YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF APPLIED ECONOMICS
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(NAY PYI TAW)

A STUDY ON KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS COVID-19 AMONG GOVERNMENT EMPLOYEES IN NAYPYITAW

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A thesis submitted as partial fulfillment towards the requirement of the degree of Master of Public Administration (MPA)

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This is to certify that this thesis entitled "**A Study on Knowledge, Attitude and Practice towards Covid-19 among Government Employees in Naypyitaw**", submitted in partial fulfilment towards the requirements for the degree of Executive Master of Public Administration (EMPA) has been accepted by the Board of Examiners.

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ABSTRACT

This study was aimed to assess the level of knowledge, attitude and practice related to COVID-19 and was conducted among the selected Government's Employees in Naypyitaw, between May to November 2022 using pre-structured self-administered questionnaires. A total of 171 eligible respondents, from four different Ministries, participated. As almost all respondents (161 persons) are graduated, most of them got a high general knowledge score regarding description about COVID-19, risk group and mode of transmission of COVID-19 infection. Nearly two-thirds had less positive attitude toward disease condition and coping capacity of institutions, whereas fourth-fifth of the respondents showed positive attitude for the control strategy of Myanmar. Only few participants (twelve persons) responded proper handwashing is not easy due to limited practice and insufficient handwashing facilities. According to the finding, it can be assumed that job, residency type and educational level, mainly influence the knowledge about COVID-19 among respondents. Knowledge about high-risk groups and disease transmission was associated with attitude of worry about COVID-19 infection. Attitude for transmission was also associated with intended practice and coping capacity for preventive activities.

ACKNOWLEDGEMENTS

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LIST OF ABBREVIATIONS

1. CDC = Center for Disease Control and Prevention
2. COVID-19 = Coronavirus Disease 2019
3. FFP2 = Filtering Face Piece" as defined in Europe, Filters at least 94% of airborne particles
4. HCOV = Human Coronavirus
5. FDA = Food and Drug Administration
6. MERS = Middle East respiratory syndrome (MERS)
7. NAAT = Nucleic Acid Amplification Tests
8. N95 = **N:** This is a Respirator Rating Letter Class. It stands for "Non-Oil" meaning that if no oil-based particulates are present, then you can use the mask in the work environment. Other masks ratings are R (resistant to oil for 8 hours) and P (oil proof); **95:** Masks ending in a 95, have a 95 percent efficiency
9. PCR = Polymerase Chain Reaction tests
10. Real-time fluorescence (RT-PCR) = The Real-Time Fluorescent (Real Time Polymerase Chain Reaction) Kit for Detecting SARS -CoV-2 is intended for use by trained clinical laboratory personnel specifically.
11. RNA = Ribonucleic acid (abbreviated RNA) is a nucleic acid present in all living cells that has structural similarities to DNA.
12. SARS-CoV-2 = Severe Acute Respiratory Syndrome Coronavirus 2.
13. UN = United Nations
14. WHO = World Health Organization

CHAPTER I

INTRODUCTION

1.1 Rationale of the Study

World Health Organization declared the outbreak of the novel coronavirus (known as COVID-19) as Public Health Emergency of International Concern on 30 January 2020 and as Pandemic on 11 March 2020. As COVID-19 has seriously endangered the socio-economic life of the human being; many sectors have been damaged and there are lots of consequences. Moreover, to control the infection, old-styled Public Health measures, such as isolation, quarantine, social distancing and community containment, have been widely practiced in every Nations.

New public measures have been enacted for the sake of people and there is resistance to accept such measures as these are against common human behavior of living in society. While preparing for living together with COVID-19 globally, the knowledge, perceptions and practice related to COVID-19 are quite important for future behavior change to contain the disease Pandemic.

Outbreak potential of COVID-19 in Myanmar is high due to being a neighboring country of China and establishing labour migration and cross-border trade not only with China but also with other outbreak countries like Thailand, India, Malaysia and Singapore, etc. On 24th March 2020, Ministry of Health(MOH) announced that there were two confirmed cases in Myanmar and became the last country infected by COVID-19 among ASEAN countries except Laos. (MoHS, 2020) The community's knowledge on the aetiological agent, epidemiological parameters like incubation period, mode of transmission, signs and symptoms and preventive measures are essential in prevention of COVID-19. People should be aware of the natural history of COVID- 19 and the risk behaviours. Host's protective behaviours such as wearing masks, hand hygiene and social distancing are major options to

prevent the infection while no treatment or vaccination is available. Moreover, risk perception of COVID-19 is a main determinant of practicing protective behaviours. Assessing the awareness, perceived risk and personal protective behaviours of each and every individual is crucial to be more effective of current COVID-19 prevention and control activities in this country.

In order to assist the energetic activities of Ministry of Health (MoH) for the control and treatment of COVID-19, Ministry of Home Affairs (specifically General Administrative Department), Ministry of Education (specifically teachers from Basic High/ Middle/ Primary Schools) and Ministry of Social Welfare, Relief and Resettlement have been assigned to enforce preventive measures against COVID-19. Likewise, other government organizations have also been allocated to different perspectives to relieve the consequences of diseases.

The Health Belief Model (HBM) is a popular framework to understand human health behaviors. The HBM construct comprises different domains: perceived severity, perceived susceptibility, perceived benefits, perceived barriers, cues to action and self-efficacy. Perceived severity refers to a person's belief about the seriousness of consequences from infection, while perceived susceptibility refers to their beliefs regarding their vulnerability to infection. In terms of vaccine acceptance, perceived benefits refer to a person's beliefs regarding useful returns from being vaccinated, and perceived barriers are their beliefs about obstacles that stand in their way to being vaccinated. Whereas, the self-efficacy is an individual's belief about his or her ability to do necessary actions to get vaccinated. Finally, cues to action can be defined as extraneous factors that influence a particular health behavior. The HBM model has been used in many studies to understand the response of human being against diseases.

Based on these background information, there is an increasingly needs to understand knowledge, attitude and behavior towards COVID-19 among specific population groups. Relevant comparable information from nearby countries or regional countries have been published widely in peer-reviewed international journals and WHO. In Myanmar, we have limited information from the scientific perspectives on the knowledge, attitude and practice regarding COVID-19. As Public Administrator, if we have sufficient scientific based information on these, we may

apply in the day to day practice and it will support for enacting relevant rules or procedures to control infectious diseases in the future.

1.2 Objective of the Study

The objective of the study is to assess the level of awareness, perception and preparedness activities related to COVID-19 among selected Government's Employee in Naypyitaw.

