

COVID-19 MANAGEMENT STRATEGIES FOR HIGHER
LEARNING INSTITUTE: A CASE STUDY IN UNIVERSITI
MALAYA

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FACULTY OF ENGINEERING
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KUALA LUMPUR

2022

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LEARNING INSTITUTE: A CASE STUDY IN UNIVERSITI
MALAYA**

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**RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT
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**FACULTY OF ENGINEERING
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COVID-19 MANAGEMENT STRATEGIES FOR HIGHER LEARNING

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ABSTRACT

COVID-19 affected nearly every country and more than 50 million individuals worldwide. Many businesses and services were unprepared for the effects of COVID-19 on their daily operations. Also affected by the COVID-19 pandemic are Higher Learning Institutions (HLIs). Pandemic management in HLIs requires the deployment of methods based on health, economic, legal, and humanistic considerations. Therefore, in this work, a comprehensive COVID-19 management guideline was developed by taking into consideration the overall operation and activities of the HLI campus. The COVID-19 management guidelines consist of a checklist that covers key aspects and strategies for managing COVID-19 or any other pandemic in HLI in the future. The strategies evaluated the requirements of many stakeholders, including financial and legal considerations. Subsequently, the COVID-19 management guidelines also consisted of detailed procedures from designing and implementing strategies to monitoring and reporting on incidents of the pandemic. The practicality of using the COVID-19 management guideline was validated at the University of Malaya. The result showed that the COVID-19 management guideline is practical as a reference to implementing pandemic management strategies with minimum resource requirements. Hence, the study has demonstrated that the COVID-19 management guidelines established can be used to initiate pandemic management strategies in HLIs.

Keywords: COVID-19, pandemic, pandemic management guideline, Higher Learning Institute

STRATEGI PENGURUSAN COVID-19 DI INSTITUSI PENGAJIAN TINGGI:

KAJIAN KES DI UNIVERSITI MALAYA

ABSTRAK

COVID-19 menjejaskan hampir setiap negara dan lebih 50 juta orang di seluruh dunia. Banyak syarikat dan perkhidmatan tidak bersedia untuk menghadapi kesan COVID-19 terhadap operasi mereka. Turut terjejas oleh pandemik COVID-19 ialah Institusi Pengajian Tinggi (IPT). Pengurusan wabak di IPT memerlukan penggunaan kaedah dengan mempertimbangkan aspek kesihatan, ekonomi, perundangan dan kemanusiaan. Maka, dalam kajian ini, garis panduan pengurusan COVID-19 yang komprehensif telah dibangunkan dengan mengambil kira keseluruhan operasi dan aktiviti di kampus IPT. Garis panduan pengurusan COVID-19 mengandungi senarai semak yang merangkumi aspek dan strategi utama mengurus COVID-19 atau sebarang wabak lain di IPT pada masa hadapan. Strategi tersebut menilai keperluan banyak pihak berkepentingan yang berbeza, termasuk pertimbangan kewangan dan undang-undang. Selain itu, garis panduan pengurusan COVID-19 juga mengandungi prosedur terperinci bermula daripada merekabentuk dan melaksanakan strategi sehingga pemantauan dan pelaporan mengenai insiden wabak tersebut. Kebolehlaksanaan penggunaan garis panduan pengurusan COVID-19 telah disahkan di Universiti Malaya. Hasil kajian menunjukkan bahawa garis panduan pengurusan COVID-19 adalah praktikal sebagai rujukan untuk melaksanakan strategi pengurusan wabak, dengan keperluan sumber yang minimum. Justeru, kajian telah membuktikan bahawa garis panduan pengurusan COVID-19 yang dibangunkan boleh digunakan untuk memulakan strategi pengurusan pandemik di IPT.

Keywords: COVID-19, Pandemik, Garis panduan pengurusan pandemik, Institusi Pengajian Tinggi

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Universiti Malaysia

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LIST OF SYMBOLS AND ABBREVIATIONS

COVID-19	:	Coronavirus Disease 2019
DDEM	:	Department of Development and Estate Maintenance UM
DVC (D)	:	Deputy Vice Chancellor (Development)
HLI	:	Higher Learning Institute
ILO	:	International Labour Organization
MCO	:	Movement Control Order
OSHE	:	Occupational Safety & Health and Environment Division, UM
PPE	:	Personal Protective Equipment
RC	:	Responsibility Centre
SOP	:	Standard Operating Procedure
UM	:	Universiti Malaya
UNESCO	:	United Nations Educational, Scientific and Cultural Organization
WHO	:	World Health Organisation

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CHAPTER 1: INTRODUCTION

1.1. Background

In 2020, COVID-19 affected nearly every nation and over 50 million individuals worldwide. The World Health Organization (WHO) then declared the COVID-19 outbreak a global health emergency. Many businesses and services were not ready to face the effect of COVID-19 to their operations. Some businesses unable to survive and need to be permanently closed. Subsequently, government has taken several measures to prevent the virus from spreading, which focuses on the controlling and limitation of movement. These measures also required closing of educational institution and affecting more than 90% of the student's population globally (United Nations Educational, Scientific and Cultural Organization (UNESCO)).

Higher Learning Institutions (HLIs) are also affected by the COVID-19 pandemics. Managing pandemic in compounded places like HLIs requires thorough implementation of strategies based on health, financial, legal, and humanistic perspectives. During the COVID-19 pandemic, various Standard Operating Procedures (SOPs) are developed according to requirement and the need basis. Therefore, in this work, a systematic guideline that can be used by the HLI in managing future pandemic will be developed. The guideline will consist key components based on actual experience of implementation in Universiti Malaya as the case study.

1.2. Research problem

COVID-19 is an unanticipated and difficult-to-control pandemic that has impacted many businesses and services globally. HLIs with many stakeholders need to develop appropriate strategies to assure that functions and operations are not jeopardized. However, the availability of comprehensive guidelines in managing pandemic/ endemic

in HLI to cater all stakeholders are currently not available. Hence, to fill this gap mentioned above, a proper management strategy will be developed to overcome any pandemic/ endemic in near future by implementing actual strategies in a selected university.

1.3. Research questions

To develop strategies for COVID-19 management in HLIs, researchers are concerned towards:

- i. What are the elements or components needed in managing COVID-19 in HLIs?
- ii. Are there any existing guidelines for managing COVID-19 in HLIs?

1.4. Aim of the study

The aim of this study is to develop a comprehensive guideline for managing pandemic/ endemic in HLIs.

1.5. Objectives of the study

The objectives of this study are as follows:

- i. Identify components and requirements for managing pandemic in HLIs.
- ii. Develop strategies for managing pandemic from various perspectives.
- iii. Validate the developed guideline using selected case study.

1.6. Scope of the study

The study is conducted to develop a guideline to manage the response to pandemic/ endemic in HLIs. The scope of the study focuses on the management of all stakeholders in HLIs.

1.7. Significant of the study

The study is conducted to develop a guideline to manage the response to pandemic/ endemic in HLIs. The scope of the study will focus on the management of all stakeholders in HLIs. The guideline of COVID-19 management in HLI is important to ensure the mitigation and preparation is in place subsequently HLI can be open and functioning as usual.

1.8. Report outline

Chapter 1: Introduction

This chapter describes the background of the research project and the problem statement associated with the research. The research aims, objectives, and scope of the study are included in the chapter.

Chapter 2: Literature Review

In this chapter, the discussion of the topics will start from a broad aspect and will then be narrowed down to the research project. The topics derived are to achieve the objectives of the study. This chapter consists of the background of COVID-19, strategies implemented by Malaysia and other countries in managing COVID-19, which includes strategies implemented by HLIs in managing COVID-19 in this world. By reviewing available journals and previous studies, proposed management strategies can be developed with the combination of various HLIs that have already established guidelines regarding managing pandemic/ endemic.

Chapter 3: Methodology

This chapter describes the detailed methodology that was used in conducting this research study. The methods used are collecting and reviewing existing guidelines from

other HLIs; analysing statistics; data collection; and validating the checklist. The methods are to ensure the research objectives are achieved.

Chapter 4: Result and Discussion

This chapter describes the results and discussion of the analysis based on the methodology derived. Proposed strategies are analysed and developed based on surveys and benchmarks from other HLIs. The outcomes of the analysis are arranged by categories of stakeholders. Further, a checklist for managing pandemic/ endemic in HLIs is developed. The results are further discussed in this chapter.

Chapter 5: Conclusion and Future Work Recommendation

This chapter discusses the achievement of research objectives by concluding it with developing strategies for managing pandemic/ endemic in HLIs. A checklist and guidelines of management strategies developed will be proposed to be used by the HLIs in managing pandemic/ endemic in the future. For future research, it is suggested that the proposed strategies and checklist be kept revising and updating.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction to COVID-19

2.1.1. The background of the source

In December 2019, Wuhan, Hubei Province, China, saw several cases of unknown pneumonia. Pneumonia spreads quickly in China and abroad. Initially, most patients had contact with Huanan seafood market. More patients developed fevers and coughs afterward. On January 7, 2020, a novel coronavirus was found in a patient's throat swab sample and named 2019-nCoV by the WHO. As the outbreak worsened, WHO declared it an international health emergency (PHEIC). The International Committee on Taxonomy of Viruses renamed the virus on February 11, 2020, as SARS-CoV-2. WHO then dubbed SARS-CoV-2 as coronavirus disease 2019 (COVID-19). (Ge et al., 2020)

2.1.2. Method of transmission of COVID-19

The novel coronavirus is highly contagious and can cause severe respiratory illness in humans. Symptoms include fever, coughing, difficulty breathing, chest pain, and pneumonia. Respiratory infections can be transmitted through droplets of various sizes: droplets larger than 5-10 μm in diameter are known as respiratory droplets, while droplets smaller than 5 μm in diameter, known as droplet nuclei, are also known as respiratory droplets. People are primarily infected with COVID-19 via respiratory droplets and direct contact. Analysis of 75,465 COVID-19 infections in China showed that the virus was not spread by air in any case. (WHO, 2020b)

2.1.3. The respond by World Health Organization (WHO)

The WHO, a United Nations (UN) agency founded in 1948 oversees global health influences health policy and planning worldwide. They have been a key player in the global response to COVID-19. They were one of the first international organizations to

recognize the potential of the outbreak, and they have been working hard to coordinate a global response. The WHO has been one of the most important responders to COVID-19. Since the virus was first found, they have been working on it and telling countries around the world about new information and what to do.

In January 2020, the WHO announced that they were investigating a novel coronavirus that was causing severe respiratory illness in humans. They released a report on the virus that included information on its genetic sequencing, epidemiology, and clinical features (Ge et al., 2020). Since then, the WHO has continued to provide updates on the virus and its response. In October 2020, they announced that a new coronavirus strain had been identified in Saudi Arabia (Khan et al., 2021). This strain is like COVID-19 and has caused several deaths.

The WHO also released a report in December 2020 which included information on how countries can best respond to COVID-19 (WHO, 2020a). They stressed the importance of early diagnosis and treatment of patients with the virus. They also warned countries about the dangers of social media and contact with people who have the virus.

Since COVID-19 was first identified, the WHO has been providing updates and recommendations to countries around the world. They have issued reports on the virus and the response to it, as well as a warning about how nations should respond. The WHO is one of the most significant responders to COVID-19, and their efforts will contribute to the protection of human life.

2.2. Introduction to disease outbreak

2.2.1. Introduction to epidemic, pandemic and endemic

The WHO uses a disease's rate of transmission to categorise diseases as pandemics, epidemics, or endemics. The intensity of the disease is not what differentiates an epidemic

from a pandemic; rather, it is the disease's ability to rapidly spread throughout a large number of people. (W. Ian Lipkin, 2021)

Endemics are diseases that are limited to a specific region. For example, malaria is endemic to Africa, while measles is endemic to the United States. This mosquito-borne disease is prevalent in numerous nations around the globe. Malaria is endemic in parts of Africa because the Anopheles mosquito, which transmits the disease, thrives in warmer temperatures. This indicates that the prevalence of malaria remains unchanged in this region.

Epidemic outbreaks are larger and more widespread than endemic outbreaks. They can affect many people in a single area or country, and they can be deadly. The Ebola outbreak happened in West Africa during 2014–2016. The unprecedented size of this epidemic was caused by a number of things, such as the wide geographic spread of cases, the slow response of the international community, the mixing and movement of populations, the spread of disease in densely populated urban areas, poor public health and social infrastructure, lack of local knowledge about the disease, and distrust of government officials and health care workers (HCWs) (Bell et al., 2016)

Pandemics are epidemics that spread to different parts of the world. The most famous example of a pandemic is the 1918 flu pandemic, which killed more than 50 million people around the world (Morens & Fauci, 2007).

