.2 Questionnaire Design

To measure the level of awareness and preparedness, multiple choice answers were used. Section B had 10 questions (n=10 questions) and C had 13 questions (n=13 questions). The questions were put on a dichotomous scale (YES or NO). Each correct answer was given a score of 1 and each wrong answer was given a score of 0. The awareness and preparedness level were ranged (0-21 & 0-27) respectively. The awareness and preparedness levels of respondents are divided into low, medium, high according to tertiles of the score range.

3.5.3 Data Collection

There was a short summary prior to the online questionnaire to notify the respondents about the purpose of this study. Data was only used if the consent box is checked

3.6 Validity and Reliability of the Instruments

The items in the questionnaire were adapted from a validated survey from a previous validated study (Taysir, Ahmad & Qarawi et al.,2020) to measure preparedness and (Yung,Tam & Rajadurai et al.,2020) to measure awareness. Feedback regarding the questionnaire was obtained and improvements were made based on their level of

comprehension and capability to answer the questionnaire. Cronbach alpha was performed to measure the reliability of the questionnaire.

3.7 Pre-Testing of the Questionnaire

The questionnaire was randomly distributed to 10 respondents consisting of general practitioners and family physician doctors. After conducting the pre-test, the questionnaire was modified accordingly after being checked and approved by the supervisory committee and relevant experts to ensure that the questions conveyed are understood and capture the meaning accurately. The Cronach alpha of the pre-test is 0.657.

3.8 Questionnaire Distribution

The data was collected using an online questionnaire. The google form questionnaire was distributed to General Practitioners via proxy. The proxies used to distribute the questionnaires were the Malaysian Medical Association (MMA), the Malaysian Medical Council and Academy of Family Physicians of Malaysia (AFPM) and Private Medical Practitioners Association of Kuala Lumpur and Selangor (PMPASKL). The questionnaire was also emailed to the official email addresses of the MMA secretary and individual clinics as well as disseminated by Whatsapp to individual General Practitioner groups.

3.9 Data Analysis

IBM Statistical Program for Social Sciences (SPSS) of Windows version 25.0 was used for analysis of the results. Descriptive statistics for all parameters were measured including frequencies, percentage, mean, and standard deviation. The non-parametric Fisher's exact test was used to analyse the data. The result was expressed as median and standard deviation (SD)

with a level of significance of $p < 0.05$.

3.10 Study Ethics

The research proposal and questionnaire was sent to the Ethical Committee for Research Involving Human Subjects, UPM for permission and approval to perform the study. A consent form was taken from the respondents prior to taking the questionnaire. The responses and information of the respondents were kept private and confidential by securely storing data with a unique identifier for each respondent. Participation in this survey was voluntary and the respondents may withdraw anytime without any penalties or loss of benefits. All survey respondents were asked to fill out a signed, informed consent form found on the questionnaire's first paragraph. If the participant answered "YES" to the form's first question, he / she automatically agreed to participate. Using the approach of skip-logic surveys, consumers who disagree were removed from analysis.

3.11 Study Variables

3.11.1 Independent Variables

Sociodemographic factors (age, ethnicity, gender) and working experience in handling a previous pandemic (SARS/ SARI).

3.11.2 Dependant Variables

The level of Awareness and Preparedness of coronavirus (COVID-19) among general practitioners in Klang Valley.

3.12 Operational Definition

Variables	Definition	Scale
Age	As filled in by the respondents in the questionnaire.	1. 20-29 years old 2. 30-39 years old 3. 40-49 years old 4. 50-59 years old 5. 60-69 years old 6. 70-79 years old
Gender	As filled in by the respondents in the questionnaire.	1. Male 2. Female
Ethnicity	As filled in by the respondents in the questionnaire.	1. Malay 2. Chinese 3. Indian 4. Others
Working Experience	Having experience in handling Severe acute respiratory syndrome (SARS) / Severe acute respiratory infection (SARI).	1. Having experience 2. Do not have the experience
Preparedness	The state of readiness with sufficient knowledge to handle COVID-19 cases. Division based on tertile of score range.	1. Low (score 0-7) 2. Medium (score 8-14) 3. High (score 15-21)
Awareness	Concern about and well-informed interest in a COVID-19 development. Division based on tertile of	1. Low (score 0-9) 2. Medium (score 10-18) 3. High (score 19-27)

	score range.	
--	--------------	--

3.13 Expected Outcome

This study could demonstrate the association between sociodemographic factors and working experience with the awareness and preparedness level of the general practitioners. The results can be used by the respondents to assess their preparedness and awareness levels in order to provide better care for their patients and allow them to brush up on important key items in dealing with this disease. The data collected from this survey will play a significant role in future reactions to fatal outbreaks of viruses. Researchers can use this to improve the preparedness of different hospitals for outbreaks. This would play a key role in many fields of the early detection and prevention of virus outbreaks. It would also play a major role in reducing the response time to hospital emergency situations.

3.14 Work Plan

NO	ACTIVITY	MAY	JUNE	JULY	AUGU ST	SEPTE MBER	OCTO BER
1	Proposal Preparation						
2	Submission of Proposal						
3	Proposal Presentation						
4	Preparation for Ethical Approval from JKEUPM						
5	Data collection and Analysis						
6	Presentation of Analysed Data						
7	Poster presentation						
8.	Final Presentation						

CHAPTER 4: DATA ANALYSIS

4.1 Response Rate

A total of 1246 questionnaires have been sent to general practitioners via email, including both general and specialist institutions in Klang Valley. The calculated sample size was 162. There were 162 respondents answering the questionnaires. The response rate is 13%. The sample size was achieved.

Response rate = Total Response / Total of surveys sent out x 100%

$$= 162 / 1246 \times 100\%$$

$$= 13\%$$

4.2 General Characteristics

Table 4.2.1 Sociodemographic factors & Working Experience among General Practitioners in Klang Valley

Variables (N=162)		Frequency (n)	Percentage (%)
Age (years)	20-29	2	1.2
	30-39	50	30.9

	40-49	65	40.1
	50-59	36	22.2
	60-69	6	3.7
	70-79	3	1.9
Gender	Male	85	52.5
	Female	77	47.5
Ethnicity	Malay	66	40.7
	Chinese	48	29.6
	Indian	40	24.7
	Others	8	4.9
Type of Healthcare Institution	General institution	159	98.1
	Specialist institution	3	1.9
Highest Level of Education	Bachelors Degree	86	53.1
	Masters / Doctor of Medicine (MMed, MPath, MPH, DrPH etc)	54	33.3
	Membership of the Royal Colleges of Physicians of the United Kingdom (MRCP, MRCGP,	9	5.6

MRCS, MRCOG etc)			
Having experience working during an endemic? (dengue, influenza)	Fellow of the Royal College of General Practitioners (FRCGP, FRCP, FRCS etc)	7	4.3
	Doctor of Philosophy (PhD)	0	0
	Others	6	3.7
	No	5	3.1
Having experience working during an epidemic? (MERS CoV, 2003 SARS etc)	Yes	157	96.9
	No	84	51.9
Having experience working during a pandemic? (2009 H1N1, etc)	Yes	78	48.1
	No	46	28.4
	Yes	116	71.6

Table 4.2.1 shows the distribution of respondents characterised by the socio-demographics of the general practitioners in Klang Valley. Our study consisted of respondents ages mostly at 40-49 (40.1%). Majority of the respondents were of the Malay race with 66 respondents out of 162 (40.7%), followed by the Chinese population 48 respondents (29.6%), then the Indian population 40 (24.7%) and Others at 8 respondents (4.9%). The majority of respondents in our study work in general institutions at 159 out of 162 respondents (98.1%) and 3 respondents were from specialist institutions (1.9%).