1.3 Method of the Study

This study is cross-sectional descriptive study done in Naypyitaw. The lists of the government employees from Department of Disaster Management, Department of Social Welfare, General Administrative Department, Basic Education Middle Schools and Military hospital have taken and ID numbers of the employee have chosen using random digit table. The employees who match with random number are requested to participate in the study. If such person did not give consent to participate, they are skipped and replaced by another person. One-hundred and seventy-one participants are selected using this simple random sampling method from the total population of approximately 50,000 government employees from Zabuthiri Township, Naypyitaw. Primary data collection using pre-structure, pre-tested questionnaire has underwent by researcher. Socio-demographic data, knowledge related COVID-19 and practice related COVID-19 are collected using multiple choice questions. Attitude regarding COVID-19 is also assessed by 5 point Linkert's scale. Frequency and cumulative number are calculated using Microsoft Excel. Scoring of KAP is also undergone. The relationship between knowledge, attitude and practice are analyzed using Pearson's Chi-square test.

1.4 Scope and Limitations of the Study

This study aims to find out the knowledge and perception about COVID-19; and day to day practice of the selected government employees during May to November 2022. It is primarily intended to explore Knowledge, Attitude and Practice of key government departments assigned for the COVID-19 education and prevention. So, it cannot explore or compare every government departments in Naypyitaw. Moreover, only 171 respondents have chosen for the interview and it may not represent the whole community in Naypyitaw. To avoid the extreme gap in the

study, DG, DDG or Director level staffs are excluded. So, all the respondents are junior or mid-level staffs.

1.5 Organization of the Study

This thesis is organized into five chapters. Chapter I is introduction and describes the rationale of the study, objective, method of the study and scope& limitation of the study. Chapter II presents literature review regarding general description about COVID-19, high risk groups, symptoms, transmission, prevention, diagnosis and treatment of COVID-19 which are available from World Health Organization, Center of Disease Control and peered review articles. Chapter III describes Overview of COVID-19 Situation in Myanmar in which Myanmar's national preparedness, Control/ containment strategy, Burden of COVID-19 and COVID-19 vaccination information, had been explained. In Chapter IV, survey analysis (in which survey profile, survey design and survey results) has been explained. Chapter V describes Conclusion.

CHAPTER II

LITERATURE REVIEW

In December 2019, health authority from China reported that there was rapid surge of pneumonia patients of unknown causes in Wuhan, the capital city of Hubei province. China notified that most of the early cases were epidemiologically linked to the Huanan seafood wholesale market and investigation revealed an unknown Beta coronavirus was discovered from lower respiratory tract samples of these patients using unbiased next-generation sequencing PCR method.

Since the initial report from China, the disease spread rapidly, and the number of cases increased exponentially. On 13 January 2020, the first case was reported outside mainland China in Thailand, and within months, the disease spread to all the continents except Antarctica. WHO declared COVID-19 as a pandemic on March 11 of 2020 after assessing the situation across all WHO member States.

On the other hand, many communicable diseases have been named after geographical locations in the past, such as the Spanish flu, Middle East respiratory syndrome etc. However, there was the guidance in 2015 avoiding to use geographical locations or groups of people in disease and virus names to prevent social stigma. So, World Health Organization (WHO) recommended 2019-nCoV and 2019-nCoV acute respiratory disease as interim names for the virus and disease in January 2020. Later on, WHO issued the official names COVID-19 and SARS-CoV-2 on 11 February 2020 with COVID-19 being shorthand for "coronavirus disease 2019". In addition, WHO used "the COVID-19 virus" and "the virus responsible for COVID-19" in public communications.

COVID-19, an infectious disease caused by the SARS-CoV-2 virus, is a highly infectious disease that can be fatal. It cannot yet be cured, although certain medications are available to assist control it. Antibiotics aren't effective against viral

infections such as COVID-19. Although the disease can affect any age group, the elderly and patients with comorbidities are at risk for severe disease. Most people infected with the virus will experience mild to moderate respiratory illness and recover without requiring special treatment. However, some will become seriously ill and require medical attention. Older people and those with underlying medical conditions like cardiovascular disease, diabetes, chronic respiratory disease, or cancer are more likely to develop serious illness. Anyone can get sick with COVID-19 and become seriously ill or die at any age.

2.1   SARS-CoV-2 and its variants

2.1.1   SAR-CoV-2

The name, Corona virus, descends from the Latin word "corona" which means crown. The unique appearance of the virus, under an electron microscope as round particles with a rim of projections resembling the solar corona, leads such a name. The Corona Viruses were first discovered from Human in 1965 and they are enveloped, positive-sense, single stranded RNA viruses. Corona virus belongs to the family Corona viridae which is known to produce mild respiratory diseases in humans. Until recent moment, the three major Corona viruses, leading to disease outbreaks, have been detected. The first one was in 2002 as the Severe Acute Respiratory Syndrome Coronavirus (SARS–CoV). It was followed by the Middle East Respiratory Syndrome Coronavirus (MERS–CoV) in 2012. The recent finding has nominated as the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS–CoV2) (Sudipta & Anu, 2020). It appears that coronaviruses have gained a significant place in the history of the twenty-first century. Five of the seven human coronaviruses were discovered in this century. The last three of them inadvertently entered our lives with the prospect of an epidemic, a pandemic, or death (Bulut & Kato, 2020).

The virus, named as 2019–novel Coronavirus (2019–nCoV), had a diameter of 60 to 140 nm with characteristic spikes of 9 to 12 nm when examined under electron microscope. That was similar to the *Coronoviridae* family. Laboratory findings also stated that the novel coronavirus was found to be more similar to two bat derived coronavirus strains (~88% similarity) than coronaviruses which infect humans including SARS (~79% similarity) and MERS (~50% similarity). Based on these

explorations, the Coronaviridae study group of the International Committee on Taxonomy of Viruses named the virus as SARS–CoV2 on February 11 of 2020.

The host receptor for SARS-CoV-2 cell entry is the angiotensin-converting enzyme 2 (ACE2) i.e. the same as for SARS-CoV. ACE2 was bond by the SARS-CoV-2 through the receptor-binding domain of its spike protein. The cellular serine protease TMPRSS2 also appears important for SARS-CoV-2 cell entry. SARS-CoV-2 underwent evolution over time as other viruses. Usually, there was no impact on viral mutation in the SARS-CoV-2 genome. Certain variants are received widespread attention because of their rapid emergence and evidence for transmission or clinical implications. Each variant has several designations based on the nomenclature used by distinct phylogenetic classification systems; the World Health Organization (WHO) has also designated labels for notable variants based on the Greek alphabet.