The WHO released a statement declaring COVID-19 as a pandemic on March 11, 2020. The statement outlined the numerous countries in which the virus had been identified, as well as the severity of the pandemic (WHO, 2020d). Currently, several countries are heading to endemic phase for COVID-19.

2.2.2. Global strategies on managing disease outbreak

When a disease outbreak occurs, there is usually a global response to try and manage and contain the spread of the disease. WHO is the agency that is typically responsible for leading the response, and its goal is to try and prevent the outbreak from becoming a global pandemic. In order to do this, they work with other global organizations and governments to help provide resources and support.

One of the most recent examples of a global disease outbreak is the Zika virus. The WHO was first made aware of the Zika virus in 2015 and started to investigate whether it could be a potential global pandemic. As soon as they determined that it could, they started to work with other organizations to try and get resources together in order to manage the outbreak. So far, the WHO has been successful in getting a number of countries around the world to start working together on this issue, which has allowed them to manage the outbreak better (WHO, 2016).

In general, the WHO's goal is to try and prevent the outbreak from becoming a global pandemic. This is done by working with other organizations to get resources together, and by providing support to countries around the world that are affected. So far, the WHO has been successful in managing the Zika virus outbreak.

2.3. Disease outbreak in Malaysia

2.3.1. Managing pandemic in Malaysia

Malaysia has a well-developed system for the management of disease outbreaks, which includes surveillance, laboratory testing, and public health response. The country has been prepared for outbreaks of a wide variety of diseases, including pandemic (H1N1) 2009, MERS-CoV, and Ebola.

The management of a disease outbreak in Malaysia generally follows the same steps, regardless of the disease. First, the relevant health authorities conduct surveillance to determine if there is an outbreak. If there is an outbreak, the national response plan is put into action and people and resources are sent to deal with the situation.

If an outbreak is mild, public health officials may only need to conduct educational campaigns to raise awareness about the disease. If the outbreak is more serious, however, public health officials may have to close schools or businesses in the affected areas, limit travel, or even put whole villages in quarantine.

In all cases, Malaysian authorities work closely with international partners to support their response. They have a good relationship with the United States Centers for Disease Control and Prevention (CDC) and have participated in several global outbreak response efforts, including the 2014-15 Ebola virus disease outbreak in West Africa.

Along with the implementation of the Malaysia Strategy for Emerging Diseases and Public Health Emergencies (MySED), the country's response to epidemics such as SARS in 2002-2003 and MERS-CoV in recent years has shaped and strengthened its structure to prevent, prepare for, respond to, and recover from public health emergencies. Malaysia has implemented influenza and Emerging Infectious Diseases (EIDs) monitoring and surveillance in accordance with International Health Regulations (IHR) (2005) core capability standards (WHO, 2020c).

2.4. Malaysian's experience in managing COVID-19

The first verified case of COVID-19 in Singapore, which was imported from Wuhan, China on January 23, 2020, is what sparked concerns about the virus spreading to Malaysia. As a result of this investigation, eight close contacts were identified to be located in the Malaysian state of Johor (Abdullah, 2020).

Then, on January 25, 2020, Malaysia announced its first verified case, involving three Chinese nationals who had been in quarantine due to close contact with the infected person in Singapore (Times, 2020). The first Malaysian involved was a 41-year-old from Selangor who has been tested positive on February 3, 2020; he has a history of traveling to Singapore for business meetings which were also attended by delegations from China (Ahmad, 2020). First local transmission in Malaysia happened to be the relative of the above-mentioned case. They met each other on January 23, 2020 until February 3, 2020 (Ahmad et al., 2020).

2.4.1. COVID-19 management in Malaysia

The Malaysian government and Ministry of Health Malaysia (MOH) responded to COVID-19 by following WHO COVID-19 Strategic Preparedness and Response Plan (WHO SPRP). It included of five domains under WHO SPRP which are: whole-government, lockdown, equity of access to services and supports, quarantine and isolation systems and legislation and enforcement (Ang et al., 2021). Malaysia also activating a centralised multi-ministerial coordination council to support MOH with some collaborations from non-government organisations and private sectors. The Malaysian government responded quickly and decisively to COVID-19. These measures were designed to prevent the spread of the pandemic, and the Malaysian government worked with international organizations to support the global response (CodeBlue, 2020).

Apart from that, Malaysia through Crisis Preparedness and Response Centre (CPRC) which were the lead agency for disasters involving health. They developed standard operating procedure (SOP) to guide MOH in handling of all potential crises and disasters and is an important component of the overall plan to prepare for successful disaster, epidemic, crisis and emergency management (Abdullah, 2014).

Malaysia went into lockdown mode in March 2020. On March 18, 2020, a movement control order (MCO) with significant suppression measures was issued. These restrictions were relaxed on May 4, 2020 and were termed a conditional movement control order (CMCO). Restrictions were further lowered into a recovery movement control order (RMCO) on June 9, 2020, a transitional phase before suppression measures were completely abolished. However, due to an increase in instances, actions at the CMCO and MCO levels were intensified on October 7, 2020, and January 13, 2021, respectively. On March 5, 2021, restrictions were removed for CMCO before another spike necessitated a tightening of measures for MCO on May 11, 2021. After September 2020, the strength of these measures changed at the state level (Jayaraj et al., 2021). Figure 2.1 summarise the phases of MCO issued by Government of Malaysia with the coverage of limitation and restrictions imposed.

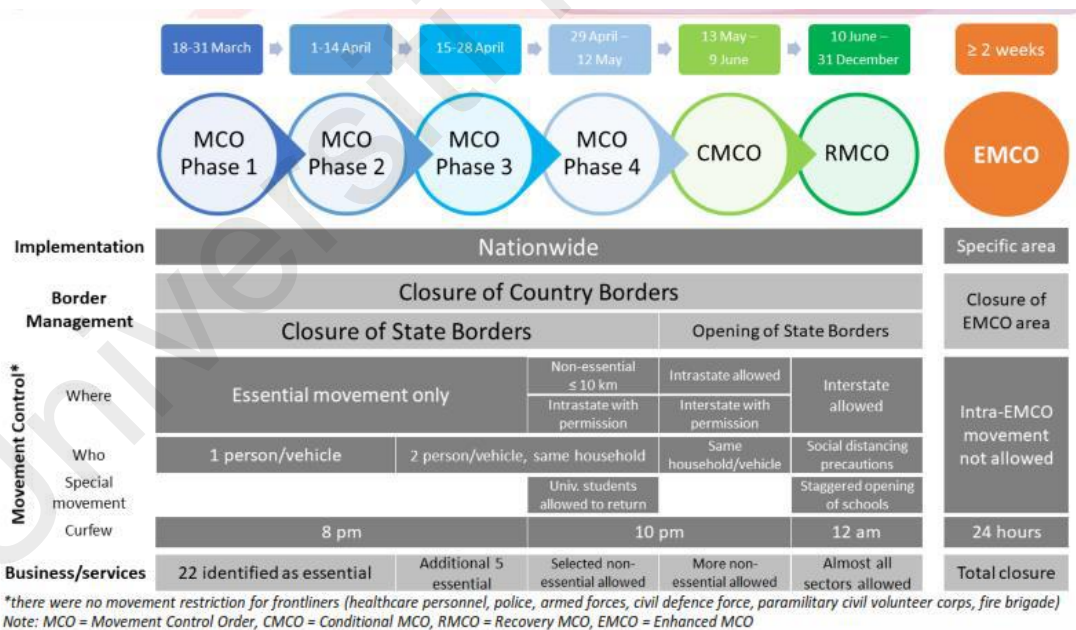


Figure 2.1: Phases of MCO and corresponding restrictions

Source: (WHO, 2020c)

2.4.2. Statistical data on COVID-19 in Malaysia

MOH data provides statistics on the number of cases and deaths, as well as the population impacted by COVID-19. There have been several waves of the COVID-19 that has been occurring in Malaysia. The first wave began on January 24, 2020, when three Chinese visitors arrived in Malaysia via Singapore. By February 16, 2020, the number of cases has risen to 22 (WHO, 2020c).

The second wave began on February 27, 2020 and lasted until the June 30, 2020. The largest cluster was Seri Petaling cluster involved a religious gathering hosted at a mosque in Seri Petaling Kuala Lumpur (Rampal et al., 2021). A few weeks following the occurrence, Malaysia recorded the highest number of COVID-19-positive patients in Southeast Asia. The religious meeting lasted four days and was attended by 16,000 individuals, including 1,500 from outside Malaysia (Barker, 2020).

On September 8, 2020, the third wave began possibly from 16th Sabah Election and prison cluster in Alor Setar Kedah. It happened due to thousands of campaigners from Peninsular Malaysia went to Sabah for campaign and return back to their home states across the peninsular and possibly spreading the virus (Tan et al., 2021).

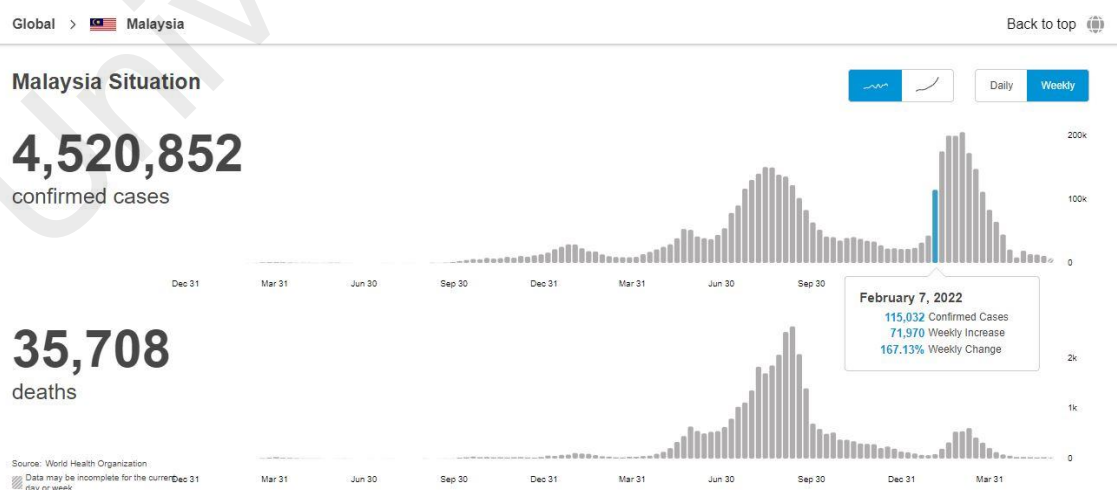


Figure 2.2: Malaysia's current COVID-19's statistics

Source: <https://covid19.who.int/region/wpro/country/my>

2.4.3. Effect to businesses in Malaysia

The economic impact of the pandemic is already being felt, with businesses and workers around the world struggling to cope with the fallout. The first Movement Control Order which took place from March to May 2020 was estimated to have cost Malaysia approximately RM2.4 billion. The second one, which will take place from January to March 2021, could cost Malaysia more than RM200 million (Star, 2021).

Agriculture and services industries lost a higher number of jobs than other sectors, according to the Malaysian Investment Development Authority (MIDA), with 21.9 percent and 15.0 percent respectively (MIDA, 2021). The Malaysian government has responded to the crisis by announcing a variety of stimulus measures, including tax breaks and subsidies for businesses (Hashim et al., 2021).

2.5. Higher Learning Institute (HLI)

2.5.1. Functions and stakeholders

A higher learning institute is a place where students can gain access to a variety of different levels of education, including pre degrees, bachelor's degrees, graduate degrees, and professional degrees. The institute is also a place where students can learn about different academic disciplines and explore their interests. For the institute to be able to offer these opportunities, it must have a working campus with a variety of stakeholders.

The campus is the physical location of the higher learning institute. It is a place where students and staff can come together to learn, work, and socialize. The campus must be well-maintained and safe for students to use. It must also have adequate resources (such as classrooms, libraries, laboratories, and dormitories) to support the educational opportunities offered by the institute.

Students, alumni, donors, parents, other institutions or providers, accrediting agencies, vendors and suppliers, employers, taxpayers, non-government organisations, government, and academic faculty, both individually and collectively in disciplinary groups and as members of other organisations such as unions and advocacy bodies, are among the many stakeholders in HLI (Marshall, 2018).

Description of common stakeholders of HLIs can be found below:

(1) Government

Government owns public HLI. They are the main provider for financial to run the HLI. They may have an impact on the quality of higher education by ensuring that the appropriate financial strategy is implemented for the proper funding of the country's colleges and institutions. A well-rounded HLI curriculum must be implemented by the government, and it must be updated on a regular basis in order to keep pace with changing market needs.