The highest education level of the respondents in our study is the bachelor's degree (53.1%) followed by masters of medicine (33.3%), Membership of the Royal College of Physicians (5.6%), Fellow of the royal college of physicians (4.3%), and Others (3.7%). None of the respondents hold a Doctor of Philosophy (PhD). Majority of respondents in our study have experience working during an endemic (96.9%) while 48.1% of respondents have experience working during an epidemic and 71.6% of respondents have experience working during a pandemic.

4.3 Level of Awareness of COVID-19 among General Practitioners in Klang Valley

Table 4.3.1 Awareness of COVID-19 among General Practitioners in Klang Valley

Awareness (N=162)		Frequency (n)	Percentage (%)
1. Sources of information to gain information about the COVID-19 outbreak	<3	60	37.0
	>=3	102	63.0
2. Aware of the latest information about case definitions for COVID-19 infection	No	3	1.9
	Yes	159	98.1
3. Aware of the criteria to guide evaluation of persons under investigation (PUI) for COVID-19 infection	No	4	2.5
	Yes	158	97.5
4. Aware of where to take the report form and how to report a potential COVID-19 case or exposure to facility infection control leaders and public health officials	No	4	2.5
	Yes	158	97.5
5. Aware of who to contact in an unprotected exposure situation to a known or suspected COVID-19 patient	No	4	2.5
	Yes	158	97.5
6. Aware of what to do if you have signs or symptoms suspected of COVID-19 infection	No	1	0.6
	Yes	161	99.4
7. Aware of who to contact (chain of	No	5	3.1

command) in outbreak situations in your healthcare institution	Yes	157	96.9
--	-----	-----	------

8. Aware that you can email the World Health Organization (WHO) directly if you suspect a series of infected patients that can lead to an outbreak	No	96	59.3
	Yes	66	40.7

9. The Symptoms of the COVID-19 Infection

a. Fever (True)	Yes	162	100.0
	No	0	0.0

b. Cough (True)	No	1	0.6
	Yes	161	99.4

c. Runny nose (False)	Yes	112	69.1
	No	50	30.9

d. Sore throat (True)	No	4	2.5
	Yes	158	97.5

e. Shortness of breath (True)	Yes	162	100.0
	No	0	0.0

f. Joint / muscle pain (True)	No	87	53.7
	Yes	75	46.3

g. Red eyes	Yes	48	29.6
-------------	-----	----	------

(False)	No	114	70.4
h. Rash	Yes	53	32.7
(False)	No	109	67.3
i. Diarrhoea	No	62	38.3
(True)	Yes	100	61.7
j. Asymptomatic	No	3	1.9
(True)	Yes	159	98.1
10. The Diagnostic Test of COVID-19 Infection			
a. Real-time PCR with respiratory material (nasopharyngeal or oropharyngeal swab / sputum / endotracheal aspirate or bronchoalveolar lavage)	Yes	162	100.0
(True)	No	0	0.0
b. Real-time PCR with serum sample	No	41	25.3
(True)	Yes	121	74.7
c. Chest X-ray	Yes	79	48.8
(False)	No	83	51.2

Based on table 4.3.1, 63% of the respondents had reliable sources to gain information about

COVID-19. Majority of them were aware of the latest information about COVID-19 (98.1%), with 97.5% of them were aware of the criteria to guide evaluation of PUI, how to report a potential COVID-19 case or exposure and who to contact in an unprotected exposure situation to a COVID-19 patient. A percentage of 99.4% of them were aware of what to do if you have signs or symptoms suspected of COVID-19 infection and 96.9% were aware of who to contact in an outbreak situation. Less than half of them were aware that they can email the WHO directly if a series of infected patients that can lead to an outbreak was suspected (40.7%).

Upon answering the question about signs and symptoms of COVID-19 infection, majority of the respondents considered fever (100%), cough (99.4%), sore throat (97.5%), shortness of breath (100%), diarrhoea (61.7%), and asymptomatic (98.1%) as COVID-19 signs and symptoms, which are true. However, 69.1% of respondents identify runny nose as the sign of COVID-19 which the actual answer is false. 53.7% of respondents do not consider joint or muscle pain as one of the symptoms which the actual answer is true.

Most respondents are able to identify real-time PCR with respiratory material (100%) and real-time PCR with serum sample (74.7%) as the diagnostic tests for COVID-19. Almost half of the respondents (48.8%) consider chest-X-ray as the diagnostic test for COVID-19 which the actual answer is false.

Table 4.3.2 Awareness of COVID-19 among General Practitioners in Klang Valley

Variable (N=162)	Frequency (n)	Percentage (%)	Median Score
Awareness of COVID-19 among General Practitioners in Klang Valley (Score: 0-21)	Low (0-7)	1	0.6
	Medium (8-14)	15	9.3
	High (15-21)	146	90.1

Table 4.3.2 shows the frequency of each tertile on the awareness of COVID-19 among the respondents. The first tertile is identified as low awareness, consisting of 0.6% of the respondents. The second tertile is identified as medium awareness, consisting of 9.3% of the respondents. The third tertile is identified as high awareness, consisting of 90.1% of the respondents. Majority of the respondents have high awareness of COVID-19.

4.3.1 Association between Sociodemographic Factors and Working Experience with Awareness of General Practitioners in Klang Valley

Table 4.3.3 The association of Sociodemographic factors and Working Experience with Awareness of General Practitioners in Klang Valley (N=162)

Variable (N=162)	Low n=1 (%)	Medium n=15 (%)	High n=146 (%)	Value of Test Statistic	p- value
------------------	-------------------	-----------------------	----------------------	----------------------------	-------------

Age (years)	20-29	0 (0)	0 (0)	2 (100.0)	14.862	0.264
	30-39	0 (0)	5 (10.0)	45 (90.0)		
	40-49	0 (0)	6 (9.2)	59 (90.8)		
	50-59	0 (0)	4 (11.1)	32 (88.9)		
	60-69	0 (0)	0 (0)	6 (100.0)		
	70-79	1 (33.3)	0 (0)	2 (66.7)		
Gender	Male	1 (1.2)	10 (11.8)	74 (87.1)	2.194	0.288
	Female	0 (0)	5 (6.5)	72 (93.5)		
Ethnicity	Malay	0 (0)	4 (6.1)	62 (93.9)	9.102	0.119
	Chinese	0 (0)	6 (12.5)	42 (87.5)		
	Indian	0 (0)	5 (12.5)	35 (87.5)		
	Others	1 (12.5)	0 (0)	7 (87.5)		
Having experience working during an endemic (dengue, influenza)	Yes	0 (0)	15 (9.6)	142 (90.4)	8.486	0.037*
	No	1 (20.0)	0 (0)	4 (80.0)		

Having experience working during an epidemic (MERS CoV, 2003 SARS etc)	Yes	1 (1.3)	9 (11.5)	68 (87.2)	1.996	0.347
	No	0 (0)	6 (7.1)	78 (92.9)		
Having experience working during a pandemic (2009 H1N1, etc)	Yes	1 (0.9)	13 (11.2)	102 (87.9)	2.133	0.452
	No	0 (0)	2 (4.3)	44 (95.7)		

*p-value < 0.05

Table 4.3.3 shows the association between the sociodemographic factors like age, gender and ethnicity and working experience in combating previous endemic, pandemic and epidemic with the level of awareness of COVID-19 among general practitioners. The hypothesis of the association was analyzed using Fisher's exact test as there are more than 20% of cells having the frequency less than 5 for each association. This test showed that the p-value for age, gender and ethnicity are 0.264, 0.288 and 0.119 respectively while the p-value for working experiences in epidemic and pandemic are 0.347 and 0.452 respectively. These indicate that the results were not statistically significant ($p\text{-value} > 0.05$). Thus, the research hypothesis was not rejected. There was no significant association between sociodemographic factors and working experience in epidemic and pandemic with the level of awareness of COVID-19 among general practitioners in Klang Valley.