2.1.2   SAR-CoV-2 Variants

The Alpha variant was first revealed in London and Kent and it was also known as B.1.1.7 (UK variant). The Beta variant (South Africa variant- B.1.351), the Gamma variant (P.1, formerly known as the Brazil variant), the Delta variant (India variant - B.1.617.2), and the Omicron variant (B.1.1.529), had spread to 57 countries. The Omicron variant was first reported from Botswana and soon from South Africa in the late 2021. Subsequently, Omicron sub lineages with increasingly greater replication advantages emerged, replacing the previous predominant sub lineage. The original Omicron variant was sub lineage BA.1, followed by sub lineage BA.2, which in turn was supplanted by BA.4 and BA.5. Other Omicron sub lineages, such as BQ.1, BQ.11, BF.7, BA.2.75, XBB, XBB.1, and XBB.1.5, which evolved from various previously circulating sub lineages, have been increasing in prevalence worldwide. Each sub lineage differs from the others by at least one mutation in the spike protein. Several Omicron sub lineages have a replication advantage over the Delta variant and evade infection- and vaccine-induced humoral immunity to a greater extent than prior variants (Chen et al., 2023).

2.2   Identification of Risk Groups for COVID-19

COVID-19 (coronavirus) can make anyone seriously ill. But for some people, the risk is higher (HSE, 2022).

2.2.1   Very high-risk groups (extremely vulnerable)

The list of people in very high-risk groups include people who:

1) have Down syndrome,

2) have cancer and are being treated with (or within 6 weeks of) chemotherapy or targeted therapy, monoclonal antibodies or immunotherapies,

3) have lung or head and neck cancer and are having (or within 6 weeks of) radical surgery or radiotherapy,

4) are having certain complex cancer surgery, for example, surgery for lung cancer, head and neck cancer or oesophageal cancer,

5) getting treatment or pending treatment for a cancer of blood or bone marrow,

6) have advanced cancer or cancer that has spread to another part of the body,

7) are on dialysis or have end-stage kidney disease and an eGFR less than 15,

8) have a condition affecting the brains or nerves that has significantly affected your ability to breathe, meaning you require non-invasive ventilation (such as motor neurone disease or spinal muscular atrophy),

9) have unstable or severe cystic fibrosis, including people waiting for a transplant,

10) have severe respiratory conditions including Alpha-1 antitrypsin deficiency, pulmonary fibrosis, lung fibrosis, interstitial lung disease and severe COPD,

11) have uncontrolled diabetes,

12) have had an organ transplant or are waiting for a transplant,

13) have had a bone marrow or stem cell transplant in the last 12 months, or are waiting for a transplant,

14) have a rare genetic condition that means you have a very high risk of getting infections (such as APECED or errors in the interferon pathway),

15) sickle cell disease,

16) have been treated with drugs such as Rituximab, Cyclophosphamide, Alemtuzumab, Cladribine or Ocrelizumab in the last 6 months,

17) have certain inherited metabolic disorders (such as Maple Syrup Urine Disease) and

18) have obesity with a body mass index (BMI) greater than 40.

2.2.2 High risk groups

The list of people in high risk groups includes people who:

1) have a learning disability other than Down syndrome,
2) are being treated for cancer but are not very high risk,
3) have been treated in the past 5 years for a cancer of the blood or bone marrow (such as leukaemia, lymphoma or myeloma),
4) have been treated in the past 1 year with immunomodulating treatment for a cancer that did not start in the blood or bone marrow,
5) have chronic heart disease (such as heart failure),
6) have chronic kidney disease with an eGFR below 30ml a minute,
7) have chronic liver disease (such as cirrhosis or fibrosis),
8) have a condition affecting the brain or nerves (such as Parkinson's disease or cerebral palsy) that affects their breathing or ability to protect or clear their airway,
9) have clinically stable cystic fibrosis,
10) have a serious lung condition but are not at very high risk, for example, severe asthma, moderate COPD, emphysema or bronchitis,
11) have diabetes,
12) are taking medicine that makes your immune system weak (such as high doses of steroids),
13) have a condition that means you have a high risk of getting infections (such as lupus, scleroderma, or HIV when not on treatment or CD4 count <200),
14) have an inherited metabolic disorder but are not very high risk,
15) have obesity with a body mass index (BMI) between 35 and 40,
16) have a severe mental illness and
17) Having a weak immune system (immunocompromised).

2.2.3 Occupation and Risk

Transmission risk is a complex combination of environmental and human factors that are associated with the likelihood of infection. There is a clear interplay between occupational risk of SARS-CoV-2 transmission and socioeconomic inequities, which reflects the amplifying effects between the working environment,

crowded housing, job insecurity and poverty. Factors affecting transmission include but are not limited to:

1) Length and frequency of exposures (time),

2) Proximity or physical contact with an infected individual (non-linear relationship with distance),

3) Number of people within a space (likelihood of presence of an infectious person and greater potential for secondary cases),

4) Infectiousness of individuals, which may differ between viral variants,

5) Emission rates of virus which vary between people and with vocal activity,

6) Ratio of virus transmitted through close-range droplets, longer range aerosol particles and on surfaces (not known but likely to differ between settings and individuals),

7) The use and efficacy of controls within each setting, including ventilation, social distancing, hygiene measures and other appropriate approaches. In a work setting this should be determined by a risk assessment using the hierarchy of control and

8) Socioeconomic factors (which influence ability to self-isolate, household size).

All occupations comprise a number of discrete but linked activities (e.g. travel to work and associated social activities). Each of these activities has a different risk requiring effective protective controls and preventative mitigations to be in place to manage them. In addition, transmission is a continuous risk and can occur in any setting or the interfaces between them. Within sectors that have remained active during lockdown, evidence shows that people who work in some specific occupations and roles have increased risks of being infected, hospitalized or dying prematurely. This is higher in many occupations where people have to attend a workplace compared with people in occupations who can work from home (Scottish Government, 2021).

2.2.4 Workplace and Risk

Requiring more people to come to a workplace is likely to increase the risk of transmission associated with that workplace. People attending the workplace while unwell (more likely if not provided with sick leave or financial compensation) increases the risk of transmission in the workplace. Occupations which involve a

higher degree of physical proximity to others over longer periods of time tend to have higher COVID-19 infection and mortality rates.

Increased risks in those employed in certain occupations may be due to workplace factors (e.g. lack of ventilation, lack of PPE, etc.) or factors outside of the workplace (e.g. socioeconomic inequalities, household size and financial barriers to isolation), which increase individuals' risk of infection (EMG, 2021).

2.2.5 Types of workers and risk

According to the previous report and researches, the following types of workers were considered to be at high risk of COVID-19:

1) Health and Social Care,
2) Education and Childcare,
3) Utilities and Communication,
4) Food and necessary goods,
5) Transports,
6) Key Public Services,
7) Public safety and national security and
8) National and local governments (EMG, 2021).