(2) Board of Director

They perform a number of tasks to guarantee the quality of university education continues to improve. They play an important role in defining an institution's strategic direction. They are also in charge of policy development and institutional performance monitoring.

(3) Management

Responsible for overall strategic direction and leadership of the HLI. They are essential to ensuring that universities maintain their status as leading institutions of learning. They concentrate on university vision and mission-driven activities and programmes

(4) Academic staff

The academic staff is the group of scholars who teach at a higher learning institute. They are responsible for providing quality instruction that meets the

needs of their students (Delgado-Zapero & Strojny, 2020). They are also responsible for conducting research that advances knowledge in their field.

(5) Administration and Support Staff

This group is responsible for managing the resources associated with students, whether they be human, material, finance, health and safety, etc (Delgado-Zapero & Strojny, 2020). The administration also responsible for managing the financial resources of the institute and ensuring that the campus is safe and clean. They also provide support to faculty members in their efforts to teach students.

(6) Student

Students are, no doubt, the most important university stakeholders. Students are the most obvious and direct stakeholders in an HLI. They can be either foundation students, undergraduate or postgraduate.

(7) Parents

They have a vested interest in the well-being of their child and the success of their academic career. The parents should be involved in their child's academic decisions and activities, and they should be kept updated on the student's progress. The parents should also be contacted if there are any problems with their child's academic performance or if the student needs assistance with a coursework assignment.

(8) Alumni

An alumnus is a former student of a school, college, university, or other educational institution. They are a stakeholder in the university, as they have a vested interest in its success. Alumni can provide feedback on how the university is functioning and can also provide financial support for its continued development. They are also a valuable source of recruitment for the

university, as they can recommend students to attend and can help promote the university to potential students.

(9) Contractors

A contractor is hired to complete a specific task or project. In the context of the HLI, a contractor may be hired to renovate a campus building, build a new dormitory, or conduct research. The HLI depends on the contractor to deliver on its promises and meet its deadlines. The HLI also wants to make sure that the contractor is responsible and takes care to protect the environment. The university will also benefit from the contractor's expertise and resources, which it may not be able to obtain on its own.

(10) Vendor or Supplier

A vendor and supplier are a person or company that sells or provide goods or services to HLI. Some HLIs have their own facilities to ease their community such as cafeteria, mini shop, barber shop, printing shop, etc.

(11) Local Community

The HLI delivers economic advantages, educational possibilities, and cultural enrichment to the surrounding community. Additionally, the HLI serves the local community by preparing future leaders and producing jobs. Numerous residents are employed by the HLI, and its students are frequently hired by local businesses. Additionally, the HLI offers educational opportunities to local students, who can acquire skills that are beneficial to the local economy. By supporting arts and music events and granting scholarships to students from nearby schools, the institution contributes to the cultural development of the surrounding community (Delgado-Zapero & Strojny, 2020).

2.6. Effect of pandemic to the business

The global pandemic of COVID-19 has had a significant impact on businesses all over the world. One-way businesses have been managing the pandemic is by closing their doors. This is often the case for businesses that are unable to keep up with the demand for their products or services. It can be difficult for these businesses to reopen after being closed for such a long period of time, and they may experience a decrease in customer base as a result.

Another way businesses have been managing COVID-19 is by decreasing the number of staff. This can be done in a variety of ways, including through layoffs or by reducing the hours that employees are working. This may make it difficult for businesses to meet the demands of their customers, but it may also help to reduce the amount of stress that employees are under.

Some businesses have been able to continue to operate despite COVID-19. This is often the case for businesses that can make use of technology in a way that helps them to remain competitive. For example, some businesses have been able to use social media platforms to keep up with the demands of their customers.

Overall, it has been difficult for businesses all over the world to manage the pandemic. However, there are a few different ways that they have been able to do so. It will be important for businesses to continue to explore new strategies as the pandemic progresses in order to stay competitive and ensure that they are able to meet the demands of their customers (Apedo-Amah et al., 2020).

2.6.1. Strategies by businesses in managing COVID-19

Each business has taken a different approach in their management of the virus. Some businesses have been proactive in their prevention methods, while others have been more reactive in their response.

One business that has been proactive in their prevention methods is Walmart. In early March, Walmart announced that they would be closing all their stores in the United States for two weeks. They also announced that they would be using biometric scanning to identify employees who had been in contact with the virus. This was done in order to prevent any further spread of the virus (Bloomberg, 2020).

Another business that has been proactive in their prevention methods is FedEx. In early March, FedEx announced that they would be using thermal imaging cameras to monitor their packages for signs of COVID-19. They also announced that they would be using pre-emptive antibiotics in all their shipments. This was done in order to prevent any further spread of the virus (FedEx, 2020).

On the other hand, another business that has been reactive in their response to COVID-19 is Delta Airlines. In early March, Delta Airlines announced that they would be cancelling all flights in and out of the United States for two weeks. They also announced that they would be using random passenger screening in order to prevent any further spread of the virus (Junrong, 2021).

Another business that has been reactive in their response to COVID-19 is Uber. In early March, Uber announced that they would be suspending all operations in the United States for two weeks. They also announced that they would be using a variety of safety measures, such as requiring customers to show identification when booking a ride, and prohibiting pickups from airports (Morshed et al., 2021).

Small businesses are particularly vulnerable to the effects of COVID-19. Small businesses are typically not as prepared for a pandemic as larger companies, and they often do not have the resources to deal with the virus. Small businesses have closed their doors, laid off employees, and lost revenue due to COVID-19.

Larger companies have been better able to cope with COVID-19. Larger companies typically have more resources available than small businesses, able to stockpile supplies such as food and fuel in anticipation of the crisis and better equipped to deal with the media attention that the pandemic has brought.

2.7. Strategies in managing pandemic to HLI

2.7.1. The respond to COVID-19 outbreak

HLI are on the frontlines of the COVID-19 pandemic. They are charged with the responsibility of safeguarding the health and well-being of their students, staff, and faculty. To fulfil this responsibility, institutes are employing a variety of management strategies.

One strategy is screening and quarantine. All new students and staff are screened for COVID-19. Anyone who tests positive is immediately quarantined. This helps to prevent the spread of the virus within the institution and between students and staff. Another strategy is communication. Institutions are using various channels to communicate information about COVID-19. They are also providing updates on how the pandemic is affecting their campus. This helps to keep everyone informed and aware of their safety precautions.

Some HLIs also providing temperature readings, hand sanitizer, gloves and face shield to their staff and students in order to combat with the virus (Izumi et al., 2021). Institutions are also working together to share resources. For example, they are sharing laboratory

space, supplies, and personnel. This enables them to pool their resources and help address the pandemic more effectively.

Apart from that due to lockdown enforced, method of teaching from face-to-face has been switch to online learning, distance learning become the 'new normal' for the HLI (Stracke et al., 2022). Academicians and students had to familiarised with the new type of teaching and learning. Academicians need to adapt an interactive learning session to attract students via online teaching.

Overall, HLIs are using a variety of management strategies to protect their students, staff, and faculty. These strategies are helping to ensure that the institution can fulfil its responsibility during the COVID-19 pandemic. Ongoing communication and cooperation between all stakeholders will be essential for ensuring the continued health and safety of those involved in these institutions.

2.7.2. Managing campus activities

Campus life has changed dramatically as the COVID-19 pandemic has taken hold. Many activities that were once commonplace on HLI, such as large group gatherings and sporting events, are either cancelled or heavily restricted. This has posed a challenge for campus administrators as they work to manage and monitor activities while also trying to keep students and staff safe.

Since the campus was closed to all parties, HLIs were required to verify that all campus facilities were also shuttered. This consists of classrooms, offices, libraries, and other locations. This will aid in preventing the virus's spread and protect students and employees. Due to the fact that all facilities are closed, all activities must be rescheduled, postponed, or cancelled (Jasmis et al., 2021).

Student activities, research activities, teaching and learning, convocation, meetings, conferences, workshops, talks, trainings, sports, renovation and construction, and cultural activities are among the activities conducted in HLIs. To ensure the continuity of their activities, each organizer or process owner must produce its own plan. This strategy must incorporate participation from all parties and adhere to the order of the day to be successful.

2.8. Stakeholders' management

HLIs must evaluate their stakeholder groups and develop strategies based on the specific requirements of each group (Alves et al., 2010). To sustain the institution's operations and preserve its reputation, it is crucial that university leadership successfully manage all stakeholders.

The first group to need management attention during COVID-19 is the students. Many of them were unable to attend classes due to the pandemic, and many others were concerned about their health. The HLI must ensure that these students have access to information and resources, including updates on the pandemic.

The next group to need management attention during COVID-19 are the staff. They need to make sure that the university is running smoothly and that all the necessary resources are available. The HLI must make sure that the staff is given enough information about COVID-19 and the pandemic so that they can continue to work without disruption.

Donors also need management attention during COVID-19. Many of them may be donating money to the HLI to help fund COVID-19 activities, but they may not know what to do next. The donors need information about the pandemic and the university's response to it. The HLI should also provide donors with updates on the pandemic.

2.9. Global experience on COVID-19 management

Each country has responded differently, with some taking more aggressive action than others. China was the first country to report a COVID-19 case, and they have been praised for their aggressive response. They have implemented strict quarantine measures, including a travel ban for affected countries, and have closed some schools. China has also deployed soldiers to help with the response (Chen et al., 2021).

France was the second country to report a COVID-19 case, and they have been much slower to react. They have implemented a travel ban for all countries except Belgium, Switzerland, and Tunisia, which are all considered “safe”. They have also closed schools, but their response has been criticised for not being as aggressive as China’s (Or et al., 2022).

The approach of New Zealand was governed by public health recommendations and developing evidence. On March 26, the government issued an alert level four lockdown and ordered the whole nation, except for a few vital personnel, to self-quarantine at home. The lockdown was lowered from level four to level three after five weeks. On June 8, New Zealand lowered the warning level to one and stated that the virus had been eradicated (Baker et al., 2020).

When the WHO declared the coronavirus a worldwide public health emergency at the end of January, Senegal's government started formulating contingency preparations immediately. By using mobile laboratories, the nation was able to enhance its testing capacity, and many COVID-19 tests produced findings within twenty-four hours. Additionally, hotels were converted into quarantine units (Chakamba, 2020).

Overall, all countries take fast actions to deal with COVID-19. Most of them engage with health authorities and WHO to get advice and prepare for the outbreak.

2.10. Global experience on COVID-19 management for HLI

As COVID-19 began to spread, universities and colleges around the world took action to prevent the spread of the virus on their campuses. Many HLIs have implemented policies and procedures to protect their students and staff. At the early stage of COVID-19, the HLI took a number of steps to prevent the virus from spreading on its campus (Goundar & Sharma, 2021). These measures included:

- (a) Implementing a quarantine policy for all visitors who are not registered with the HLI.
- (b) Monitoring all incoming and outgoing emails and communications.
- (c) Instituting a ban on all outdoor activities, including sporting events.
- (d) Allowing only registered staff and students to enter campus buildings.

As COVID-19 began to spread more widely, the HLI took additional measures to protect its students (Goundar & Sharma, 2021). HLI are taking swift and proactive action to address the spread of COVID-19. To protect all stakeholders, faculty, staff, and students, preventative measures are being put into place. These measures include, but are not limited to, the following:

- (a) Requiring all individuals who have travelled to high-risk areas to self-isolate for 14 days.
- (b) Sending daily updates on campus conditions to faculty, staff, and students.
- (c) Educating students on the risks of COVID-19 and how to protect themselves.

These measures are necessary to ensure the safety of all individuals on campus. Higher learning institutes must remain vigilant to protect their students, faculty, and staff from the dangers of COVID-19.

2.11. Experience in Malaysia on COVID-19 management for HLI

2.11.1. The respond from MOHE

In response to announcement from Prime Minister of Malaysia on government's decision to implement MCO, Ministry of Higher Education (MoHE) came out with a guideline on preventing COVID-19 infection in the HLI from March 18, 2020, until March 30, 2020. The guidelines announcing the closing of HLI, prohibition of teaching and learning activity, student management (allowing students to go back to hometown) and food premise operation (MOHE, 2020a).

Nonetheless, on March 20, 2020, the ministry revoked the directives, permitted HLI to offer teaching and learning (T&L) online, and prohibited students from returning to their respective hometowns. The HLI provides food and other goods for all students, according to the MOHE. The ministry also setting up a 24-hour COVID-19 operational room at ministry level and each HLI. They provided hotline numbers for parents and students to ask about the plan and guidelines.