Nonetheless, the p-value for the working experience during an endemic is 0.037. This

indicates that the result was statistically significant ($p\text{-value} < 0.05$). Hence, the research hypothesis was rejected. There was an association between the working experience in endemic with the level of awareness of COVID-19 among general practitioners in Klang Valley.

4.4 LEVEL OF PREPAREDNESS OF COVID-19 AMONG GENERAL PRACTITIONERS

Table 4.4.1 Preparedness of COVID-19 among General Practitioners in Klang Valley

Preparedness (N=162)		Frequency (n)	Percentage (%)
1. Participated in any training course for dealing with the COVID-19 outbreak	No	113	69.8
	Yes	49	30.2
2. Availability of an Airborne Infection Isolation Room (AIIR) In your healthcare institution	No	159	98.1
	Yes	3	1.9
3. Know where to transfer a patient with suspected or confirmed COVID-19 infection if an Airborne Infection Isolation Room in your healthcare institution is unavailable	No	10	6.2
	Yes	152	93.8
4. Consider yourself prepared for the management of the COVID-19 outbreak	No	16	9.9
	Yes	146	90.1

5. Know how to use personal protective equipment (PPE) in case of contact with possible COVID-19 patients	No	3	1.9
	Yes	159	98.1
6. Know how to perform isolation procedures on the patients to minimize chances for exposure in case of contact with confirmed COVID-19 patients	No	10	6.2
	Yes	152	93.8
7. Confidence in handling suspected COVID-19 patients	No	20	12.3
	Yes	142	87.7
8. Ask about suggestion (Open Question)	-	-	-
9. Having experience in the 2009 H1N1 pandemic	No	95	58.6
	Yes	67	41.4
10. Having experience in the 2003 SARS epidemic	No	118	72.8
	Yes	44	27.2
11. Way to identify patients at risk of having COVID-19 infection			
a. The presence of symptoms of diarrhoea	No	42	25.9
	Yes	120	74.1
b. The presence of symptoms of respiratory infection	No	3	1.9
	Yes	159	98.1
c. History of travel to areas experiencing transmission of COVID-19	Yes	162	100.0
	No	0	0.0
d. History of contact with possible infected patients	Yes	162	100.0
	No	0	0.0

a. Frequently clean hands by using alcohol-based hand rub or soap and water	Yes	162	100.0
	No	0	0.0
b. Eat boiled and cooked food	No	18	11.1
	Yes	144	88.9
c. Put facemask on known or suspected patients	Yes	162	100.0
	No	0	0.0
d. Place known or suspected patients in adequately ventilated single rooms	No	3	1.9
	Yes	159	98.1
e. All health staff members wear protective clothing	No	1	0.6
	Yes	161	99.4
f. Avoid moving and transporting patients out of their area unless necessary	No	1	0.6
	Yes	161	99.4
g. Routinely clean and disinfect surfaces in contact with known or suspected patients	Yes	162	100.0
	No	0	0.0

12. Measure taken to prevent transmission from known or suspected COVID-19 patients

a. Nebulization	No	10	6.2
	Yes	152	93.8
b. Nasopharyngeal sampling	No	6	3.7
	Yes	156	96.3
c. Oropharyngeal sampling	No	7	4.3

	Yes	155	95.7
d. Tracheal intubation	No	85	52.5
	Yes	77	47.5
e. Non-invasive ventilation	No	34	21.0
	Yes	128	79.0
f. Tracheotomy	No	107	66
	Yes	55	34.0
g. Bronchoscopy	No	116	71.6
	Yes	46	28.4
h. Cardiopulmonary resuscitation	No	78	48.1
	Yes	84	51.9

Based on table 4.4.1, more than half of the respondents never participated in any training course for dealing with COVID-19 outbreak (69.8%). Majority of them knew where to transfer suspected COVID-19 patient (93.8%) if an Airborne Infection Isolation Room (AIIR) isn't available in their healthcare institutions, considered themselves prepared for the management of COVID-19 outbreak (90.1%), knew how to use PPE (98.1%), knew how to perform isolation procedures on the patient (93.8%) and were confident in handling suspected COVID-19 patient (87.7%). 41.4% of the respondents had the experience in handling the 2009 H1N1 pandemic and only 27.2% of the respondents had the experience in handling the 2003 SARS epidemic.

When asked about the criterias to identify patients at risk of having COVID-19 infection, the majority of them answered correctly. 74.1% answered “yes” for diarrhoea, 98.1% answered “yes” for respiratory infection, 100% answered “yes” for both history of travel to areas experiencing COVID-19 transmission and history of contact with infected patients. For measures to be taken to prevent transmission from known or suspected COVID-19 patients, majority of the respondents also answered correctly.

More than half of them knew the precautionary measures to take when performing aerosol generating procedures on COVID-19 patients which includes 93.8% for nebulization, 96.3% for nasopharyngeal sampling, 95.7% oropharyngeal sampling and 79% for non-invasive ventilation. Meanwhile less than half of the respondents did not know the precautionary measure, which includes 47.5% for tracheal intubation, 34.0% for tracheotomy, 28.4% for bronchoscopy and 51.9% for cardiopulmonary resuscitation.

Table 4.4.2 Preparedness of COVID-19 among General Practitioners in Klang Valley

Variable (N=162)		Frequency (n)	Percentage (%)	Median Score
Preparedness of COVID-19 among General Practitioners in Klang Valley (Score: 0-27)	Low (0-9)	1	0.6	21

Medium	17	10.5
(10-18)		
High	144	88.9
(19-27)		

Table 4.4.2 shows the frequency of each tertile on the preparedness of COVID-19 among the respondents. The first tertile is identified as low preparedness, consisting of 0.6% of the respondents. The second tertile is identified as medium preparedness, consisting of 10.5% of the respondents. The third tertile is identified as high preparedness, consisting of 88.9% of the respondents. Majority of the respondents have high preparedness of COVID-19.