2.3 Symptoms of COVID-19

COVID-19 symptoms might appear one to fourteen days after being exposed to the virus. Symptoms vary but frequently include:

1) Fever
2) Cold
3) Cough
4) Bone pain
5) Respiratory issues
6) Headache
7) Exhaustion
8) Breathing difficulty
9) Loss of smell
10) Loss of taste

At least one-third of those afflicted do not exhibit any symptoms. Most patients (81%) develop mild to moderate symptoms (up to mild pneumonia). Fourteen percent of those develop severe symptoms (dyspnea/air hunger), hypoxia (oxygen deficiency), or more than 50% reveal lung involvement on imaging, and 5% develop critical symptoms (respiratory failure, shock, or multiorgan dysfunction). Older persons are more likely to have severe symptoms. Some persons continue to have a variety of symptoms (long COVID) for months after recovery, and organ damage has been seen.

2.3.1   Phases of COVID-19

COVID-19 is classified into three phases based on their capacity to combat the infection.

1) Phase I: Flu-like symptoms

The primary viral reaction is the first stage. Fever, chills, cough, shortness of breath, exhaustion, muscular or body pains, headache, loss of taste or smell, sore throat, congestion, runny nose, nausea or vomiting, and diarrhoea are all mild to severe warning signs.

Among the COVID-19 patients, 40 percent are asymptomatic, which is a significant risk for unwittingly transmitting the disease. It can take two to fourteen days for symptoms to develop, which is why quarantining (separating) is necessary following exposure. If a person has difficulty breathing, persistent discomfort or tightness in the chest, disorientation, inability to stay awake, and pale, grey, or bluish-coloured skin, lips, or nail beds, depending on the skin tone, get immediate medical attention.

2) Phase II: Pneumonia/respiratory symptoms

The virus progresses to the second stage when it enters the lungs and produces pneumonia (lung inflammation caused by bacterial or viral infection). It is vital to keep an eye out for difficulty breathing, chest discomfort, and disorientation. When a patient cannot take deep breaths because he is coughing all the time, his oxygen level may drop. If the oxygen saturation in the blood is not sufficient, the patient will be hospitalized and treated.

Respiratory therapists will use non-invasive equipment to try to enhance the flow of oxygen, as well as teach breathing exercises, while the doctor will administer anti-viral medicines, steroids, and other medications as needed. In addition to pneumonia and other serious respiratory difficulties, this stage needs emergency care for blood clots and appropriate therapy based on the individual's state.

3) **Phase III: Organ failure**

The third stage is a hyper-inflammatory response in the lungs, which can lead to sepsis (a serious condition in which the body's immune system fails to respond properly to an infection) and organ failure. If it needs a ventilator (a machine or equipment used medically to support the respiration of a person who is unwell, or wounded). At the onset of the COVID-19 pandemic, data showed that just one in 10 patients on ventilators survived. Many of those who did need rehabilitation and home oxygen (NIH, 2023).

2.4   Transmission of COVID 19

Coronavirus disease 2019 is mostly spread when people breathe in air polluted by droplets/aerosols and tiny airborne particles harbouring the virus. Infected persons expel such particles by breathing, talking, coughing, sneezing, or singing. Transmission is more likely when people are physically near. However, illness can spread across larger distances, particularly indoors.

2.4.1   Transmittable period (Communicable period)

Infected people can spread the disease even if they are pre-symptomatic or asymptomatic. Although contact tracing typically begins only two to three days before symptom onset, Infectivity can begin four to five days before the onset of symptoms. Most commonly, the peak viral load (the amount of virus that can find in the body) in upper respiratory tract samples occurs close to the time of symptom onset and declines after the first week after symptoms begin. Current evidence suggests duration of viral shedding and the period of infectiousness of up to ten days following symptom onset for people with mild to moderate COVID-19, and up to 20 days for persons with severe COVID-19, including people who have a weakened immune system.

People are most infectious soon before and after their symptoms appear, even if they are mild or non-specific, since the virus load is at its greatest at this time.

Patients who test positive to the virus again after recovery are found to be not transferring the virus to others, assuming they were not reinfected. Five days after the beginning of symptoms or a positive test, over a third of patients with COVID-19 remain infectious (spreadable). This is lowered to 7% for individuals who test negative on both days 5 and 6 with fast testing. On day 10, 5% of those who have not been tested are infectious.

2.4.2   Direct Transmission

Direct person-to-person respiratory transmission is the primary means of transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It is thought to occur mainly through close-range contact (i.e., within approximately six feet or two meters) via respiratory particles; virus released in the respiratory secretions when a person with infection coughs, sneezes, or talks can infect another person if it is inhaled or makes direct contact with the mucous membranes. Infection might also occur if a person's hands are contaminated by these secretions or by touching contaminated surfaces and then they touch their eyes, nose, or mouth, although contaminated surfaces are not thought to be a major route of transmission.

2.4.3   Airborne transmission

SARS-CoV-2 can also be transmitted longer distances through the airborne route (through inhalation of particles that remain in the air over time and distance), but the extent to which this mode of transmission has contributed to the pandemic is uncertain. Scattered reports of SARS-CoV-2 outbreaks (e.g., in a restaurant, on a bus) have highlighted the potential for longer distance airborne transmission in enclosed, poorly ventilated spaces. Studies have identified that viral RNA in ventilation systems and in air samples of hospital rooms of patients with COVID-19, including patients with mild infection; attempts to find viable virus in air and surface specimens in health care settings have only rarely been successful. Nevertheless, the overall transmission and secondary attack rates of SARS-CoV-2 suggest that long-range airborne transmission is not a primary mode. Furthermore, in a few reports of health care workers exposed to patients with undiagnosed infection while using only contact and droplet precautions, no secondary infections were identified despite the absence of airborne precautions. Recommendations on airborne precautions in the health care

setting vary by location; airborne precautions are universally recommended when aerosol-generating procedures are performed.

2.4.4 Indirect transmission

SARS-CoV-2 has been detected in non-respiratory specimens, including stool, blood, ocular secretions, and semen, but the role of these sites in transmission is uncertain. In particular, several reports have described detection of SARS-CoV-2 RNA from stool specimens, even after viral RNA could no longer be detected from upper respiratory specimens, and replicative virus has been cultured from stool in rare cases. Scattered reports of clusters in a residential building and in a dense urban community with poor sanitation have suggested the possibility of transmission through aerosolization of virus from sewage drainage.

Detection of SARS-CoV-2 RNA in blood has also been reported in some but not all studies that have tested for it. However, the likelihood of bloodborne transmission (e.g., through blood products or needlesticks) appears low; respiratory viruses are generally not transmitted through the bloodborne route, and transfusion-transmitted infection has not been reported for SARS-CoV-2. There is also no evidence that SARS-CoV-2 can be transmitted through contact with non-mucous membrane sites (e.g., abraded skin).