On April 16, 2020, MOHE has announced a suspension of higher education admissions for foundation, matriculation, and certificate programmes until July/August 2020, while admissions for degree programmes would be delayed until September/October 2020 (MOHE, 2020b).

Students who have stranded in the campus and surrounding were permitted to return home under tight SOPs starting from April 27, 2020 and completed in June 2020. A massive movement of students from HLI around the country was carried out in phases

with the help of Royal Malaysian Police and local officials, with advice from National Security Council (NSC) and the MOH (Patho Rohman & Halid, 2020).

On May 27, 2020, MOHE announced that five (5) categories of students in need were allowed to enter the campus but online T&L still be required until the end of 2020 (MOHE, 2020c). Since the opening of more academic sectors, MOHE also come out with SOP in management of operation of HLI to guide HLI stakeholders on management of each activity.

The MOHE has also activated its social media platforms to disseminate information and updates on COVID-19. MOHE continuously updating SOPs and guidelines align with the SOP and directive from NSC and MOH. This to ensure HLI can do operation as usual and activities in campus does not stop by ensuring safe and healthy conditions for everyone on campus.

2.11.2. Information from other HLI in managing COVID-19

The higher education scenario in Malaysia is diversified, with over 20 state universities, 36 polytechnics, 104 community colleges, and 434 private institutions and colleges. These institutions served roughly 1,207,593 students in 2021, including 131,225 overseas students (MOHE, 2021).

During the COVID-19 outbreak in Malaysia, all institutions are affected, and each institution have their own way in managing COVID-19. Azman & Abdullah (2020) summarize the action taken by the government of Malaysia and HLIs in term of T&L activities that can be found in Table 2.1.

Table 2.1: Chronology of events describing the Malaysian government and higher education COVID-19 response (Jan 2020- Jun 2020)

Phases		COVID -19 Status	Government/ HE Actions	HLI Responses	Issues/ Ramifications
The Onset (January 2020)	Jan 2020	3 active cases by 23 Jan 2020	-	<ul style="list-style-type: none"> • Mandatory 14-day self-quarantine period for international students • Only essential travels abroad allowed for academic staff. • Restrictions on meetings, mass gatherings, and sports and recreational activities 	-
31 Jan 2020 – WHO Declared COVID-19 as Global Health Emergency					
The Showdown (March 2020)	1-15 March 2020	535 active cases by 15 March 2020	<ul style="list-style-type: none"> • National Security Council (NSC) cancelled all mass gatherings (meetings, sports, social and religious events) 	<ul style="list-style-type: none"> • USM was the first public HLI to mandate all teaching and learning activities to be conducted online. • UniMAP students were not allowed to leave campus without permission. 	-
	16 March 2020	672 active cases	<ul style="list-style-type: none"> • Prime Minister (PM) announced the Movement Control Order from 18- 31 March for 2 weeks 	<ul style="list-style-type: none"> • All HLIs were closed except essential services (healthcare and supermarkets). 	-
	17 March 2020 (the eve of 1 st Phase of MCO 18- 31 March 2020)	782 active cases	<ul style="list-style-type: none"> • Borders were closed, and inter-state air and land travels were prohibited. • Ministry of Higher Education (MoHE) issued a directive that public HE students could choose to either return home before the start of MCO or remain in campus 	<ul style="list-style-type: none"> • Public HLIs instructed students to return home. 	<ul style="list-style-type: none"> • Mass student exodus from public HLIs. • The delayed announcement by MoHE, made on the eve of the MCO, was criticised as it created panic and anxiety among parents and students.

Phases		COVID -19 Status	Government/ HE Actions	HLI Responses	Issues/ Ramifications
	20 March 2020 (within 1 st Phase of MCO 18-31 March 2020)	1138 active cases	<ul style="list-style-type: none"> MoHE forbade students residing in hostels, dormitories and rented properties to leave the premises. Government subsidised meals and sundry items for students who remained on campus/ rented properties. MoHE prohibited all digital courses/learning except by open learning mode 	<ul style="list-style-type: none"> HLIs prepared contingency measures for T&L activities, as well as work arrangements for all staff. HLIs adjusted their mid semester break to end of April. 	<ul style="list-style-type: none"> All teaching, research and service activities came to a halt.
	25 March 2020 (within 1 st Phase of MCO 18-31 March 2020)	1996 active cases	<ul style="list-style-type: none"> PM announced extended MCO by another two weeks (2nd Phase of MCO) 	-	-
The Acclimation (April – May 2020)	10 April 2020 (within 2 nd Phase of MCO 1-14 April 2020)	4485 active cases		<ul style="list-style-type: none"> HLIs revised academic calendar. HLIs issued circular to mandate online delivery of T&L activities until 31 December 2020. HLIs introduced a 4-week buffer period for students and staff to complete the syllabus for the remaining academic semester. 	<ul style="list-style-type: none"> Students' main issues are affordability to access high speed internet and hardware devices Students expressed anxiety over the need to quickly master new technology for learning. Students raised concern about the quality of their learning experience through online.

Phases		COVID -19 Status	Government/ HE Actions	HLI Responses	Issues/ Ramifications
	27 April 2020 (within 3 rd Phase of MCO 15-28 April 2020)	5848 active cases	<ul style="list-style-type: none"> Government initiated an operation to enable students to go home. A 24-hour Command Centre COVID 19 operation centre was set up at MoHE's base in Putrajaya, where parents, family members, and the community could seek information and advice <p>PM announced extended MCO by another two weeks (4th Phase of MCO)</p>	<ul style="list-style-type: none"> Postponement of higher education intake for foundation, matriculation and diploma programmes to July/August 2020. Standard Operating Procedures (SOPs) was introduced for online assessments and final examinations. Clearer SOPs on working from home arrangements for academic and administrative staff were introduced Some HLIs provided contingency funding to help students with broadband subscription and device procurement. HLIs developed a Productivity Recovery Plan throughout the MCO period. Oral examinations for Master and PhD, meetings, and interviews were pivoted online, saving travel time and reducing carbon footprints of academics and administrators. 	<ul style="list-style-type: none"> Transferring content and learning activities for online delivery requires extra work and assistance from instructional designers. Many of the online learning experiences offered throughout the MCO may not have been necessarily well-planned, with a high probability of suboptimal implementation with simple online content delivery and activities. Students frequently expressed disappointment that they were not receiving 'value for money' because of the reduced face-to-face component of the course delivery.
	10 May 2020 (within 4 th Phase of MCO 29 April – 12 May 2020)	6705 active cases	<ul style="list-style-type: none"> PM announced extended MCO by a month (5th Phase of MCO) 		
The New Normal (June -	7 June 2020	8326 active cases	<ul style="list-style-type: none"> Prime Minister introduced the Recovery MCO from 10 June to 31 August 2020 	<ul style="list-style-type: none"> Work resumed in HLIs, subject to stringent physical distancing measures required by MOH. 	

Phases		COVID -19 Status	Government/ HE Actions	HLI Responses	Issues/ Ramifications
August 2020)				<ul style="list-style-type: none"> • Online delivery of academic programmes would still be required until the end of 2020 except for: <ul style="list-style-type: none"> (a) Post-graduate students in research mode, i.e., those required to attend physical laboratories or relying on specialized equipment; (b) Final-year students doing postgraduate studies, Diploma and Bachelor's Degree students required to do clinical work, practical, laboratory and design work, workshops, or are in need of specialized equipment; (c) Final-year students who do not have internet access and are in an unconducive environment for T&L via online are allowed to return to campus as early as July 1st; (d) Students with special needs enrolled in the Technical and Vocational Training (TVET) education programme (e) at polytechnics and community colleges, and who need to get face-to-face guidance in order to access T&L due to learning difficulties. <p>Implement staggered return of staff to campus for work, or allow staff to work from home</p>	

Source: (Azman & Abdullah, 2020)

Besides T&L matters, some HLIs also developed some SOPs in response to mitigate and prevent COVID-19 on campus. The SOPs cover on managing case or infection on campus, health screening, staff and student entry, research activities, and other activities.

Apart from that, HLIs prohibited its members from travelling to high-risk nations (UKM, 2020; USM, 2020; UUM, 2020b). The establishment of response committee to deal with COVID-19 is a good initiative to manage and oversee the COVID-19 outbreak on campus (USM, 2020).

HLI has contributed specific funds for this purpose since it is aware of the risks of covid-19 and the necessity for assistance in mitigating these risks (USM, 2020; UUM, 2020a). Risk communication is important to all HLIs in managing COVID-19. Some HLIs setting up special website for COVID-19 to update on situation, directive, SOPs and guidelines to their stakeholders. Not only focusing on website, HLIs also tend to use social media to reach their stakeholders (Kamisan & Abu Bakar, 2021).

Building and maintaining relationships is pivotal for mental and social well-being. The students were concerned about their ability to manage their educational financial commitments due to family loss of income and loss of opportunities to work and self-finance their studies. The students faced uphill tasks in terms of technological infrastructure, mainly poor internet connection (Sundarasan et al., 2020). Thus, HLIs also setting up a psychological support for students and staff to overcome the problems arising from COVID-19 (Mat Ruzlin et al., 2021).

2.12. Literature review summary

Literature review is used to guide the researcher to develop proposed guidelines for managing pandemic/ endemic in near future in HLI. The devastating effects of disease outbreaks cannot be understated. When an outbreak occurs, it can quickly spread and devastate the community. It is important to have a good response plan in place. This plan should be able to quickly identify and respond to any outbreaks. To ensure continuity of HLIs operations, a proper plan or guidelines is required. From the literature, some elements of managing COVID-19 in HLIs were identified as either local or international HLIs. This guideline should cover stakeholders' management, surveillance, case management and many more.

Universiti Malaysia

CHAPTER 3: METHODOLOGY

3.1. Overall methodology

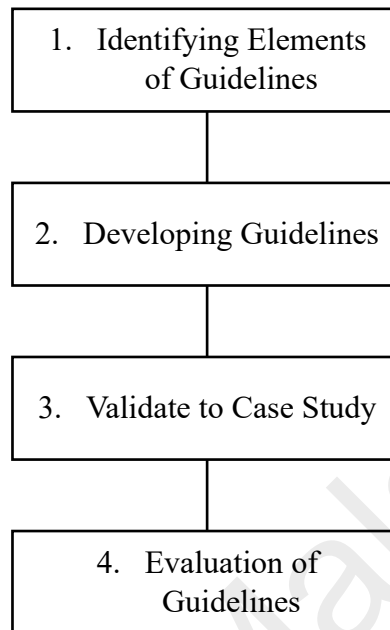


Figure 3.1: Methodology Process Flow

Figure 3.1 summarises the methodology used in this study. At first, the elements of guidelines were identified through document reviews of scholarly articles, government information/guidelines, HLI documents from their websites, media articles, reports, and papers either from local or international sources. Next, from the elements, guidelines in managing COVID-19 in HLIs were developed. Then, the guidelines being validated in the case study selected which is University of Malaya. Lastly, the guidelines being evaluate through meetings or reviews.

3.2. Introduction of case study HLI

In this work, University of Malaya (UM) was chosen as the case study for validation of the practicality of using the developed COVID-19 management guideline. UM is one of the leading HLIs in Malaysia. It is in Kuala Lumpur, the capital city of Malaysia. The university has a total of 13 faculties, two academies, three institutes and three centres.

The main campus is in Kuala Lumpur and the other campus is in Kelantan. The university offers a wide range of courses and programs in the fields of arts, humanities, sciences, and business. UM has over 28,000 students (foundations, undergraduate and postgraduate) and 5,500 staff (academics and executive & operations). Most of the students are from Malaysia but there are also a significant number of international students.

The substantial increase in cases in the Klang Valley is a result of an increase in workplace incidents. Additionally, population density is a risk factor for the increased likelihood of COVID-19 breakout. The location of Universiti Malaya (UM), which is bordered by red zone districts and where most university workers also reside, has led to the tightening of regulations within the institution to prevent the spread of COVID-19. In terms of students, staff, sorts of activities, and management, UM is quite diverse. Therefore, UM was chosen as case study for this topic.

3.3. COVID-19 management in University of Malaya

UM set up a task force as Directed by the VC in early February when Malaysia had started recording single digit cases of COVID-19. This task force continues to meet regularly to ensure that all precautionary measures are being taken for the well-being of staff, students and the university. The task force has also developed risk mitigation and business continuity plans.