4.4.1 ASSOCIATION BETWEEN SOCIODEMOGRAPHIC FACTORS AND WORKING EXPERIENCE WITH LEVEL OF PREPAREDNESS OF COVID-19 AMONG GENERAL PRACTITIONERS

Table 4.4.3 The association of Sociodemographic factors and Working Experience with Preparedness of General Practitioners in Klang Valley (N=162)

Variable (N=162)		Low n=1 (%)	Medium n=17 (%)	High n=144 (%)	Value of Test Statistic	P- value
Age	20-29	0 (0)	0 (0)	2 (100.0)	17.063	0.123
	30-39	1 (2.0)	4 (8.0)	45 (90.0)		
	40-49	0 (0)	8 (12.3)	57 (87.7)		
	50-59	0 (0)	2 (5.6)	34 (94.4)		
	60-69	0 (0)	1 (16.7)	5 (83.3)		
	70-79	0 (0)	2 (66.7)	1 (33.3)		
Gender	Male	0 (0)	9 (10.6)	76 (89.4)	1.074	0.894
	Female	1 (1.3)	8 (10.4)	68 (88.3)		
Ethnicity	Malay	0 (0)	8 (12.1)	58 (87.9)	5.026	0.632
	Chinese	1 (2.1)	3 (6.3)	44 (91.7)		
	Indian	0 (0)	5 (12.5)	35 (87.5)		
	Others	0 (0)	1 (12.5)	7 (87.5)		

Having experience working during an endemic (dengue, influenza, measles, Nipah virus, chikungunya, typhoid , rotavirus etc)	Yes	1 (0.6)	15 (9.6)	141 (89.8)	5.785	0.115
	No	0 (0)	2 (40.0)	3 (60.0)		
Having experience working during an epidemic (MERS CoV, 2003 SARS etc)	Yes	0 (0)	12 (15.4)	66 (84.6)	4.533	0.071
	No	1 (1.2)	5 (6.0)	78 (92.9)		
Having experience working during a pandemic (2009 H1N1, etc)	Yes	0 (0)	13 (11.2)	103 (88.8)	2.404	0.333
	No	1 (2.2)	4 (8.7)	41 (89.1)		

Table 4.4.3 shows the association between sociodemographic factors like age, gender and ethnicity and working experience in combating previous endemic, pandemic and epidemic with the level of preparedness of COVID-19 among general practitioners. The hypothesis of the association was analyzed using Fisher's exact test as there are more than 20% of cells having the frequency less than 5 for each association.

This test showed that the p-values for age, gender and ethnicity are 0.123, 0.894 and 0.632 respectively. This means that the result was not statistically significant ($p\text{-value} > 0.05$). Thus, the research hypothesis was not rejected. There was no significant association between

sociodemographic factors with the level of preparedness of COVID-19 among general practitioners.

The p-values for working experiences are 0.115, 0.071 and 0.333 for endemic, epidemic and pandemic respectively. This means that the result was not statistically significant. Thus, the research hypothesis for working experiences in endemic, epidemic and pandemic was accepted. There was no significant association between working experiences in endemic, epidemic and pandemic with the level of preparedness of COVID-19 among general practitioners.

CHAPTER 5: DISCUSSION

To the best of our knowledge, this is the first study in Malaysia that provides significant insight into awareness and preparedness of Coronavirus (COVID-19) among general practitioners in Klang Valley. In general, our results showed high level for both awareness and preparedness towards Coronavirus (COVID-19).

5.1 Response Rate

The response rate is considered low most probably due to the time constraints and the non-committing attitude of the respondents. This could be due to the fact that most of the general practitioners were busy and did not have sufficient time to answer the questionnaires given.

5.2 General Characteristics

Majority of respondents are 40-49 years of age. A previous study in Saudi Arabia (Tripathi et al., 2020) stated that the majority of their respondents are of less than 30 years of age. Male predominates in the study and this finding was different from the past study that reported having females as the main respondents. The level of highest education was similar with previous study where the respondents' highest level of education was bachelor's degree. This similarity may be due to bachelor's degrees being the minimum requirement to be a healthcare worker in some countries. The respondents had the most experience working during an endemic and this could be because endemic cases like dengue and influenza are

more commonly affecting Malaysia compared to pandemic and epidemic. Based on the 2019 Malaysia demographics profile, the highest population in Malaysia by ethnicity is Malay, followed by Chinese, Indian and others. This may explain why the respondents of this study consists mainly of Malay, with Chinese, Indian and others being second, third and fourth respectively.

5.3 Level of awareness of General Practitioners and Its Association with Sociodemographic Factors and Working Experience

Majority of the respondents have a high level of awareness of COVID-19, followed by medium awareness and low awareness. This finding is similar from the same previous study which stated that the healthcare workers had good knowledge and awareness on COVID-19. They are well aware due to the respondents having reliable sources to gain information about COVID-19 including media, social network, academic training courses, colleagues, government organization and others.

The association between sociodemographic factors like age, gender and ethnicity and working experience in epidemic and pandemic with the level of awareness of COVID-19 showed to be not significant. This proved that there is no association between the factors and the level of awareness of COVID-19. Age, gender, ethnicity and working experience in epidemic and pandemic of general practitioners will not determine whether the general practitioners are highly aware of COVID-19 or not. This finding is different from a previous study conducted in Riyadh (Alahdal et al., 2020) which mentioned that gender was one of the

significant factors that influence the level of awareness. The study found that male had a higher level of awareness of COVID-19 compared to females.

However, working experience during an endemic with the level of awareness of COVID-19 was found to have an association. This suggests that more emphasis should be placed on the preparation in combating an endemic among the general practitioners aimed to improve their awareness about the COVID-19 pandemic. In summary, we are able to identify the major issues that need emphasis during implementation of future intervention programs to raise awareness and improve knowledge of general practitioners towards COVID-19.

5.4 Level of preparedness of General Practitioners and Its Association with Sociodemographic Factors and Working Experience

Majority of the respondents have a high level of preparedness of COVID-19, followed by medium preparedness and low preparedness. This finding differs from the previous study (Elhadi et al., 2020) which stated that the healthcare workers had low levels of preparedness when dealing with COVID-19. This study showed that the general practitioners were prepared because they had proper training course for dealing with COVID-19 and they had experience in working during 2009 H1N1 pandemic and 2003 SARS epidemic like involved in screening patients, referred patients to designated healthcare centres, managed treatment of confirmed cases and practiced proper infection prevention and control measures.

The association between sociodemographic factors like age, gender and ethnicity and working experience in endemic, epidemic and pandemic with the level of preparedness of

COVID-19 showed to be not significant. This proved that there is no association between the factors and the level of preparedness of COVID-19. Age, gender, ethnicity and working experience in endemic, epidemic and pandemic of general practitioners will not determine whether the general practitioners are highly prepared of COVID-19 or not.



CHAPTER 6: CONCLUSION

6.1 Conclusion

Generally, respondents had an overall high level of awareness and preparedness of COVID-19. Furthermore, there was no significant difference in awareness and preparedness level in different age, gender and ethnicity. Moreover, there was also no significant difference between working experience during an endemic, epidemic and pandemic with the level of preparedness of COVID-19. Working experience during an endemic was shown to have an association with the level of awareness of COVID-19.

Thus, the study highlights the need to create a medium for general practitioners in Malaysia to further increase their level of awareness and preparedness of COVID-19. Awareness and preparedness level can be elevated through exposure of COVID-19 via media, social network, academic training courses and government organizations.

6.2 Limitations

However, it is important to interpret the results in the context of potential study limitations. First, as a cross-sectional study, it describes the relationship between the independent variables and dependent variables as general association and not to be taken as cause-effect relationship.

Second, information was obtained from available general practitioners working in private healthcare institutions in Klang Valley who were willing to participate and answer our questionnaire. In this study, non-response bias occurred where some of the participants did not

want to participate in our survey. Those who were not willing to participate have been excluded and information on their characteristics is unknown. Since the population study consists of general practitioners working in private healthcare institutions, the results cannot be generalised to all doctors in Malaysia. In addition, this study only took place in Klang Valley, hence the study did not include general practitioners who worked in other areas.

Third, self-reported information may not be entirely accurate and should be viewed with caution as it may reflect the subjective views of the respondents themselves. This may limit the reliability of the findings because of the possibility that respondents could give a more positive picture than would be revealed by other data collection methods, they might have answered in a manner that they perceived as correct and some respondents might give answers in a manner that will be viewed favorably by the researcher and thus was not their true response (social desirability bias).