The risk of transmission with more indirect contact (e.g., passing someone with infection on the street, handling items that were previously handled by someone with infection) is not well established and is likely very low. However, many individuals with COVID-19 do not report having had a specific close contact with COVID-19 in the weeks prior to diagnosis.

2.4.5 Place of transmission

The risk of transmission from an individual with SARS-CoV-2 infection varies by the type and duration of exposure, use of preventive measures, and likely individual factors (e.g., the amount of virus in respiratory secretions). The risk of transmission after contact with an individual with COVID-19 increases with the closeness and duration of contact and appears highest with prolonged contact in indoor settings.

The risk of transmission in outdoor settings appears to be substantially lower than indoors, although data are limited. Nevertheless, close contact with an individual with COVID-19 remains a risk outdoors.

2.5   Preventive measures of COVID-19

To combat the disease, the WHO has emphasized the importance of accurate clear COVID-19-related health information as a means of dispelling misconceptions, mitigating fear, preventing discrimination, and ultimately eliminating future outbreaks of COVID-19. The Center for Disease Control and Prevention standard infection control guidelines details guidelines for practices that are regularly updated to protect not only the patients but also the HCW providing care to those infected. These measures include hand hygiene, use of PPE, and correct use of medical masks and more.

When an infected individual cough, sneezes, speaks, sings, or breathes, the COVID-19 virus spreads in microscopic liquid particles from their mouth or nose. These particles range in size from larger respiratory droplets to tiny aerosols (a suspension of fine solid or liquid particles in gas). If a person feels ill, it is critical to adopt respiratory good manners, such as coughing into a flexed elbow, and to stay at home and self-isolate until they recover.

2.5.1   Individual preventive practice

Basic preventive measures of COVID-19 infection are recommended as followed:

1) getting vaccinated
2) staying at home
3) wearing a mask in public
4) avoiding crowded places
5) keeping distance from others
6) ventilating indoor spaces
7) managing potential exposure durations
8) washing hands with soap and water frequently and for at least twenty seconds,
9) washing hands using hand sanitizer or an alcohol-based rub frequently
10) practicing good respiratory hygiene
11) avoiding touching the eyes, nose or mouth with unwashed hands.

2.5.2 Community preventive practices

In addition to basic COVID-19 control measures such as hand washing, wearing masks, and keeping at least one meter apart, some preventative steps at Community Levels include:

1) **Staying up to date on COVID-19 Vaccines:** Staying up to date on COVID-19 vaccines significantly reduces the risk of becoming very sick, being hospitalized, or dying from COVID-19, everyone who is eligible, should get a booster and stay up to date on their COVID-19 vaccines, especially people with weakened immune systems.

2) **Increasing ventilation:** Improved ventilation may eliminate impurities such as pollution, germs, and moisture while also reducing the transmission of airborne viruses.

3) **Obtaining COVID-19 testing if necessary:** If a person exhibits COVID-19 signs, they should be evaluated. Rapid testing and laboratory tests using samples from his nose, throat, or saliva are the two types of viral tests. Knowing if a person is infected with the virus that causes COVID-19 helps him to take care of himself and take precautions to avoid infecting others.

4) **Personal preventive measures:** In the setting of community transmission of SARS-CoV-2, the following general measures are recommended to prevent infection:
   a) Hand washing and respiratory hygiene
   b) Vaccination
   c) Ensuring adequate ventilation of indoor spaces
   d) If symptoms suggestive of COVID-19 occur, staying home away from others and getting tested for SARS-CoV-2
   e) Avoiding close contact with individuals who have or may have COVID-19

2.5.3 Wearing masks in the community

2.5.3.1 When to wear a mask

Local guidelines on mask-wearing depend on the level of community transmission and vaccination rates. The World Health Organization (WHO) recommends mask-wearing as part of a comprehensive approach to reducing SARS-

CoV-2 transmission in either indoor or outdoor settings where there is widespread transmission and social distancing is difficult as well as indoor settings with poor ventilation (regardless of ability to distance). In the United States, the CDC recommendations on masking depend on the estimated COVID-19 community levels, which reflect a combined measure of local case counts, new COVID-19 hospital admissions, and the percent of staffed inpatient beds occupied by patients with COVID-19.

In locations with low community levels, the CDC suggests that mask wearing be optional; at medium levels, it advises individuals who are immunocompromised or otherwise at risk for severe disease to consider masking in public and advises their close contacts to wear masks; at high levels, the CDC recommends that all individuals wear masks in indoor public settings. All masking recommendations assume that strategies to achieve and maintain high rates of vaccination, including booster doses, are ongoing. The CDC also recommends that all individuals wear masks on public transportation (including taxis and ride-shares) and at transportation hubs (e.g., airports, bus or ferry terminals, railway stations, seaports). Masking is also recommended for all persons who have suspected or documented COVID-19 or exposure to SARS-CoV-2, regardless of community level (Chen et al., 2023).

2.5.3.2 Type of masks

The CDC recommends that, in locations or situations where masks are recommended, individuals wear the mask with the highest filtration efficacy that fits well and that one can wear reliably over the mouth and nose. When fit tightly around the face, respirators (e.g., N95) have the highest filtration efficacy, followed by disposable medical masks. In general, cloth masks have the lowest filtration efficacy, although cloth masks made of several layers of tightly woven fabric can approach the filtration efficacy of medical masks. The importance of filtration efficacy increases in situations in which the risk of exposure is high (e.g., prolonged close contact indoors or in vehicles with people outside the household, particularly if other people are unmasked) or for individuals who are at risk for severe COVID-19.

Ultimately, however, consistent and correct use is the most important aspect of mask use, as incorrect use or poor fit diminishes the value of high filtration efficacy of the material. Strategies to improve mask fit include using a mask with an adjustable

nose bridge, wearing a cloth mask over a disposable mask, knotting the ear loops of a medical mask to cinch the sides of the mask and secure it against the face, using masks with ties rather than ear loops, and using a mask brace. Respirators and masks should not have exhalation valves.

For individuals who opt to wear a respirator, KN95 and KF94 are advertised as meeting high filtration standards in China and South Korea, respectively, and are alternatives to the N95 respirator. People should be aware, however, that many marketed KN95 and KF94 respirators do not meet the advertised filtration standards; if used, KN95 or KF94 respirators that have been independently assessed for filtration efficiency should be chosen.