When the WHO declared COVID-19 a pandemic on March 11, 2020, UM cancelled all physical events to ensure that the safety of the community was not compromised. With the introduction of enforced social distancing in many parts of the world, the UM had plans in place to move all teaching online in the form of Guided Learning. When the Movement Control Order (MCO) was introduced, they put in place plans to comply with

the Order and to ensure the safety and well-being of the 650+ students still living on campus, along with several hundred students who were staying in private accommodation close to the campus.

The university's Management has communicated with every student and member of the staff since the Order was implemented, via official email and social media platforms and communication channels from the VC. UM has been extremely pleased with reaction and actions of our staff and other stakeholders. Our academics have found innovative ways to teach, our professional services staff are keeping the university running and our suppliers have been nothing but supportive. There is a determination from all concerned to ensure the well-being of our staff and students.

Knowing who will do what, when, and with what resources is critical to managing a pandemic situation. Successful operations occur when actors know their roles and responsibilities, understand how they fit into the plan and how to work together, and have the capacities and resources to implement the plan. To achieve these objectives, all stakeholders need to be involved in the planning process – the process is as important as the plan itself. Hence, the UM COVID-19 Task Force have produced general SOP and recommend action plans for prevention and control of COVID-19 especially during containment and mitigation phases to minimize the spread and reduce its impacts among UM campus community.

To address the COVID-19 outbreak, the Office of the Deputy Vice Chancellor (Development) (DVC(D)) has also coordinated the purchasing and distribution of equipment and Personal Protective Equipment (PPE) support requested by each responsible centre (RC) for the use of the university community who will be on duty. Thermometer, face mask, hand sanitizer, and gloves were given.

The function of the UM COVID-19 Task Force in the management of the university's COVID-19 has been expanded with the coordination of the committee, which will be renamed the UM COVID-19 Management Committee on December 1, 2020. DVC(D) chairs the committee, while the OSHE Director serves as coordinator and OSHE as secretariat. The committee members are representatives from key RCs that play an important role in the management of COVID-19 UM. The committee and description of committee are as Table 3.1.

Table 3.1: UM COVID-19 Management Committee

Representatives	Description of task/ responsibility
(1) Secretariat: OSHE	Preparing SOP, Enforce SOP, Managing data
(2) UM Health Clinic	Student case management and advise on medical
(3) Student Affairs Division	Students issue
(4) Department of Development and Estate Maintenance (DDEM)	Development issue and providing disinfection service
(5) Centre for Information Technology	Information technology issue
(6) Security Office	Security issue
(7) Legal Unit	Legal issue
(8) Corporate Communication Office	Media issue
(9) Deputy Vice Chancellor (Development) Office	Assist in management of committee
(10) Deputy Vice Chancellor (Research & Innovation) Office	Research matters
(11) Deputy Vice Chancellor (Academic & International) Office	T&L matters
(12) Registrar Office	Governance and staff issue
(13) Universiti Malaya Medical Centre	Input and advise on medical side
(14) UM Student Body Representative	Input from student

This committee was formed to develop and implement COVID-19 management strategies at UM, as well as to create and implement SOPs, provide information to the campus community, and operate a quarantine centre. This committee meets weekly to

discuss on SOPs, update current statistics, and any issues or actions to be taken related to COVID-19 in UM.

UM COVID-19 Management Committee took proactive prevention and control measures to control COVID-19 infection on campus. UM COVID-19 Infection Control and Prevention SOP has been issued to the campus community as a reference. The SOPs include procedures for entering university, screening, isolation, procedures in the office, pantry, lift, laboratory, and teaching room, cafeteria, and disinfection. All SOPs were in line with the current MKN SOP and will be revised by the committee accordingly.

The use of information technology has also been implemented. UM enhances the existing UM mobile application named UMTouch by adding a compulsory health declaration feature that requires staff, students, contractors, and visitors to do the declaration before coming to campus. Staff cannot clock in attendance if a health declaration is not completed. Every RC has their own staff to monitor the declarations made by staff, students, or visitors.

The government allows for a certain number of movement controls on campus. The number or percentage will follow the SOP and the head of RC is responsible for arranging the schedule. Research activities were also being allowed following government allowable capacity.

Communicating information is important to all stakeholders. UM COVID-19 Management Committee is circulating information, awareness, SOPs, and decisions to the campus community through e-mail, UM Portal, UMTouch and other relevant social media such as Facebook. Video on COVID-19 prevention and control was also developed by OSHE and distributed to the campus community.

Establishment of COVID-19 Management Committee in each RCs helps to convey information to staff and students. They also help in managing cases in their respective locations. They need to report to the secretariat on any issue, and the issue will be discussed at the next committee meeting.

Other prevention and control measures taken are adapted to the new normal culture, namely social distancing, wearing face masks, and hand hygiene across the campus and workplace. Mode of working and T&L changed to online. Meetings, discussions, workshops, talks, and T&L were conducted online.

In managing COVID-19 cases for staff and students, SOP being distributed, and the committee will respond to the case and give advice to the person involved. UM has a quarantine centre for students identified as positive (stage 1 and 2) and close contact. Swab test also being arranged by the UM Health Clinic for students involved. Students at stage 3 and above will be sent to the UM Medical Centre for further treatment.

The Student Affairs Division established a committee for residential college management. The committee creates specific SOP for residential college students, monitors students and their welfare at residential college, coordinates and manages the quarantine process, provides hotline numbers, and communicates with parents about any concerns.

UM also set up a disinfection team consisting of cleaning services staff and contractors. UM Health Clinic and DDEM trained them on proper disinfection and sanitization procedures, as well as how to wear proper PPE. Disinfection activities were monitored by OSHE and DDEM.

UM COVID-19 Management Committee is required to report to the District Health Office on cases involving students on campus. Statistics of cases are also being reported

to MOHE through an online dashboard developed by MOHE. If there is a fatality, the MOHE requires a full report. The current active case status is also being distributed to the campus community through e-mail and UMTouch.

3.4. Challenges in managing COVID-19 in University of Malaya

Managing COVID-19 in UM also has a variety of challenges. UM surrounded by red zones, where many staff and students also reside. It is difficult to control and ensure they comply with SOPs outside UM. 70% of cases at UM were identified as having contracted the infection from family members or others in the community. This issue is quite alarming to the committee. Continuous reminders and notices were given to ensure staff and students abide by SOPs outside campus.

Due to frequent changes in SOP from the government and MOHE, the committee must ensure that UM complies with current SOP. There were also some changes to instructions from MOHE that UM must follow. Allowing students to return home during the Hari Raya celebration, and the students were allowed to return to campus for some categories, making UM in standby mode to follow the instruction and prepare for any changes.

MOHE instructed HLI to have an isolation centre for students returning from their hometown and a quarantine centre for close contact and positive cases. The cost of quarantine per person is RM225.00, which consists of accommodation and food. Until August 2021, the total cost reaches RM71,675.00, which is quite high. The cost was covered by UM and, consequently, UM was compelled to curtail funding for other student programmes.

3.5. Developing COVID-19 guideline for HLI

3.5.1. Identification the elements of guideline

The documents review method being used in this study. It is a research technique that entails the examination of a variety of documents to gather information about a specific topic. This method can be used to identify trends, understand the scope of a problem, or gather information about specific topics. The use of this method can help researchers to develop a more complete understanding of a problem and to identify potential solutions.

The documents review method can be used in a variety of ways to inform management of COVID-19. One way that this method can be used is to identify trends in the incidence of COVID-19. By examining data from previous outbreaks, researchers can identify any patterns that may help them to better understand how the virus is spreading and how best to prevent future outbreaks.

Another way that documents review can be used in management of COVID-19 is to gather information about the elements in managing COVID-19 in various business including HLIs. By examining reports from researchers, guidelines from government or international organization, and many more documents related to elements of managing COVID-19, the COVID-19 guideline for HLI being developed.

Developing guideline in managing COVID-19 in HLI will start from finding important elements from document review. These elements obtained from various sources and there are similarities of elements in some of those sources. Table 3.2 describes the source type of documents and number of documents being reviewed.

Table 3.2: Source type and number of documents reviewed

Source Type	Example	Total Number of Document
Scholarly Articles	Hashim, J. H., Adman, M. A., Hashim, Z., Mohd Radi, M. F., & Kwan, S. C. (2021). COVID-19 Epidemic in Malaysia: Epidemic Progression, Challenges, and Response [Review]. <i>Frontiers in Public Health</i> , 9.	20
Government Information/Guidelines	<i>Kementerian Pengajian Tinggi, Malaysia. 2020. Pengendalian Aktiviti Akademik Di Kampus Institusi Pendidikan Tinggi Semasa dan Pasca Perintah Kawalan Pergerakan</i>	8
HLI Document From their websites	UKM. (2020). <i>Arahan Mengenai Aktiviti Dan Perjalanan Ke Luar Negara Oleh Warga Universiti Kebangsaan Malaysia (UKM)</i> .	20
Media Articles	Patho Rohman, M. A., & Halid, S. (2020). 53,000 pelajar IPT mula pulang Isnin ini. <i>Berita Harian</i> .	9
Reports & Papers	ILO. (2020). <i>Prevention and Mitigation of COVID-19 at Work: Action Checklist</i> .	4

3.6. Validation of COVID-19 guideline in University of Malaya

Validation of COVID-19 guideline in UM has been done during presentation to UM management in OSHE Steering Meeting No.2/2020 on Jun 18, 2020, based on Prevention and Mitigation of COVID-19 at Work: Action Checklist published by International Labour Organization (ILO). The taskforce did the assessment based on the checklist and present it to UM top management. In addition, the presentation has been made to all RCs representatives during the OSHE Central meeting on June 30, 2020. Since the checklist just focused on workplace and lack of some aspects in HLI, five more elements have been added to ensure the guideline cover all stakeholders and aspects.

3.6.1. Confidentiality of data and strategies

The confidentiality of data and strategies for managing COVID-19 in universities is of paramount importance. The outbreak of the pandemic has resulted in a significant amount of data being generated which needs to be managed effectively to protect the privacy of individuals and to prevent the spread of the disease. There are a few measures that can be taken to protect the privacy of data, including restricting access to it, and ensuring that it is appropriately secured.

It is important to ensure that data is properly secured to prevent unauthorized access and dissemination. Patient data could be used to identify and track the spread of the pandemic. This information could then be used for marketing purposes or to target individuals with health-related advertisements. If a patient's identity got out by accident, it could lead to discrimination or other harm and a breach of confidentiality.

While it is important to protect the confidentiality of data, there are also circumstances in which this may not be possible. For example, if a patient's identity is required for treatment or if it is necessary to investigate the spread of COVID-19. In these cases, healthcare providers may have to disclose a patient's identity to carry out these activities. However, they should take measures to protect the privacy of this information, including using secure storage facilities and ensuring that individuals who have access to this information are aware of confidentiality policies and procedures.

3.6.2. Safety precautions during validating guidelines

The safety aspect of conducting validation of guidelines during COVID-19 is of utmost importance. The process of guideline validation requires the collection of confidential data from a variety of sources, which can pose a risk to the safety of those involved. During the validation process, it's important to take care of safety so that everyone stays safe.

A precautionary measure that should be taken during guideline validation is the use of a secure data collection platform. This platform will ensure that all confidential data is securely collected and protected from unauthorised access. Those who work on guideline validation will be able to protect the privacy of their participants if they use a secure data collection platform.

It is also important to take precautions during the validation process to ensure the safety of those who will be using the guidelines if it is being done physically. For example, it is recommended that individuals who will be using the guidelines be screened for exposure to COVID-19. This screening will help ensure that those involved in guideline validation are not at risk of becoming infected with the virus. In addition, it is important to ensure that the guidelines are being used in a safe and effective manner. This can be done by performing quality assurance reviews of the guidelines. Reviews of quality assurance will help make sure that the rules are being followed correctly and that they are getting the results that are wanted.

Overall, it is important to take precautions during guideline validation to protect the safety of all involved. By using a secure data collection platform, screening for exposure to COVID-19, and performing quality assurance reviews, individuals will be able to ensure that the guidelines are safe and effective.