Despite the limitations identified, we believe that the study addresses a high level of awareness and preparedness of COVID-19 among general practitioners in Klang Valley. It has highlighted the area where high awareness and preparedness regarding the virus and the infection may have important influence in the prevention and management of Malaysians during this pandemic.

6.3 Recommendations

This study can be improved by increasing the sample size as more available data can be collected and analyzed. Hence, an increase in the data collection period would also be

recommended in order to achieve the greater sample size value, given enough time and larger population.

Although this study cannot be generalised to the whole of Malaysian general practitioners, however, it could provide some insight to the government about the level of awareness and preparedness of COVID-19 among them which will benefit the country to plan for in case of future pandemic.



REFERENCES

1. Bown-Wilson D. (2011) The Role of Age in Career Progression: Motivation and Barriers to Fulfilment in Older Employees. In: Parry E., Tyson S. (eds) Managing an Age-Diverse Workforce. Palgrave Macmillan, London
2. Bryn, G. (2020). COVID-19 Epidemiology and Natural History. Retrieved from: https://www.treatmentactiongroup.org/wp-content/uploads/2020/05/covid_19_epidemiology_final.pdf
3. Cennimo, D. J. (2020, June 19). Coronavirus Disease 2019 (COVID-19). Retrieved from <https://emedicine.medscape.com/article/2500114-overview#a5>
4. Center of Disease Control (CDC): Human Coronavirus Types. (2020, 15 February). Retrieved from: <https://www.cdc.gov/coronavirus/types.html>
5. Center of Disease Control (CDC): Common Human Coronaviruses. (2020, 13 February). Retrieved from: <https://www.cdc.gov/coronavirus/general-information.html>

6. Center of Disease Control (CDC): Coronavirus Disease 2019 Basics (2020, 2 June).

Retrieved from:

<https://www.cdc.gov/coronavirus/2019-ncov/faq.html#Coronavirus-Disease-2019-Basics>

7. Collins N., Litt J., Moore J., Winzenberg T. & Shaw K. (2006, November 20).

General practice: professional preparation for a pandemic. Retrieved from:

<https://www.mja.com.au/journal/2006/185/10/general-practice-professional-preparation-pandemic>

8. Coronavirus. (n.d.). Retrieved May 7, 2020, from

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019>

9. Coronavirus. (2020, May 19). National Institute of Allergy and Infectious Diseases.

Retrieved from <https://www.niaid.nih.gov/diseases-conditions/coronaviruses>

10. COVID-19, MERS & SARS. (2020, April 6). National Institute of Allergy and

Infectious Diseases. Retrieved from

<https://www.niaid.nih.gov/diseases-conditions/covid-19>

11. Covid-19 Strategy Update. (2020, April 14). Retrieved from

https://www.who.int/docs/default-source/coronaviruse/covid-strategy-update-14april2020.pdf?sfvrsn=29da3ba0_19

12. Daniel WW (1999). Biostatistics: A Foundation for Analysis in the Health Sciences. 7th edition. New York: John Wiley & Sons.
13. Definition of awareness (n.d.). Merriam-Webster Dictionary. Retrieved from <https://www.merriam-webster.com/dictionary/awareness>.
14. Definition of preparedness (n.d.). Merriam-Webster Dictionary. Retrieved from <https://www.merriam-webster.com/dictionary/preparedness>.
15. Deng, J. F., Olowokure, B., Kaydos-Daniels, S. C., Chang, H. J., Barwick, R. S., Lee, M. L., Deng, C. Y., Factor, S. H., Chiang, C. E., Maloney, S. A., & SARS International Field Team (2006). Severe acute respiratory syndrome (SARS): knowledge, attitudes, practices and sources of information among physicians answering a SARS fever hotline service. *Public health*, 120(1), 15–19.
<https://doi.org/10.1016/j.puhe.2005.10.001>.
16. Doctor, TS. (2020, March 25). Covid-19: People, please tell doctors the truth. New Straits Times. Retrieved from <https://www.nst.com.my/opinion/letters/2020/03/577909/covid-19-people-please-tell-doctors-truth>.
17. Donald, K.T.L, Shanzhu, Z. (2020, April 1). Contributions and challenges of general practitioners in China fighting against the novel coronavirus crisis. Retrieved from <https://fmch.bmj.com/content/8/2/e000361>

18. Emanuel, E. J., Persad, G., Upshur, R., Thome, B., Parker, M., Glickman, A., Zhang, C., Boyle, C., Smith, M., & Phillips, J. P. (2020). Fair Allocation of Scarce Medical Resources in the Time of Covid-19. *The New England journal of medicine*, 382(21), 2049–2055.
19. Employment Opportunities: Do Race and Ethnicity Matter? (2016). Retrieved from <https://www.un.org/development/desa/socialperspectiveondevelopment/wp-content/uploads/sites/27/2017/07/RWSSPolicyBrief3.pdf>.
20. Elengoe, A. (2020, June). COVID-19 Outbreak in Malaysia. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7258884/>
21. Graham-Harrison, E. (2020, March 15). Experience of Sars a key factor in countries' response to coronavirus. *The Guardian*. Retrieved from <https://www.theguardian.com/world/2020/mar/15/experience-of-sars-key-factor-in-response-to-coronavirus>.
22. Guidelines COVID-19 Management No.5/2020: Screening and Triaging Annex 2C, (n.d.). Retrieved from : https://www.moh.gov.my/moh/resources/Penerbitan/GarisPanduan/COVID19/Annex_2c_Screening_Triaging_22032020.pdf

23. Guidelines COVID-19 Management In Malaysia No. 5/2020: Annex 2e : Clinical Management Of Confirmed Case (n.d.). Retrieved from http://covid-19.moh.gov.my/garis-panduan/garis-panduan-kkm/Annex_2e_Clinical_Management_22032020.pdf
24. Guidelines COVID-19 Management In Malaysia No. 5/2020: Annex 3 : Senarai Hospital COVID dan Pusat Saringan (n.d.). Retrieved from http://covid-19.moh.gov.my/garis-panduan/garis-panduan-kkm/Annex_3_Screening_centre_24032020.pdf
25. Healthcare Professional Preparedness Checklist For Transport and Arrival of Patients With Confirmed or Possible COVID-19. (n.d.). Retrieved from <https://www.cdc.gov/coronavirus/2019-ncov/downloads/hcp-preparedness-checklist.pdf>
26. Guidelines COVID-19 Management In Malaysia No. 5/2020: Annex 35 : Guidelines Of Infection Control And Clinical Management Of SARI & Pneumonia Tro Covid-19 (n.d.). Retrieved from http://covid-19.moh.gov.my/garis-panduan/garis-panduan-kkm/Annex_35_GUIDELINES_OF_INFECTION_CONTROL_AND_CLINICAL_MANAGEMENT_OF_SARI_&_PNEUMONIA_TRO_COVID-19.pdf
27. Herceg, A., Geysen, A., Guest, C., Bialkowski, R. (2005). SARS and biothreat preparedness — a survey of ACT general practitioners. The Department of Health

Australia. Retrieved from

<https://www1.health.gov.au/internet/main/publishing.nsf/Content/cda-cdi2903f.htm>

28. International Health Regulations (2005), International Health Regulations

(2005)28–30 (n.d.). Retrieved from

<https://apps.who.int/iris/bitstream/handle/10665/246107/9789241580496-eng.pdf?sequence=1>

29. Healthcare Resources. Malaysian Health at a Glance. (2020, January 6). Retrieved

from <https://www.moh.gov.my/moh/penerbitan/MYHAAG2018.pdf>.