The WHO also recommends medical or nonmedical masks (including homemade multilayered masks) for most individuals and has issued standards for the ideal composition of a cloth mask to optimize fluid resistance and filtration efficiency. However, it specifically recommends medical masks for individuals with symptoms consistent with COVID-19, for individuals at risk for severe COVID-19 when in public settings where distancing is not feasible, and for household contacts of individuals with suspected or confirmed COVID-19 when in the same room.

When advising patients on the use of masks, clinicians should counsel them to avoid touching the eyes, nose, and mouth when putting on or removing the mask, to practice hand hygiene before and after handling the mask, and to launder cloth masks routinely. Clinicians should also emphasize that the mask does not diminish the importance of other preventive measures, such as social distancing and hand hygiene. Patients can also be counseled that masks have not been associated with impairment in gas exchange, including among patients with underlying lung disease (Chen et al., 2023).

2.5.4 Vaccinations

COVID-19 vaccinations should be available to everyone, everywhere. Meanwhile, from the beginning of the COVID-19 outbreaks, WHO has worked with nations and territories in the Western Pacific Region on public health measures to reduce or stop the virus's spread. In conjunction with other measures, safe and effective vaccinations are a key tool for protecting individuals against COVID-19, saving lives, and reducing widespread societal disturbance. Countries and localities in

the Western Pacific Region have already received regulatory permission and have begun to distribute one or more COVID-19 vaccinations.

WHO and partners are collaborating with countries through the COVAX Global Vaccine Facility and other channels to ensure fair access to and distribution of an initial allocation of vaccine as soon as practicable. WHO recommends that in each country, early immunization should target individuals at highest risk of infection, including as health professionals, the elderly, and people with serious health conditions. Once COVID-19 vaccines reach priority groups, nations should vaccinate the general population and additional priority groups. It is critical to get vaccinated as soon as possible and to continue adopting other preventative measures (WHO, 2022).

To bring this pandemic to an end, the world must be immune to the virus. The most secure method is vaccination. Vaccines are a technique that mankind has frequently relied on in the past to reduce the mortality toll from infectious illnesses. The next step is to make these vaccinations available to individuals all around the world. It is critical that citizens in all countries, not just affluent countries, have the necessary protection. The objectives are to maintain and build momentum for reducing mortality and morbidity, protecting health systems, and resuming socioeconomic activities with existing vaccines, as well as to speed the development and availability of enhanced vaccination products.

COVID-19 vaccines are currently accessible in a variety of nations and these available now are successful in preventing major illness, hospitalization, and death. As with other vaccine-preventable illnesses, being up to date on recommended vaccines, including booster injections, provides the best protection against COVID-19.

Currently using vaccines recommended by WHO with emergency use list, include:

1) Pfizer-Biontech
2) Moderna
3) Novavax
4) Johnson & Johnson's Janssen
5) AstraZeneca/Oxford vaccine
6) Sinopharm

7) Sinovac

8) Covaxin

9) Covovax

10) Cansino

Even if someone has already had COVID-19, it is critical that he get vaccinated as soon as it is his time and not delay. Combining several COVID-19 vaccinations is both safe and effective. The current COVID-19 vaccinations offer effective protection against serious disease and death. Being properly immunized also reduces the possibility of new variations arising.

Many people throughout the world have now been immunized against COVID-19 while pregnant or nursing, and no safety problems for them or their new-born have been discovered. In fact, being vaccinated when pregnant helps to protect the infant; getting vaccinated while breastfeeding may also aid to protect the new born.

If a person is immuno-compromised (has a weaker immune system), an extra dose of COVID-19 vaccination should be prioritized after 1 to 3 months. People with weakened immune systems may not develop adequate immunity to COVID-19 after one or two treatments, thus an extra dosage may be beneficial. If necessary, he should receive a booster dosage.

Several COVID-19 vaccines have been licensed and supplied in countries where mass immunization programs have begun. Physical or social isolation, quarantining, ventilation of interior areas, usage of face masks or covers in public, covering coughs and sneezes, hand washing, and keeping unclean hands away from the face are further preventative strategies.

2.6   Diagnosis of COVID 19

Diagnosis and testing of COVID-19 is important to identify and help reduce the spread of disease. Viral tests, including NAAT and antigen tests, are used to diagnose COVID-19. Antibody tests (serology) are not indicated to diagnose a current infection. NAATs that use reverse transcription-polymerase chain reaction (RT-PCR) technology to detect SARS-CoV-2 ribonucleic acid (RNA) are highly sensitive and specific and detect SARS-CoV-2 RNA in respiratory specimens. Clinical RT-PCR tests for SARS-CoV-2 that determine the cycle threshold (Ct) value are not validated

to estimate viral load, and the NIH recommends that Ct values may be considered only in consultation with an infectious disease expert.

SARS-CoV-2 antigen tests typically provide rapid results and are less expensive than NAATs, but they are generally less sensitive than NAATs. Antigen tests for SARS-CoV-2 use immunoassays to detect the presence of a specific viral antigen in respiratory specimens, and include point-of-care, laboratory-based, and self-tests. A negative antigen test in persons with signs or symptoms of COVID-19 should be confirmed by NAAT.

2.6.1 Considerations for Laboratory Testing

SARS-CoV-2 co-infection with another pathogen, including a respiratory virus, bacterium, or fungus has been documented, particularly in hospitalized patients. Detection of a different respiratory pathogen does not rule out COVID-19 infection. Testing for other causes of respiratory illness, in addition to testing for SARS-CoV-2, may be considered, depending on local pathogen co-circulation, patient age, underlying medical conditions, season, and clinical setting.

2.6.2 Types of Tests

Viral tests look for a current infection with SARS-CoV-2, the virus that causes COVID-19, by testing specimens from your nose or mouth. All tests should be performed following FDA's requirements.

There are two main types of viral tests: Polymerase Chain Reaction (PCR) tests and Antigen tests. PCR tests are the "gold standard" for COVID-19 tests. They are a type of nucleic acid amplification test (NAAT), which are more likely to detect the virus than antigen tests. Your sample will usually be taken by a healthcare provider and transported to a laboratory for testing. It may take up to 3 days to receive results. Antigen tests are rapid tests that usually produce results in 15-30 minutes. Positive results are very accurate and reliable. However, in general, antigen tests are less likely to detect the virus than PCR tests, especially when symptoms are not present. Therefore, a single negative antigen test cannot rule out infection. To be confident you do not have COVID-19, FDA recommends 2 negative antigen tests for individuals with symptoms or 3 antigen tests for those without symptoms, performed 48 hours apart. A single PCR test can be used to confirm an antigen test result (CDC, 2023).

2.6.3 Other Laboratory Testing Considerations

Several markers of inflammation and abnormal coagulation are associated with severe COVID-19 illness. Studies found that hospitalized patients with COVID-19 may have coagulation abnormalities including increased D-dimer concentration, a modest decrease in platelet count, and a prolongation of the prothrombin time (CDC, 2023).