CHAPTER 4: RESULTS AND DISCUSSION

4.1. Statistic of COVID-19 in UM

Statistics on COVID-19 in UM were managed by OSHE as the secretariat. Staff and students who have found positive or close contact are required to report to OSHE through their representative at RC. Data has been collected since the outbreak in Malaysia. Data is reported to the UM COVID-19 Management Committee, MOHE, and the campus community. The data is used to plan for measures to be taken and respond to what the committee should do. The statistics of the positive case for staff and students until May 2022 are presented and discussed below:

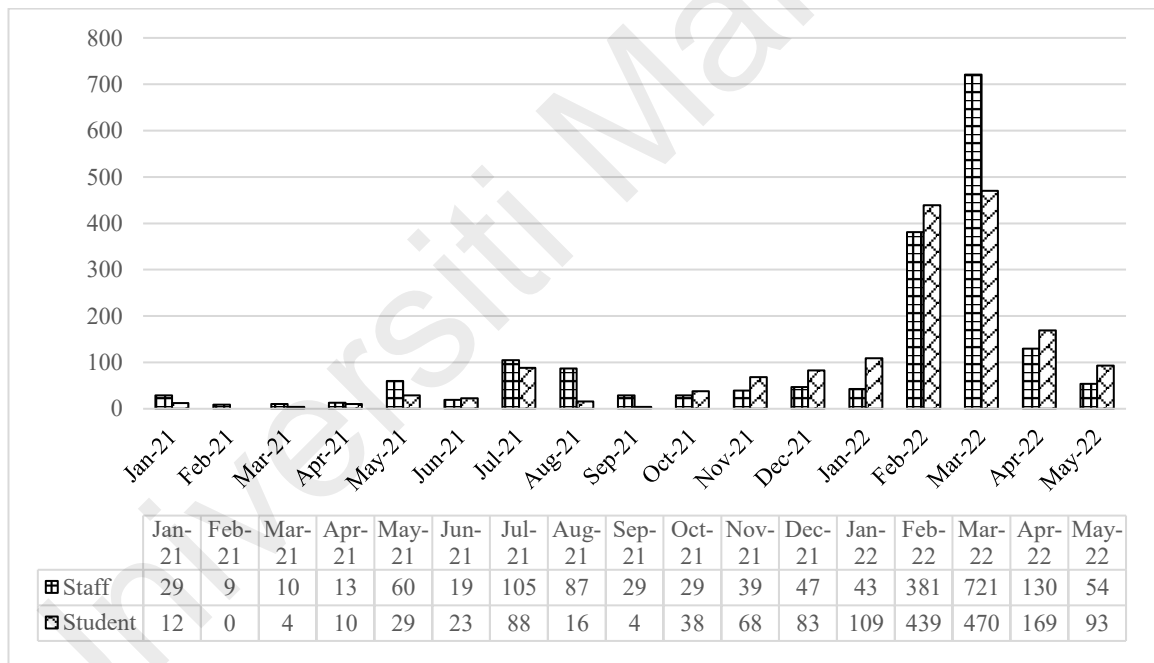


Figure 4.1: Statistic of UM staff and students infected by COVID-19

From Figure 4.1, cases in 2021 for staff were only 429, while students had 375 cases. However, in 2022, the number of cases for staff (721) and students (470) increased in March 2022, bringing the total for staff until May 2022 to 1,329 and 1,280 cases for students. This trend is the same as the national trend, as we can see in Figure 4.2. This proves that the case happened for staff and students following the national trend.



Figure 4.2: National statistic of person infected by COVID-19

Source: <https://covidnow.moh.gov.my/cases/>

Out of a total of 3,460 cases that happened in UM, five casualties were reported, which involved four staff and one student. All of them have comorbidity, and the case happened in 2021. The source of infection for all cases is unknown and it may come from the community. Only 2% of staff and students reported infection at stage 3 and above, while other cases were in categories 1 and 2 of infection. The UM COVID-19 Management Committee always follows up on all cases through a representative from each RC.

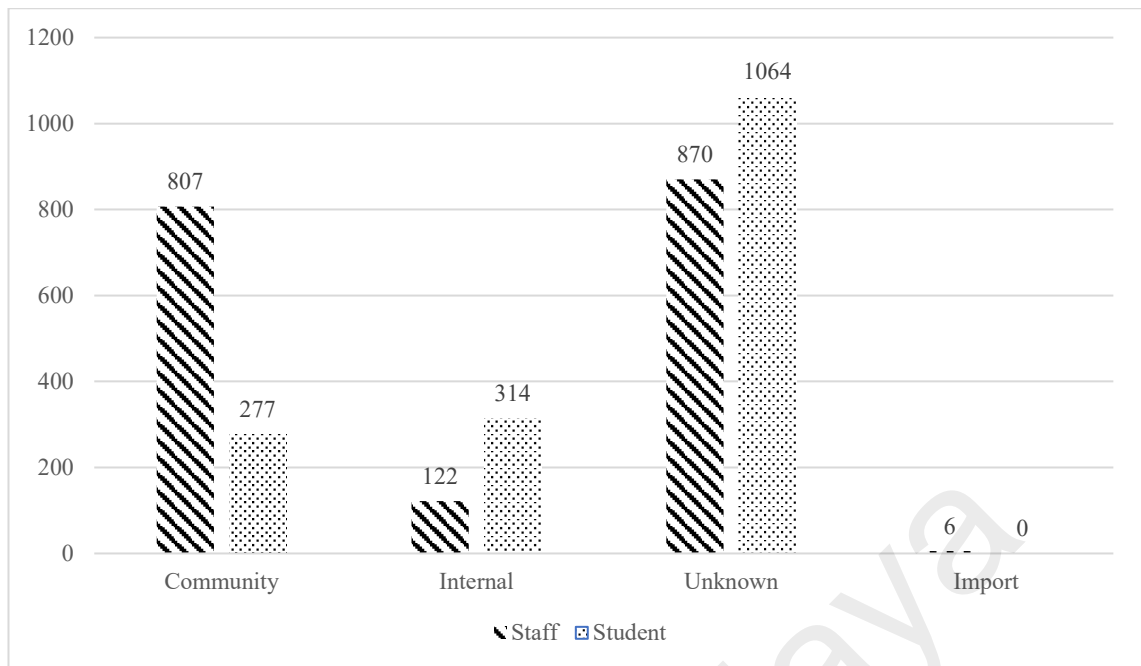


Figure 4.3: Source of infection for UM staff and students infected by COVID-19

Figure 4.3 shows that most of the cases got their infection from an unknown source or sporadic cases. Staff tend to get infections from their family members, friends, and community more than students. The internal case for students is higher than staff since they share facilities and a tendency to do activities together outside the campus. Internal infection among staff due to violation of SOPs in the office, such as not wearing the mask, no physical distancing, and attending to the office despite having symptoms.

4.2. Personnel to use the COVID-19 management guideline

This guidance is intended for administrators of HLI institutions in the public and private sectors. Top management of HLI institutions (e.g., vice-chancellors, deans, provosts) creates rules and procedures, establishes educational goals and standards, and oversees programming.

This guideline will assist HLI and its partners in understanding how to avoid the spread of COVID-19 among students and staff. It also intends to enable HLI to react promptly if a case is detected in the HLI or if the disease spreads inside the HLI's community. The

guidance gives ideas to help administrators plan for the continuity of teaching, learning, and research in the case of a community-wide COVID-19 outbreak and deal with issues related to stigma.

4.3. Procedures to use the COVID-19 management guideline

In order to use this guideline, the user should consider following the steps below:

(1) Top management of HLI needs to appoint a team comprised of key responsibility centres such as the Academic office, Human Resources office, Student Affairs office, Legal Unit, OSHE, Maintenance office, and Security.

(2) Brief and train the team on the overall guideline.

Once the team has been set up, briefing should be done on every aspect of the guidelines. It is essential that the briefing be clear, concise, and thorough. First, provide an overview of the guidelines and their purpose. Next, give a brief explanation of how to use the guidelines. Finally, ensure that everyone on the team is aware of the guidelines and how to use them.

(3) Complete the guidelines and record the check result.

A team member should be designated to be responsible for recording the results according to the portfolio. This individual can then ensure that all checks are recorded and tracked regularly. Finally, the team should review the results and make sure that they are accurate. If there are any changes or updates to the guidelines, the team should update their records accordingly.

(4) Determine who should take the action and when.

The findings of the report should be used to determine who should take the action and when. The report should also include a plan of action and a timeline. The plan of action should be designed to address the findings of the report, and the timeline should be based on the urgency of the findings. If the findings are

urgent, action should be taken as soon as possible. If the findings are not urgent, action should be taken based on the timeline determined in the plan of action. The plan of action should also include a list of who will be responsible for taking the action and how they will be held accountable for their actions. Finally, a review process should be put in place to make sure that the action taken is effective and meets the needs of the population.

- (5) Right after the discussion, make plans for how the changes will be put into place and give them to management.

It is important to have a plan for implementing change because it can be difficult to adapt to new procedures. Employees may feel lost or uncomfortable when their jobs are changed, and they may not be able to understand or follow the new instructions. A plan can help to minimize the disruption caused by the changes and ensure that they are successful. And it is up to management to decide how to implement them, considering the effect on cost, human resources, legislation, and time.

4.4. COVID-19 management guideline

Listed below are elements that have been identified to be in the guideline:

- (1) Develop management's commitment statement

Developing a management statement on reducing the risk of COVID-19 is an important step for businesses as they work to protect their employees and customers. By outlining the policies and procedures that will be put in place, employees can be trained on how to identify and respond to cases of the virus, and company resources can be mobilized should an outbreak occur.

- (2) Develop a preparedness and response plan on mitigation and prevention of COVID-19 in campus

It is essential to have standard operating procedures (SOP) for mitigation and control to guarantee that there are rules or processes for all parties to follow.

(3) Develop information-sharing systems with health authorities

To ease the process and refer any case or issue, it is important to have a good connection with the health authorities which in this case District Health Office.

(4) Establish a method to provide the campus community with accurate, up-to-date information about the COVID-19 situation, with reference to information released by national or local health authorities.

Important information should be presented to the campus community in a style that is user-friendly and easily comprehended by all.

(5) Map the hazards of all operations and covering all jobs.

Hazards assessment should be done in all types of work and propose control measures for the hazards.

(6) Integrate safety and health into your contingency and business continuity plan

The business continuity plan is developed to ensure HLI operation keep on open under extraordinary conditions due to the pandemic and the plan should be communicated to all stakeholders.

(7) Encourage teleworking for non-critical staff to minimize the spreading of COVID-19 in your workplace.

Teleworking should be implemented whenever possible because it is an effective preventative tool, particularly for high-risk employees (staff with chronic disease, elder staff).

(8) If teleworking is not feasible introduce shifts or rotation of day to work on site to avoid large concentrations of staff in the facilities.

Implementation of shift work or rotation of day will be good to reduce the risk of internal infection.

- (9) Develop a plan on COVID-19 case management for confirmed and suspected cases

SOP on managing confirmed and suspected cases should be in place and that includes among others reporting, monitoring, and disinfection in line with the national guidelines.

- (10) In line with national standards, expand access to paid sick leave, sickness benefits, and parental/care leave and inform all staff.

To follow up with national standards on sick leaves and any other related to leaves once staff has contracted COVID-19.

- (11) Establish a monitoring and evaluation mechanism of the COVID-19 prevention strategies and plans.

The prevention strategies and plans should be reviewed on a regular basis to ensure their continued relevance.

- (12) Assess the risk of potential interaction among stakeholders

Assess the possibility for interaction with workers, students, contractors, and visitors in the workplace, as well as workplace contamination, and take preventative measures. Risk assessment should be done covering all aspects of the activities in the campus.

- (13) Train stakeholders in campus

Stakeholders such as staff, students and contractors should be trained to act in case of COVID-19 infection and train on the correct use of PPE.

- (14) Inform stakeholders that each has a right to remove from campus situation that poses imminent and danger for life or health

Based on national law, the stakeholders can remove themselves from any situation that they might think dangerous to them.

(15) Limiting contact of transportation workers with passengers

Drivers with contact to passengers need to be given PPE to reduce contact with passengers.

(16) Travel should be avoided if not essential.

A non-essential travel should be postponed.

(17) Maintain regular communication with stakeholders

Communication should be maintained with sick stakeholders and their families as well as the staff who are teleworking and students having online classes in their hometown.

(18) Assist staff and students to manage any emerging psychosocial risks

Develop a psychosocial support to ensure the mental health of all involved is in good condition.

(19) Ensure physical distancing of at least 1 metre in all activities

Organize work, class, and laboratory work to enable at least 1 meter of physical distance from other persons or a greater distance as prescribed by the appropriate responsible authority.

(20) Avoid face-to-face meetings and class

Giving preference to virtual meetings and classes.

(21) Ensure hand wash facility or sanitizers are ready

Provide adequate and easily available locations where staff, students, and visitors can wash their hands with soap and water, disinfect their hands using hand sanitizers, and foster a culture of hand washing.

(22) Put sanitizing hand rub dispensers in prominent places around the workplace and make sure these dispensers are regularly refilled.

Hand rub sanitizer should be put in prominent places and the building owner must ensure the dispenser are well maintained.