30. Lee, A., Chuh, A.A. Facing the threat of influenza pandemic - roles of and

implications to general practitioners. BMC Public Health 10, 661 (2010).

<https://doi.org/10.1186/1471-2458-10-661>

31. Malaysia Influenza Surveillance Protocol. (2005). Disease Control Division, Ministry of Health Malaysia.

32. Ministry of Health: Case Definition of COVID-19. Guidelines COVID-19

Management No.5/2020. (24 March 2020). Retrieved from:

https://www.moh.gov.my/moh/resources/Penerbitan/Garis%20Panduan/COVID19/Annex_1_case_definition_COVID_22032020.pdf

33. Ministry of Health Annual Report. (2003). Retrieved from:

<https://www.moh.gov.my/moh/images/gallery/publications/md/ar/2003-1.pdf>

34. N. Peiffer-Smadja, J.-C. Lucet, G. Bendjelloul, L. Bouadma, S. Gerard, C. Choquet, S. Jacques, A. Khalil, P. Maisani, E. Casalino, D. Descamps, J.-F. Timsit, Y.

Yazdanpanah, F.-X. Lescure. (2020, April 2). Challenges and issues about organizing a hospital to respond to the COVID-19 outbreak: experience from a French reference centre. Retrieved from

<https://www.clinicalmicrobiologyandinfection.com/action/showPdf?pii=S1198-743X%2820%2930187-7>

35. Position Statement Aerosol Generating Medical Procedures During an H1N1

Influenza A Pandemic (n.d.). New Brunswick Association of Respiratory Therapists.

Retrieved from

<https://www.nbart.ca/en/nbart-position-statements/position-statement-aerosol-generating-medical-procedures-during-an-h1n1-influenza-a-pandemic.html>

36. Rajiah, K., Maharajan, M., Yin, P., Yee, Y., Lin, W., & Kean, C. (2019). Zika

Outbreak Emergency Preparedness and Response of Malaysian Private Healthcare

Professionals: Are They Ready? *Microorganisms*, 7(3), 87. MDPI AG. Retrieved

from <http://dx.doi.org/10.3390/microorganisms7030087>

37. Risk Assessment And Management Of Healthcare Workers (HCW) With Potential Exposure In a Healthcare Setting To Patients With COVID-19, Risk Assessment And Management Of Healthcare Workers (HCW) With Potential Exposure In a Healthcare Setting To Patients With COVID-19 (n.d.). Retrieved from http://covid-19.moh.gov.my/garis-panduan/garis-panduan-kkm/Annex_21_Protocol_for_Health_Care_Workers_05042020.pdf
38. Riska, E. (2020, October). Gender and medical career. Retrieved from https://www.researchgate.net/publication/47621178_Gender_and_medical_career.
39. Selangor State Health Department: Health Facts 2015. Retrieved from: http://jknsel.moh.gov.my/documents/pdf/2017/info/jkns_healthfacts2015.pdf
40. Speech of Dato'Chua Jui Meng, Minister of Health, Malaysia. (2003, March 17). Retrieved from https://www.who.int/csr/sars/conference/june_2003/materials/presentations/meng/en/
41. Standard Operating Procedure (SOP) for Triage of Suspected COVID-19 Patients in non-US Healthcare Settings: Early Identification and Prevention of Transmission during Triage. (2020, April 15). Retrieved from <https://www.cdc.gov/coronavirus/2019-ncov/hcp/non-us-settings/sop-triage-prevent-transmission.html>

42. Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV). (n.d.). Retrieved May 7, 2020, from [https://www.who.int/news-room/detail/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-\(2005\)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-\(2019-ncov\)](https://www.who.int/news-room/detail/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-(2019-ncov))
43. Stokes, E. K., Zambrano, L. D., Anderson, K. N., Marder, E. P., Raz, K. M., Felix, S. E., . . . Fullerton, K. E. (2020, June 18). Coronavirus Disease 2019 Case Surveillance - United States, January 22–May 30, 2020. Retrieved from https://www.cdc.gov/mmwr/volumes/69/wr/mm6924e2.htm?s_cid=mm6924e2_w
44. Bioethics & COVID-19: Guidance for Clinicians (Version 1st Edition). Kuala Lumpur: Malaysian Bioethics Community. <http://doi.org/10.5281/zenodo.3821126>
45. The Prime Minister’s Special Message on COVID-19 – 16 March 2020. (2020, March 16). Retrieved from <https://www.pmo.gov.my/2020/03/perutusan-khas-yab-perdana-menteri-mengenai-covid-19-16-mac-2020/>
46. Truog, R. D., Mitchell, C., & Daley, G. Q. (2020). The Toughest Triage - Allocating Ventilators in a Pandemic. *The New England journal of medicine*, 382(21), 1973–1975. <https://doi.org/10.1056/NEJMp2005689>

47. van der Hoek, L., Pyrc, K., Jebbink, M. et al. Identification of a new human coronavirus. *Nat Med* 10, 368–373 (2004). Retrieved from <https://doi.org/10.1038/nm1024>
48. Qarawi, Ahmad & Ng, Sze Jia & Gad, Abdelrahman & Luu, Mai & Al-Ahdal, Tareq & Sharma, Akash & Vuong, Huan & Vuong, Nguyen & Tawfik, Gehad Mohamed & Hashan, Mohammad & Dumre, SP & Ghozy, Sherief & Shaikhkhalil, Hosam & Mahmoud, Mona & Alhady, Shamael & Nam, Nguyen & Shariful Islam, Sheikh Mohammed & Smith, Chris & Lee, Peter & Nguyen, Huy. (2020). Awareness and Preparedness of Hospital Staff against Novel Coronavirus (COVID-2019): A Global Survey - Study Protocol. *SSRN Electronic Journal*. 10.2139/ssrn.3550294.
49. Winnipeg Regional Health Authority: Acute Care Infection Prevention & Control Measure. (2006, February 1). Retrieved from: <https://professionals.wrha.mb.ca/old/extranet/ipc/files/manuals/acutecare/Rev1602-07.pdf>
50. World Health Organization (WHO): Coronavirus disease (COVID19) pandemic. Retrieved from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>
51. World Health Organization (WHO): Q&A on coronaviruses (COVID19). (2020, 17 April). Retrieved from:

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/q-a-coronaviruses>

52. Ying Liu, Albert A Gayle, Annelies Wilder-Smith, Joacim Rocklöv, The reproductive number of COVID-19 is higher compared to SARS coronavirus, *Journal of Travel Medicine*, Volume 27, Issue 2, March 2020, taaa021, <https://doi.org/10.1093/jtm/taaa021>
53. Yung CF; Tam CC; Rajadurai VS; Chan JK; Low MS; Ng YH; Thoon KC; Tan LK; (n.d.). Rapid Assessment Zika Virus Knowledge Among Clinical Specialists in Singapore: A Cross-sectional Survey. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/28736678>
54. Zhang M., Zhou M., Tang F., Wang Y., Nie H., Zhang L., You G. (2020, April 9). Knowledge, attitude, and practice regarding COVID-19 among healthcare workers in Henan, China. Retrieved from <https://www.sciencedirect.com/science/article/pii/S0195670120301870>
55. Elhadi, M., Msherghi, A., Alkeelani, M., Zorgani, A., Zaid, A., Alsuyihili, A., Buzreg, A., Ahmed, H., Elhadi, A., Khaled, A., Boughididah, T., Khel, S., Abdelkabar, M., Gaffaz, R., Bahroun, S., Alhashimi, A., Biala, M., Abulmida, S., Elharb, A., Abukhashem, M., ... Amshai, A. (2020). Assessment of Healthcare Workers' Levels of Preparedness and Awareness Regarding COVID-19 Infection in Low-Resource Settings. *The American journal of tropical medicine and hygiene*, 103(2), 828–833.