2.6.4 Radiographic Considerations and Findings

Chest radiographs of patients with severe COVID-19 may demonstrate bilateral air-space consolidation. Chest computed tomography (CT) images from patients with COVID-19 may demonstrate bilateral, peripheral ground glass opacities and consolidation. Less common CT findings can include intra- or interlobular septal thickening with ground glass opacities (crazy paving pattern) or focal and rounded areas of ground glass opacity surrounded by a ring or arc of denser consolidation (reverse halo sign). Multiple studies suggest that abnormalities on CT or chest radiograph may be present in people who are asymptomatic, pre-symptomatic, or before RT-PCR detection of SARS-CoV-2 RNA in nasopharyngeal samples (CDC, 2023).

2.7 Treatment of COVID 19

Medications to treat COVID-19 must be prescribed by a healthcare provider and started as soon as possible after diagnosis to be effective. There are several FDA-authorized or approved antiviral medications used to treat mild to moderate COVID-19 in people who are more likely to get very sick. Antiviral treatments are targeted specific parts of the virus to stop it from multiplying in the body, helping to prevent severe illness and death.

1) **Remdesivir** (Veklury): to treat COVID-19 in hospitalized adults and children who are age 12 and older in the hospital, needing supplemental oxygen or having a higher risk of serious illness. It's given through a needle in the skin (intravenously).

2) **Baricitinib** (Olumiant): the rheumatoid arthritis drug, is a pill that seems to work against COVID-19 by reducing inflammation and having antiviral activity.

3) **Tocilizumab** (Actemra): to treat COVID-19 in some cases and is an injection. It seems to work against COVID-19 by reducing inflammation and may be used in people in the hospital with COVID-19 who are on mechanical ventilators or need supplemental oxygen.

4) **Paxlovid**: to treat mild to moderate COVID-19 in people age 12 and older who are at higher risk of serious illness. The medications are taken by mouth as pills.

5) **Molnupiravir**: to treat mild to moderate COVID-19 in adults who are at higher risk of serious illness and who aren't able to take other treatment options. The medication is taken by mouth as a pill.

6) **Corticosteroid dexamethasone**: to treat severe COVID-19 patients who are on supplemental oxygen or need mechanical ventilation. Other corticosteroids, such as prednisone, methylprednisolone or hydrocortisone, may be used if dexamethasone isn't available.

7) **Combination**: the drugs remdesivir, tocilizumab or baricitinib may be given with dexamethasone in hospitalized people who are on mechanical ventilation or need supplemental oxygen.

8) **Vilobelimab**, the monoclonal antibody, is for those who are on mechanical ventilation.

2.8   Global Situation of COVID-19

The Worldwide Effect of COVID-19 highlights the effects, ramifications, hazards, and possibilities of the COVID-19 pandemic on our existing global system. The epidemic and the lengthy statewide lockdowns that followed it have had a number of short- and long-term effects on people's health, society, the economy, and the environment. As an illustration, the strict lockdowns implemented in some nations have really sparked a significant economic and humanitarian disaster. Thus, it's critical to learn from this pandemic in order to improve our capacity for future preparedness and reaction to such shocks.

Globally, over 794 000 new COVID-19 cases and over 4800 deaths were reported during 12 June to 9 July 2023. While five WHO regions have reported decreases in the number of both cases and deaths, the African Region has reported a decline in cases but an increase in deaths – albeit from a relatively low baseline. As of 9 July 2023, over 767 million confirmed cases and over 6.9 million deaths have been

reported globally. Reported cases are not an accurate representation of infection rates due to the reduction in testing and reporting globally. During this 28-day period, 57% (133 of 234) of countries and territories reported at least one case – a proportion that has been declining since mid-2022.

The COVID-19 epidemic has caused a shocking loss of life on a global scale and poses an unprecedented threat to food systems, public health, and the workplace. The pandemic has had a devastating impact on the economy and society. Tens of millions of people face the possibility of living in abject poverty, and the number of undernourished people , which is currently estimated to be close to 690 million, could rise by as many as 132 million by the end of the year. Particularly vulnerable to the consequences of COVID-19 are those that are currently coping with humanitarian crises or catastrophes. It is crucial to react to the epidemic quickly while making sure that relief and rehabilitation aid reaches those who need it the most.

The globe needs to unite in solidarity and help those who are most in need, especially in the growing and developing world. Only by working together will we be able to combat the pandemic's interconnected health, social, and economic effects and stop it from worsening into a protracted humanitarian and food security crisis that might undo development progress that has already been made.

While it is difficult to tell exactly what the economic damage from the global COVID-19 coronavirus pandemic has been, it has had severe negative impacts on the global economy. During 2020, the world's collective gross domestic product (GDP) fell by 3.4 percent. To put this number in perspective, global GDP reached 84.54 trillion U.S. dollars in 2020 – meaning that a 3.4 percent drop in economic growth results in over two trillion U.S. dollars of lost economic output. However, the global economy quickly recovered from the initial shock, reaching positive growth levels again in 2021. That year, it reached 92.3 trillion U.S. dollars and it is expected to continue to grow in the coming years, although Russia's war in Ukraine since February 2022 and its impact on the world's economy may hamper economic growth.

Global stock markets also suffered dramatic falls after the coronavirus outbreak, although they were able to recover from the losses quite quickly. The Dow Jones reported its largest-ever single day loss of almost 3,000 points on March 16, 2020 – beating its previous record of 2,300 points that was set only four days earlier.

The COVID-19 pandemic had a varied impact on different sectors and industries. As countries around the world closed their borders and imposed travel restrictions, especially the travel and tourism industry was heavily affected. The travel restrictions led to a sharp decrease in the number of flights worldwide. On the other hand, the internet trade boomed as an increasing number of people either chose or were forced to buy their non-essential goods online, as retailers were forced to close their shops during the pandemic. For instance, Amazon's net sales revenue reached new records both in 2020 and in 2021.

Anti-pandemic measures of COVID-19 impose disastrous resource challenges for health systems of the countries around the world. These challenges have been substantial, especially for the low-to-middle- income countries with fewer buffering resources and poor capacity to fight against a pandemic. The lack of system readiness with shortage of health care workforce leads to disruption of other essential health services and self-medication. Limited health care resources with inadequate support of personal protective equipment put more at risk of health care professionals. Poor information sharing resulted in the issue of infodemic of fake news, untrusting the Government and worsening the situation. According to a modelling study, it is estimated that the Pandemic could cost around the United States Dollar (USD) 52 billion each 4 weeks to provide an effective health care response to COVID-19.