(23) Promote a culture of routine disinfectant wiping of desks and workstations, doorknobs, telephones, keyboards, and working devices, and disinfect common areas, including restrooms, on a regular basis.

Disinfection and cleaning procedures from MOH should be provided to ensure all locations are clean.

(24) Improve exhaust ventilation

Guideline from the Department of Occupational Safety and Health Malaysia should be disseminated and followed by all RCs.

(25) Promote and communicate good respiratory hygiene at the campus

A promotional poster or procedure on covering your mouth and nose with your bent elbow or tissue when you cough or sneeze.

(26) Ensure social distance at the workplace and remain out of “congregate settings” as much as possible.

The WHO has been recommending that people maintain social distance from others to help prevent the spread of the disease. This means avoiding close contact with people outside of your household and remaining out of congregated settings as much as possible.

(27) Provide appropriate facemasks and make available paper tissues at campus

Facemask should be distributed to staff.

(28) Encourage staff and students who have symptom to not coming to the campus

Staff and students should make aware of the guidelines and health screening should be done before entering campus.

(29) Advise staff and students to call nearest healthcare provider if developing serious symptom

This also should be included in the guidelines and disseminate to all stakeholders

(30) Arrange isolation location and quarantine facilities

Isolation room or space should be made ready in every RCs and quarantine facilities for students should be prepared.

(31) On campus dining/restaurants

Ensure staff and students inside campus always have meals either being supplied or ensuring the cafeteria is open.

(32) International students and staff

To always update with current requirements and directive on international students and staff.

(33) Demographic data of students and staff

Data of staff and students should be updated regularly, and the information should be shared with the committee for further planning.

(34) Managing Donors

Donors as one of the stakeholders also need to be cared for. The university must establish a fund to which contributors can contribute. Donors also provide non-financial contributions, and universities must be prepared to construct facilities to accept them.

(35) Review of Academic Calendar

There are a few reasons why HLIs have had to make changes to their academic calendars. One of the main issues is that many classes have had to be cancelled or moved. HLIs also need to give decisions on the method of teaching and other activities related to the academic calendar.

(36) Managing Research Activities

Managing research activities during COVID-19 will be a challenging but necessary task. It is essential to approach the administration of research students with prudence and perspective. HLIs should pay attention to the side

of caution, restricting the amount and type of work that students can perform and ensuring that all activities are properly authorised and supervised.

Details checklist can be found in Appendix A.

4.5. Validation of guideline in UM

The first validation of the guideline has been presented to UM Management on June 18, 2020, during the OSHE Steering Committee meeting, based on the Prevention and Mitigation of COVID-19 at Work: Action Checklist published by the International Labour Organization (ILO). The meeting was chaired by the Vice-Chancellor and attended by UM top management, the Head of Legal Unit, the President of the Executive Staff Committee, the President of the Support Staff Union, and UM Student Health Clinic representative. Among the agenda was the COVID-19 status of compliance in UM in general and all RCs.

The assessment of the checklist is being done by OSHE, Human Resources Department, Student Affairs Division, and the UM Health Clinic. The checklists were emailed to the respective departments to get their feedback on the responses that had been prepared by their offices. Evidence of each action taken is also being collected by OSHE as the secretariat. Following that, OSHE created a presentation that serves as a summary of the checklist assessment and is included in Appendix B.

The assessment was presented to the committee by the Director of OSHE. Based on 30 checklists, UM has taken 29 actions, which brings the total to 97%. The summary of the overall assessment is as in Figure 4.4. From the presentation, the management agreed on the validation, and the task force's action on prevention and mitigation has been approved by management. The Vice-chancellor was then informed that the action taken

was sufficient and committed to the planning that had been done. The Vice-Chancellor also told RCs to get ready for the isolation room and instead use the sickbay.



Figure 4.4: Validation of guidelines on UM

The presentation was then discussed in OSHE central meetings. This meeting was attended by representatives from each RC and discussed all matters related to occupational safety and health at their workplace. The Director of OSHE, as the chairman of the meeting, has presented the findings of the assessment to all members. The people who went to the meeting also knew what they needed to do and can use the checklist in their own RCs.

Since the checklist focused on the workplace, some elements have been added to ensure it covers the HLI setup. These extra parts have been checked with other HLIs by looking at their guidelines and any other information that was available.

Table 4.1 explains the additional elements being added to the checklist and the availability of the elements in other HLIs.

Table 4.1: Comparison of additional elements with other HLIs

Elements	Universiti Sains Malaysia (USM)	Universiti Teknologi Malaysia (UTM)	Universiti Putra Malaysia (UPM)
On campus dining/ restaurants	Food outlets will only sell readily packed food	Take aways allowed and convenience store allowed to open	Restaurant & Food Outlets (take away) and Food/Goods Delivery Services
International students and staff	In line with government directive on international staff and students	In line with government directive on international staff and students	In line with government directive on international staff and students
Demographic data of students and staff	Staff and students were required to report to respective superior/ Principal	Staff and students were required to report to respective superior/ Principal	Staff and students were required to report to respective superior/ Principal
Managing Donors	Set up COVID-19 Special Fund	Tabung Khas COVID-19 UTM were set up	Dana Sumbangan Warga UPM – Tabung UPM Prihatin
Review of Academic Calendar	Mid-semester break shifted earlier	Shifted mid-semester break and gave extra holiday due to MCO	Adjustment of academic calendar
Managing Research Activities	Guideline on research activities published on May 11, 2020.	Guideline on research activities published on May 15, 2020.	Guideline on research activities published on May 15, 2020.

From table 4.1, it is stated that during the start of COVID-19, food supply should be continuous to ensure staff and students on campus can get the supply without movement off campus. In the UM case, it was required that food premises be open and dry food supplies were given to students. UM also in line with government directives on management of international students and staff. UM through the Student Affairs Division always keeps updated information on student demographics while staff through the Human Resources Division. UM also set up a special fund named Tabung COVID-19 UM to help the community affected by COVID-19, especially for students on campus. Deputy Vice-Chancellor (Academic & International) of UM in her statement on March 20, 2020 regarding COVID-19: Way Forward for Teaching and Learning (T&L)

informed that the adjustment of Academic Calendar for 2019/2020 session by extending the mid semester break to April 26, 2020. Guidelines on managing research activities in UM have been published on May 17, 2020 to cater to all types of research. The guidelines consist of hygiene precautions, operations, daily health declaration, cleaning, and disinfection, avoiding discussion and practising social distancing. In conclusion, UM also added all the elements that have been added to manage COVID-19 in HLI. Therefore, these elements are also being added as part of the guidelines.

Universiti Malaya

CHAPTER 5: CONCLUSION AND RECOMMENDATION

5.1. Conclusion

The outbreak of COVID-19 has presented a unique challenge to universities around the world. As institutions of higher learning, universities are typically places where people from all over the globe come together to live, learn, and work. This makes HLIs particularly vulnerable to the spread of infectious diseases. In response to the outbreak of COVID-19, HLIs are in need of developing management guidelines for the virus. Therefore, the objectives of this study are achievable by conducting;

- (1) Developing guidelines to manage COVID-19 in HLIs requires identification of components and elements to ensure all stakeholders are covered and respective activities. Several documents were reviewed, ranging from HLIs guidelines, international organizations' guidelines, and many more.
- (2) From the elements identified, a guideline consisting of five main strategies was developed. The strategies cover (i) policy, planning and organizing, (ii) risk assessment, management and communication, (iii) prevention and mitigation measures, (iv) arrangements for suspected and confirmed COVID-19 cases, and (v) providing services to staff, students and visitors.
- (3) The guideline is then validated with the case study selected, which is UM. The validation found that almost all elements of the checklist had been covered.

In order to be successful in managing COVID-19 in HLIs, each party involved needs to play a role and move promptly according to strategies in order to ensure that the virus can be contained. Although developing COVID-19 management guidelines is a complex task, universities need to take this step in order to protect their members of the community and ensure the safety of their students. By taking these steps, universities can help prevent the spread of the virus and ensure that their students have a safe and healthy learning

environment. It is also important for the guidelines to be reviewed from time to time to ensure that they are relevant to current conditions and instructions.

5.2. Recommendation for future work

The guidelines are proposed to ensure that the management of COVID-19 at the HLIs is well-organized, and that the institution can lessen its impact on COVID-19. Recommendations for future work are to ensure these proposed strategies and guidelines are practically implemented in managing COVID-19 or any other pandemic in HLIs. In order to achieve this, the future recommendations are to:

- (1) Distribute the proposed strategies and guideline to other HLIs in Malaysia and validate it at their respective institutions.
- (2) Understand the nature of each pandemic and its transmission. The strategies then need to be simulated to other types of pandemics that has been occurred before to validate it.
- (3) Study the effectiveness of the guideline in private HLI since the assessments that has been done only focus on public HLIs.
- (4) Include other elements such as vocational education methods, cyber security facilities and healthcare studies plan.

REFERENCES

- Abdullah, N. H. (2014). *What is Crisis Preparedness and Response Centre (CPRC)?* Retrieved 11 June 2022 from <https://kpkesehatan.com/2014/08/04/crisis-preparedness-and-response-centre-cprc/>
- Abdullah, N. H. (2020). *Tindakan KKM bagi pengesanan kontak (contact tracing) kepada kes pertama positif Novel Coronavirus di negara Singapura pada 24 Januari 2020*
https://www.moh.gov.my/index.php/database_stores/store_view_page/21/1300
- Ahmad, D. (2020, 4 February 2020). *Situasi terkini jangkitan 2019-nCoV dan pengesanan kes baharu di Malaysia*
https://www.penerangan.gov.my/japenv2/wp-content/uploads/2020/02/Kenyataan-Akhbar-KPK-Situasi-2019-nCoV-4-FEBRUARI-2020_edited-2.pdf
- Ahmad, N. A., Chong, Z. L., Abd Rahman, S., Ghazali, M. H., Nadzari, E. E., Zakiman, Z., Redzuan, S., Md Taib, S., Kassim, M. S. A., & Wan Mohamed Noor, W. N. (2020). First local transmission cluster of COVID-19 in Malaysia: public health response. *International Journal of Travel Medicine and Global Health*, 8(3), 124-130.
- Ang, Z. Y., Cheah, K. Y., Shakirah, M. S., Fun, W. H., Anis-Syakira, J., Kong, Y. L., & Sararaks, S. (2021). Malaysia's Health Systems Response to COVID-19. *Int J Environ Res Public Health*, 18(21). <https://doi.org/10.3390/ijerph182111109>
- Apedo-Amah, M. C., Avdiu, B., Cirera, X., Cruz, M., Davies, E., Grover, A., Iacovone, L., Kilinc, U., Medvedev, D., Maduko, F. O., Poupakis, S., Torres, J., & Tran, T. T. (2020). Unmasking the Impact of COVID-19 on Businesses : Firm Level Evidence from Across the World. *Policy Research Working Paper*.
<https://openknowledge.worldbank.org/handle/10986/34626>
- Azman, N., & Abdullah, D. (2020). A CRITICAL ANALYSIS OF MALAYSIAN HIGHER EDUCATION INSTITUTIONS' RESPONSE TOWARDS COVID-19: SUSTAINING ACADEMIC PROGRAM DELIVERY. *Journal of Sustainability Science and Management*, 16, 70-96.
<https://doi.org/10.46754/jssm.2021.01.008>
- Baker, M. G., Kvalsvig, A., & Verrall, A. J. (2020). New Zealand's COVID-19 elimination strategy. *The Medical journal of Australia*, 213(5), 198-200.e191.
<https://doi.org/10.5694/mja2.50735>
- Barker, A. (2020). *Coronavirus COVID-19 cases spiked across Asia after a mass gathering in Malaysia. This is how it caught the countries by surprise.* ABC News.
<https://www.abc.net.au/news/2020-03-19/coronavirus-spread-from-malaysian-event-to-multiple-countries/12066092>
- Bell, B. P., Damon, I. K., Jernigan, D. B., Kenyon, T. A., Nichol, S. T., O'Connor, J. P., & Tappero, J. W. (2016). *Overview, Control Strategies, and Lessons Learned in the CDC Response to the 2014–2016 Ebola Epidemic.*