<https://doi.org/10.4269/ajtmh.20-0330>

56. Tripathi, R., Albarraq, A. A., Meraya, A. M., Tripathi, P., Banji, D., Alshahrani, S., . . . Alnakhli, F. M. (n.d.). Awareness and Preparedness of COVID-19 Outbreak Among Healthcare Workers and Other Residents of South-West Saudi Arabia: A Cross-Sectional Survey. In 933884891 731063126 S. S. Alqahtani (Ed.). doi:<https://doi.org/10.3389/fpubh.2020.00482>
57. Alahdal, H., Basingab, F., & Alotaibi, R. (2020, June 17). An analytical study on the awareness, attitude and practice during the COVID-19 pandemic in Riyadh, Saudi Arabia. Retrieved September 18, 2020, from <https://www.sciencedirect.com/science/article/pii/S1876034120305256>

Appendix 1

Consent form



**JAWATANKUASA ETIKA UNIVERSITI UNTUK
PENYELIDIKAN MELIBATKAN MANUSIA
(JKEUPM)**

**UNIVERSITI PUTRA MALAYSIA, 43400 UPM
SERDANG,
SELANGOR, MALAYSIA**

**FORM 2.4: RESPONDENT'S INFORMATION SHEET AND INFORMED CONSENT
FORM**

Please read the following information carefully and do not hesitate to discuss any questions you may have with the researcher.

1. STUDY TITLE :

Awareness and Preparedness of Coronavirus (COVID-19) Among General Practitioners in Klang Valley.

2. INTRODUCTION:

The recent outbreak of respiratory disease caused by a novel coronavirus (named "COVID-2019") has gained global attention and has been recognised by the US Centre for Disease Control and Prevention (CDC) as a serious threat to public health. The first case was identified in Wuhan City, Hubei Province , China and has spread rapidly since then . Information on the health services and the preparedness of health practitioners to combat the COVID-19 is not understood. Hence, their awareness and preparedness in managing the COVID-19 infection is important to prevent the disease from spreading further. Information on the health services and the preparedness of health practitioners to combat the COVID-19

is not understood. Hence, their awareness and preparedness in managing the COVID-19 infection is important to prevent the disease from spreading further.

3. WHAT WILL YOU HAVE TO DO?

If you agree to take part in this research, you will need to fill up the attached online questionnaire. Please fill out all the questions honestly with respect to your awareness and preparedness of coronavirus. Please note that participation is voluntary, and respondents may withdraw anytime without loss of benefit.

4. WHO SHOULD NOT PARTICIPATE IN THE STUDY?

You should not participate in this study if you are not a general practitioner working in a private healthcare institution in Klang Valley..

5. WHAT WILL BE THE BENEFITS OF THE STUDY:

(a) TO YOU AS THE SUBJECT?

You will be allowed to reflect on your awareness and preparedness of the coronavirus to provide better care to your patients. Once the research is done, you can use the results to better prepare yourself in the event of a pandemic in the future.

(b) TO THE INVESTIGATOR?

The investigators will be able to determine the level of awareness and preparedness of general practitioners in the Klang Valley area and the factors that may account for the varying levels and provide suggestions on how they can be improved in the case of a future pandemic.

6. WHAT ARE THE POSSIBLE RISKS?

This being a survey study poses no risks associated with the study

7. WILL THE INFORMATION THAT YOU PROVIDE AND YOUR IDENTITY REMAIN CONFIDENTIAL?

The research investigators will collect personal information about you as part of the study but details of your identity, I.e. your name, will not be asked. The data obtained from this study will only be shared among our research team and any information concerning you will be kept confidential.

8. WHO SHOULD YOU CONTACT IF YOU HAVE ADDITIONAL QUESTIONS DURING THE COURSE OF THE RESEARCH?

If you have any questions regarding this study, please contact

1. Shneha Shaanthinee (012-5002589)
2. Tay Wei Jie (010-2805014)
3. Nadira Izani (018-2313124)

Please initial here if you have read and understood the contents of this page_____

9. CONSENT

I Identity Card No.
address.....
.....hereby voluntarily agree to
take part in the research stated above (questionnaire-based).

I have been informed about the nature of the research in terms of methodology, possible
adverse
effects and complications (as written in the Respondent's Information Sheet). I understand
that I have the right to withdraw from this research at any time without giving any reason
whatsoever. I also understand that this study is confidential and all information provided with
regard to my identity will remain private and confidential.

I* wish / do not wish to know the results related to my participation in the research

* delete where necessary

Signature

(Respondent)

Signature

(Witness)

Date :.....

Name :.....

I/C No. :.....

I confirm that I have explained to the respondent the nature and purpose of the above-mentioned research.

Date

Signature

(Researcher)

Appendix 2

Questionnaire form

SECTION A: GENERAL INFORMATION

1. Your age in years:

2. Your gender:

☐ Male

☐ Female

☐ Other

3. The name of your healthcare institution:

4. Your race:

☐ Malay

☐ Chinese

☐ Indian

☐ Other, specify:

5. Years working as a medical doctor:

6. Type of healthcare institution you worked in during the pandemic:

☐ General institution

☐ Specialist institution

7. Was your healthcare institution open or closed during the MCO

☐ Open

☐ Closed

8. If closed, when did it reopen?:

9. Highest level of education:

☐ Bachelors Degree

☐ Masters/Doctor of Medicine (MMed, MPath, MPH, DrPH etc)

☐ Membership of the Royal Colleges of Physicians of the United Kingdom (MRCP, MRCGP, MRCS, MRCOG etc)

☐ Fellow of the Royal College of General Practitioners (FRCGP, FRCP, FRCS etc)

☐ Doctor of Philosophy (PhD)

☐ Others

10. Have you had experience working during an endemic? (dengue, influenza)

☐ Yes

☐ No

11. Have you had experience working during an epidemic? (MERS CoV, 2003 SARS etc)

☐ Yes

☐ No

12. Have you had any experience working during a pandemic? (2009 H1N1, etc)

☐ Yes

☐ No



SECTION B: ASSESSMENT OF THE AWARENESS OF GENERAL PRACTITIONERS AGAINST THE NOVEL CORONAVIRUS 2019

1. Please choose the sources of information from which you gained information about the 2019nCoV outbreak? (Select all that apply)

- ☐ Media (Newspaper, television, radio, etc.)
- ☐ Social network (Facebook, Twitter, blog, etc.)
- ☐ Academic Training Courses
- ☐ Colleagues
- ☐ Government Organization such as Ministry of Health
- ☐ Other, specify:

2. Do you keep yourself aware on the latest information about case definitions for 2019-nCoV infection?

- ☐ Yes
- ☐ No

3. Are you aware on the criteria to guide evaluation of persons under investigation (PUI) for 2019nCoV infection?

- ☐ Yes
- ☐ No

4. Are you aware on where to take the report form and how to report a potential 2019-nCoV case or exposure to facility infection control leaders and public health officials?

- ☐ Yes
- ☐ No

5. Are you aware on who to contact in an unprotected exposure situation to a known or suspected 2019-nCoV patient?

☐ Yes

☐ No

6. Are you aware on what to do if you have signs or symptoms suspected of 2019- nCoV infection?

☐ Yes

☐ No

7. Are you aware on who to contact (chain of command) in outbreak situations in your healthcare institution?

☐ Yes

☐ No

8. Are you aware that you can email the World Health Organization (WHO) directly if you suspect a series of infected patients that can lead to an outbreak?

☐ Yes

☐ No

INSTRUCTION: Please tick the answers for each question in the space (Yes/ No) provided.

Questions	Answer choices	Yes	No
9. Which of the following are the symptoms of the 2019-nCoV infection?	a. fever		
	b. cough		
	c. runny nose		
	d. sore throat		
	e. shortness of breath		
	f. joint/ muscle pain		
	g. red eyes		
	h. rash		
	i. diarrhoea		
	j. may present with no symptoms		
10. Which of the following tests should be performed for the diagnosis of 2019-nCoV infection?	a. Real-time polymerase chain reaction (PCR) with respiratory material (nasopharyngeal or oropharyngeal swab/ sputum/ endotracheal aspirate or <u>bronchoalveolar lavage</u>)		
	b. Real-time PCR with serum sample		
	c. Chest X-ray		

SECTION C: ASSESSMENT OF THE PREPAREDNESS OF GENERAL PRACTITIONERS AGAINST THE NOVEL CORONAVIRUS 2019

1. Have you participated in any training course for dealing with the 2019-nCoV outbreak?

☐ Yes

☐ No

2. In your healthcare institution, is an Airborne Infection Isolation Room (AIIR) available?

☐ Yes

☐ No

3. If an Airborne Infection Isolation Room in your healthcare institution is unavailable, do you know where to transfer a patient with suspected or confirmed 2019-nCoV infection?

☐ Yes

☐ No

4. Do you consider yourself prepared for the management of the 2019-nCoV outbreak?

☐ Yes

☐ No

5. In case of contact with possible 2019-nCoV patients, do you know how to use personal protective equipment (PPE)?

☐ Yes

☐ No

6. In case of contact with confirmed 2019-nCoV patients, do you know how to perform isolation procedures on the patients to minimize chances for exposure?

☐ Yes

☐ No

7. To what extent are you confident in handling suspected 2019-nCoV patients?

☐ No confidence

☐ Little confidence

☐ Confident

☐ Very confident

☐ Extremely confident

8. What is your suggestion for improving the preparedness of general practitioners against 2019-nCoV in your healthcare institution?

-
9. During the 2009 H1N1 pandemic:

☐ a. I was involved in screening patients : i.e. performing rapid tests, or sending samples to designated laboratories.

☐ b. I referred patients to designated healthcare centres

☐ c. I managed treatment of confirmed cases

☐ d. I practiced proper infection prevention and control measures recommended by the MOH Malaysia.

☐ e. I had the influenza vaccination

10. During the 2003 SARS epidemic

- ☐ a. I was involved in screening patients : i.e. performing rapid tests, or sending samples to designated laboratories.
- ☐ b. I referred patients to designated healthcare centres
- ☐ c. I managed treatment of confirmed cases
- ☐ d. I practiced proper infection prevention and control measures recommended by the MOH Malaysia.

INSTRUCTION: Please tick the answer for each questions in the space (Yes/ No) provided.

Questions	Answer choices	Yes	No
11. Which of the following should be considered to identify patients at risk of having 2019-nCoV infection?	a. the presence of symptoms of diarrhoea		
	b. the presence of symptoms of respiratory infection		
	c. history of travel to areas experiencing transmission of 2019-nCoV		
	d. history of contact with possible infected patients		
12. Which of the following measures should be taken to prevent transmission from known or suspected 2019-nCoV patients?	a. frequently clean hands by using alcohol-based hand rub or soap and water		
	b. eat boiled and cooked food		
	c. put facemask on known or suspected patients		
	d. place known or suspected patients in adequately ventilated single rooms		
	e. all health staff members wear protective clothing		

	f. avoid moving and transporting patients out of their area unless necessary		
	g. routinely clean and disinfect surfaces in contact with known or suspected patients		
13. Do you know the precautionary measures to take when performing the following aerosol-generating procedures on 2019-nCoV patients?	a. tracheal intubation		
	b. non-invasive ventilation		
	c. tracheotomy		
	d. bronchoscopy		
	e. cardiopulmonary resuscitation		
	f. tracheotomy		
	g. bronchoscopy		
	h. cardiopulmonary resuscitation		

Appendix 3

MARKING SCHEME

SECTION A: GENERAL INFORMATION

Question Number	Answer	Mark
1-9	-	-
10	YES	YES: 1 NO: 0
11	YES	YES: 1 NO: 0
12	YES	YES: 1 NO: 0

**SECTION B: ASSESSMENT OF AWARENESS OF GENERAL PRACTITIONERS
AGAINST CORONAVIRUS (COVID-19)**

Question number	Answer	Mark
1	ALL	≥ 3 TICKS: 1 < 2 TICKS: 0
2	YES	YES: 1 NO: 0
3	YES	YES: 1 NO: 0
4	YES	YES: 1 NO: 0
5	YES	YES: 1 NO: 0

6		YES	YES: 1 NO: 0
7		YES	YES: 1 NO: 0
8		YES	YES: 1 NO: 0
9	(a)	YES	YES: 1 NO: 0
	(b)	YES	YES: 1 NO: 0
	(c)	NO	NO: 1 YES: 0
	(d)	YES	YES: 1 NO: 0

	(e)	YES	YES: 1 NO: 0
	(f)	YES	YES: 1 NO: 0
	(g)	NO	NO: 1 YES: 0
	(h)	NO	NO: 1 YES: 0
	(i)	YES	YES: 1 NO: 0
	(j)	YES	YES: 1 NO: 0
10	(a)	YES	YES: 1 NO: 0

	(b)	YES	YES: 1 NO: 0
	(c)	NO	NO: 1 YES: 0



**SECTION C: ASSESSMENT OF PREPAREDNESS OF GENERAL
PRACTITIONERS AGAINST CORONAVIRUS (COVID-19)**

Question number	Answer	Mark
1	YES	YES: 1 NO: 0
2	-	-
3	YES	YES: 1 NO: 0
4	YES	YES: 1 NO: 0
5	YES	YES: 1 NO: 0
6	YES	YES: 1

			NO: 0
7		CONFIDENT, VERY CONFIDENT, EXTREMELY CONFIDENT	CONFIDENT, VERY CONFIDENT, EXTREMELY CONFIDENT: 1 NO CONFIDENCE, LITTLE CONFIDENCE: 0
8		-	-
9		ALL	≥ 3 TICKS: 1 <2 TICKS: 0
10		ALL	≥ 2 TICKS: 1 <1 TICKS: 0
11	(a)	YES	YES: 1 NO: 0
	(b)	YES	YES: 1 NO: 0

	(c)	YES	YES: 1 NO: 0
	(d)	YES	YES: 1 NO: 0
12	(a)	YES	YES: 1 NO: 0
	(b)	YES	YES: 1 NO: 0
	(c)	YES	YES: 1 NO: 0
	(d)	YES	YES: 1 NO: 0
	(e)	YES	YES: 1 NO: 0

	(f)	YES	YES: 1 NO: 0
	(g)	YES	YES: 1 NO: 0
13	(a)	YES	YES: 1 NO: 0
	(b)	YES	YES: 1 NO: 0
	(c)	YES	YES: 1 NO: 0
	(d)	YES	YES: 1 NO: 0
	(e)	YES	YES: 1 NO: 0

	(f)	YES	YES: 1 NO: 0
	(g)	YES	YES: 1 NO: 0
	(h)	YES	YES: 1 NO: 0