- Bloomberg. (2020). *How Walmart can step up during the coronavirus outbreak*. Retrieved 10 June 2022 from <https://www.digitalcommerce360.com/2020/03/18/how-walmart-can-step-up-during-the-coronavirus-outbreak/>
- Chakamba, R. (2020). *How Senegal has set the standard on COVID-19*. <https://www.devex.com/news/how-senegal-has-set-the-standard-on-covid-19-98266>
- Chen, Q., Rodewald, L., Lai, S., & Gao, G. F. (2021). Rapid and sustained containment of covid-19 is achievable and worthwhile: implications for pandemic response. *BMJ (Clinical research ed.)*, 375, e066169-e066169. <https://doi.org/10.1136/BMJ-2021-066169>
- CodeBlue. (2020). *The Guardian Highlights How Malaysia Curbed Covid-19*. Retrieved 31 May 2022 from <https://codeblue.galencentre.org/2020/06/15/the-guardian-highlights-how-malaysia-curbed-covid-19/>
- Delgado-Zapero, Á., & Strojny, J. (2020). STAKEHOLDERS MANAGEMENT IN A UNIVERSITY: ANALYSIS OF THEIR IMPORTANCE WITH AHP. *Modern Management Review*, XXV. <https://doi.org/10.7862/rz.2020.mmr.12>
- FedEx. (2020). *FedEx Stands Up Special Operation to Help Fight COVID-19*. <https://newsroom.fedex.com/newsroom/fedex-stands-up-special-operation-to-help-fight-covid-19/>
- Ge, H., Wang, X., Yuan, X., Xiao, G., Wang, C., Deng, T., Yuan, Q., & Xiao, X. (2020). The epidemiology and clinical information about COVID-19. *Eur J Clin Microbiol Infect Dis*, 39(6), 1011-1019. <https://doi.org/10.1007/s10096-020-03874-z>
- Goundar, P., & Sharma, S. (2021). Pacific Universities' Leadership during the COVID-19 Pandemic- a Case Study of Fiji and New Zealand. *Public Administration Research*, 11, 1. <https://doi.org/10.5539/par.v11n1p1>
- Hashim, J. H., Adman, M. A., Hashim, Z., Mohd Radi, M. F., & Kwan, S. C. (2021). COVID-19 Epidemic in Malaysia: Epidemic Progression, Challenges, and Response [Review]. *Frontiers in Public Health*, 9. <https://doi.org/10.3389/fpubh.2021.560592>
- ILO. (2020). *Prevention and Mitigation of COVID-19 at Work: Action Checklist*. https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/instructionalmaterial/wcms_741813.pdf
- Izumi, T., Shaw, R., & Zhang, H. (2021). *Universities' Preparedness and Response Towards Multi-Hazards: COVID-19, Natural, and Human Induced Hazards*.
- Jasmis, J., Aziz, A. A., Hasrol Jono, M. N. H., Zamzuri, Z. F., & Elias, S. J. (2021). An Analysis Model for An Integrated Student Activities Management System for Higher Education during RMO/CMCO/PASCA COVID-19 Period in Malaysia. *Procedia Computer Science*, 179, 798-803. <https://doi.org/https://doi.org/10.1016/j.procs.2021.01.067>

- Jayaraj, V. J., Rampal, S., Ng, C. W., & Chong, D. W. Q. (2021). The Epidemiology of COVID-19 in Malaysia. *Lancet Reg Health West Pac*, 17, 100295. <https://doi.org/10.1016/j.lanwpc.2021.100295>
- Junrong, L. (2021, 2021/12/15). The Impact of Covid 19 on the American Airlines Industry. Proceedings of the 2021 3rd International Conference on Economic Management and Cultural Industry (ICEMCI 2021),
- Kamisan, M., & Abu Bakar, A. P. D. M. S. (2021). The Usage Patterns of Social Media among University Students in Malaysia During the Movement Control Order (MCO). *International Journal of Academic Research in Business and Social Sciences*, 11. <https://doi.org/10.6007/IJARBS/v11-i9/10971>
- Khan, A., Nafisah, S. B., Mzahim, B., Aleid, B., Almatrafi, D., Assiri, A., & Jokhdar, H. (2021). MERS-CoV in the COVID-19 era: update from Saudi Arabia, 2019-2020. *East Mediterr Health J*, 27(11), 1109-1113. <https://doi.org/10.26719/emhj.21.049>
- Marshall, S. (2018). Internal and External Stakeholders in Higher Education. In (pp. 77-102). https://doi.org/10.1007/978-981-10-7620-6_4
- Mat Ruzlin, A. N., Chen, X. W., Yunus, R. M., Samsudin, E. Z., Selamat, M. I., & Ismail, Z. (2021). Promoting Mental Health During the COVID-19 Pandemic: A Hybrid, Innovative Approach in Malaysia [Community Case Study]. *Frontiers in Public Health*, 9. <https://doi.org/10.3389/fpubh.2021.747953>
- MIDA. (2021). *Impact of COVID-19 on the Malaysian Economy and the Mitigation Measures*. Retrieved 10 June 2022 from <https://www.mida.gov.my/why-malaysia/business-during-covid-19/impact-of-covid-19-on-the-malaysian-economy-and-the-mitigation-measures/>
- MOHE. (2020a). *Garis Panduan Pengendalian Isu-isu Berhubung Penularan Wabak COVID-19 bagi Universiti Awam (UA) dan Institusi Pengajian Tinggi Swasta (IPTS) Mulai 18 Mac hingga 1 Mac 2020*. https://www.apu.edu.my/sites/default/files/surat_pemakluman_jpt_garis_panduan_ipta_dan_ipts_covid-19.pdf
- MOHE. (2020b). *Kemasukan Pelajar Baharu ke Institusi Pengajian Tinggi Awam (IPTA) Tahun Ini Bagi Sesi Akademik 2020/2021*. <http://www.mohe.gov.my/en/media-mohe/press-statement/1070-kemasukan-pelajar-baharu-ke-institusipengajian-tinggi-awam-ipta-tahun-inibagi-sesi-akademik-2020-2021>.
- MOHE. (2020c, May 20, 2020). *Pengendalian Aktiviti Akademik Di Kampus Institusi Pendidikan Tinggi Semasa dan Pasca Perintah Kawalan Pergerakan* <https://www.mohe.gov.my/hebahan/kenyataan-media/pengendalian-aktiviti-akademik-di-kampus-institusi-pendidikan-tinggi-semasa-dan-pasca-perintah-kawalan-pergerakan>
- MOHE. (2021). *Statistik Pendidikan Tinggi 2021*. Retrieved 20 May 2022 from <https://www.mohe.gov.my/en/download/statistics/2021-1>
- Morens, D. M., & Fauci, A. S. (2007). The 1918 Influenza Pandemic: Insights for the 21st Century. *The Journal of Infectious Diseases*, 195(7), 1018-1028. <https://doi.org/10.1086/511989>

- Morshed, S. A., Khan, S. S., Tanvir, R. B., & Nur, S. (2021). Impact of COVID-19 pandemic on ride-hailing services based on large-scale Twitter data analysis. *Journal of Urban Management*, 10(2), 155-165. <https://doi.org/10.1016/j.jum.2021.03.002>
- Or, Z., Gandré, C., Durand Zaleski, I., & Steffen, M. (2022). France's response to the Covid-19 pandemic: between a rock and a hard place. *Health Economics, Policy and Law*, 17(1), 14-26. <https://doi.org/10.1017/S1744133121000165>
- Patho Rohman, M. A., & Halid, S. (2020). 53,000 pelajar IPT mula pulang Isnin ini. *Berita Harian*. <https://www.bharian.com.my/berita/nasional/2020/04/681114/53000-pelajar-ipt-mula-pulang-isnin-ini>
- Rampal, S., Rampal, L., Jayaraj, V. J., Pramanick, A., Choolani, M., Liew, B. S., Gosavi, A., & Arj-Ong Vallibhakara, S. (2021). The epidemiology of COVID-19 in ten Southeast Asian countries. *Med J Malaysia*, 76(6), 783-791.
- Star, T. (2021). Daily economic losses from MCO around RM750m, says CGS-CIMB Research. *The Star*. <https://www.thestar.com.my/business/business-news/2021/01/12/daily-economic-losses-from-mco-around-rm750m-cgs-cimb-research-says>
- Stracke, C. M., Burgos, D., Santos-Hermosa, G., Bozkurt, A., Sharma, R. C., Swiatek Cassafieres, C., dos Santos, A. I., Mason, J., Ossiannilsson, E., Shon, J. G., Wan, M., Obiageli Agbu, J.-F., Farrow, R., Karakaya, Ö., Nerantzi, C., Ramírez-Montoya, M. S., Conole, G., Cox, G., & Truong, V. (2022). Responding to the Initial Challenge of the COVID-19 Pandemic: Analysis of International Responses and Impact in School and Higher Education. *Sustainability*, 14(3), 1876. <https://www.mdpi.com/2071-1050/14/3/1876>
- Sundarasan, S., Chinna, K., Kamaludin, K., Nurunnabi, M., Baloch, G. M., Khoshaim, H. B., Hossain, S. F. A., & Sukayt, A. (2020). Psychological Impact of COVID-19 and Lockdown among University Students in Malaysia: Implications and Policy Recommendations. *International Journal of Environmental Research and Public Health*, 17(17), 6206. <https://doi.org/10.3390/ijerph17176206>
- Tan, K.-K., Tan, J.-Y., Wong, J.-E., Teoh, B.-T., Tiong, V., Abd-Jamil, J., Nor'e, S.-S., Khor, C.-S., Johari, J., Yaacob, C.-N., Zulkifli, M.-M.-S., CheMatSeri, A., Mahfodz, N.-H., Azizan, N. S., & AbuBakar, S. (2021). Emergence of B.1.524(G) SARS-CoV-2 in Malaysia during the third COVID-19 epidemic wave. *Scientific Reports*, 11(1), 22105. <https://doi.org/10.1038/s41598-021-01223-4>
- Times, N. S. (2020). [Breaking] 3 coronavirus cases confirmed in Johor Baru. <https://www.nst.com.my/news/nation/2020/01/559563/breaking-3-coronavirus-cases-confirmed-johor-baru>
- Toronto, C. o. (2020). *COVID-19 Guidance for Post-Secondary Institutions*. <https://www.toronto.ca/wp-content/uploads/2020/08/8d95-COVID-19-Guidance-for-Post-Secondary-Institutions.pdf>

- UKM. (2020). *Arahan Mengenai Aktiviti Dan Perjalanan Ke Luar Negara Oleh Warga Universiti Kebangsaan Malaysia* (UKM). <https://www.facebook.com/UKMOfficial/posts/2874867169236688:0>
- USM. (2020). *COVID-19: SOCIAL RESPONSIBILITY, PREVENTIVE POLICY AND CURRENT DEVELOPMENTS AT UNIVERSITI SAINS MALAYSIA*. <https://news.usm.my/index.php/english-news/6485-covid-19-social-responsibility-preventive-policy-and-current-developments-at-universiti-sains-malaysia>
- UUM. (2020a). *THE COVID-19 ASSISTANCE FUND PROVIDES PROMPT HELP TO STUDENTS*. <https://www.uum.edu.my/uum-news-feed/746-the-covid-19-assistance-fund-provides-prompt-help-to-students.html>
- UUM. (2020b). *TRAVEL ADVICE FOR UUM STAFF AND STUDENTS FOR THE UPCOMING SEMESTER BREAK (MAC 2020)*. <https://www.facebook.com/universitiutaramalaysia/photos/a.277243558967632/3949595831732368/?type=3&theater>
- W. Ian Lipkin, C. B., Linda Fried. (2021). *Epidemic, Endemic, Pandemic: What are the Differences?* Retrieved 5 June 2022 from <https://www.publichealth.columbia.edu/public-health-now/news/epidemic-endemic-pandemic-what-are-differences#:~:text=The%20WHO%20defines%20pandemics%2C%20epidemics,as%20opposed%20to%20regional%20epidemics>.
- WHO. (2016, 1 February 2016). *WHO Director-General summarizes the outcome of the Emergency Committee regarding clusters of microcephaly and Guillain-Barré syndrome* <https://www.who.int/news/item/01-02-2016-who-director-general-summarizes-the-outcome-of-the-emergency-committee-regarding-clusters-of-microcephaly-and-guillain-barr%C3%A9-syndrome>
- WHO. (2020a). *COVID-19 global risk communication and community engagement strategy, December 2020 - May 2021: interim guidance, 23 December 2020* CC BY-NC-SA 3.0 IGO). <https://apps.who.int/iris/handle/10665/338057>
- WHO. (2020b). *Report of the WHO-China joint mission on coronavirus disease 2019 (COVID-19)*. <https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf>
- WHO. (2020c). *Strong Preparedness and Leadership for a successful COVID-19 Response in Malaysia*. Retrieved 31 May 2022 from <https://www.who.int/news-room/feature-stories/detail/strong-preparedness-and-leadership-for-a-successful-covid-19-response-in-malaysia>
- WHO. (2020d, 11 March 2020). *WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020* <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>