To withstand the compiling effect of the pandemic with the minimal negative impact, health systems need to be inevitably resilient in every aspect. Considering the country's economy and uncertainty of the pandemic duration, it alerts the policy makers to revisit and update the policies in a timely manner according to the changing situation. Estimating the cost of treating the COVID-19 infected patients is the fundamental need that will help the clinicians and researchers as well as policy makers and health planners to handle the pandemic with competing priorities.

2.9   Reviews on Previous Studies

The relevant journal articles published online had been surfed for the review. Relevant peer reviewed articles, which were conducted to know the knowledge, attitude and practices towards COVID19 among population, had been chosen to get international data and comparative information.

2.9.1   Study from Bangladesh (2020)

Tasnima and his friends (2020) studied Knowledge, attitude and practices towards Covid-19 and assessment of risks of infection by SARS-COV-2 among the Bangladeshi population with an online cross-sectional survey. According to the report, 54.8% of respondents maintained their knowledge. Divergence in knowledge was significant across age, gender, educational attainment, place of residence, socioeconomic position, and marital status. Despite having education, Bangladeshi individuals do not have a remarkable mindset or set of habits. 32.08 percent of the population had a high risk of infection, whereas 44.30 percent did not. Everyone is in danger. Poor information, unscientific thinking, and traditional religious beliefs might all be contributing factors to the subpar attitude and actions. To implement effective interventions for preventing the COVID19, government and policy makers must take into account these knowledge levels, attitudes, and behaviours as well as the risk of infection assessment.

2.9.2   Study from China (2020)

The research conducted by Yaqing Fang, Panpan Liu, and Qisheng Gao, (2020) discovered that during the COVID19 outbreak, Chinese residents have good knowledge, a positive outlook, and supportive behavior. There is still a population in China that does not use or have access to social media. Therefore, it is critical to provide health education to those with low levels of education.

2.9.3   Study from Canada (2020)

Parsons Leigh, Fiest K and et.al. (2020) studied Public perceptions of the COVID-19 pandemic: Self-reported beliefs, knowledge, and behaviors, Concerns regarding healthcare (such as having enough equipment, 52%), pandemic stress (45%), and declining social (49%) and mental/emotional (39%) health are only a few of the negative effects of pandemic conditions that have been observed. Most respondents (88%) said they had a good to outstanding understanding of how viruses spread, and most (74%) and most (60%) of them relied on non-government news sources, newspapers, and television for their Canadian news. It was observed excellent compliance with the physical or self-isolating means of distance (80% reported doing so) and discovered connections between geography and self-reported attitudes, information, and COVID-19-related behaviors. It was discovered that most

people learn about COVID-19 via domestic news sources, which might account for the high self-reported compliance with preventative measures. The findings demonstrate the pandemic's effects on the general public's health and wellbeing that go beyond individual infections. The study's conclusions should guide public health messaging during COVID-19 and next pandemics.

2.9.4 Study from Venezuela (2021)

Daniela, Fhabian and other authors (2021) studied Knowledge, Attitudes, and Practices Regarding COVID-19 Among Healthcare Workers in Venezuela. It showed that the majority of Health Care Workers indicated using suitable procedures (76.9%), had positive attitudes (53.6%), and claimed having high knowledge (76.3%). They also reported getting their information mostly from scientific sources (85.4%). Unfortunately, more than half of the HCWs did not participate in training for COVID-19. Frontline workers had considerably higher positive sentiments than non-frontline workers (p = 0.001). Good knowledge was more prevalent among bio analysts, students, and physicians; training participation was a predictor of favorable attitudes, and greater age was a predictor of suitable practice. The education and training systems in Venezuela might be strengthened to increase HCWs' expertise. The promotion of preventative measures should be a key component of strategies aimed at lowering anxiety and enhancing attitudes toward the treatment of COVID-19 patients.

2.9.5 Study from Tanzanian (2021)

Sima Rugarabamu, Mariam Ibrahim and Aisha Byanaku highlighted Knowledge, attitudes, and practices (KAP) towards COVID-19 among Tanzanian residents. According to the report, 84.4% of participants had solid understanding. 77% of those surveyed said they had avoided crowded areas recently. It was shown that lower knowledge score was substantially correlated with male gender, age range of 16 to 29, and secondary or lower education. The findings showed that a community-based health education program on COVID-19 is useful and required to prevent the illness since they demonstrated good knowledge, upbeat attitudes, and suitable practices about COVID-19.

2.9.6   Study from Ethiopia (2021)

Teferi Gebremeskel had conducted a cross- sectional study to improve the perceived susceptibility, severity, and benefits of preventive behavioral changes in 2021. It was discovered that the majority of health professionals were aware of COVID-19 and had a positive attitude toward it, a certain proportion of them did not employ PPE or other best practices for its prevention. This is consistent with other research that demonstrate how social media may be effectively used to alter behavior and improve the health of both individuals and entire nations.

CHAPTER III

OVERVIEW OF COVID-19 SITUATION IN MYANMAR

World Health Organization (WHO) declared the 2019-20 coronavirus outbreak as a pandemic on 11th March 2020 as the number of cases of COVID-19 outside China has increased 13-fold. The WHO member states, including Myanmar, has been advised to prepare for containment and prevention of onward spread of the virus. Therefore, Myanmar has established National-Level Central Committee on Prevention, Control and Treatment of COVID-19 on March 13, 2020, for effective response to the pandemic. The virus was confirmed to have reached Myanmar on March 23, 2020. Following the detection of the first case of COVID-19, the Government of Myanmar has increased efforts to meet the challenges of COVID-19 by the following measures:

1) increasing testing and treatment capacity for COVID-19;
2) providing quarantine facilities;
3) expanding the quantity of general and ICU beds and
4) developing the COVID centers to isolate and treat the infected patients while safeguarding the health of other patients and health care workers.

3.1 Institutional setup of prevention and control of COVID-19

Actually, Myanmar has started its preventive measures against transmission of COVID-19 since January 2020 before WHO declared as Public Health Emergency of International Concern on 30th January 2020. Myanmar had organized the following committees at the National level for the prevention and control of COVID-19(MoH, 2022):

1) Central Committee on prevention, control and treatment of Coronavirus Disease 2019 (COVID-19) chaired by Prime Minister

2) Coronavirus Disease 2019 Containment and Emergency Response Committee chaired by Union Minister for Health

3) Inter-ministerial Coordination Committee

4) Committee on Economic Relief due to COVID-19

5) Technical Advisory Committee on for Prevention and Control of COVID-19

Since the Central Committee had been organized, senior level representatives from relevant Union Ministries work together in synergetic approach for the mandate of the committee. Accordingly, Naypyitaw, State/ Regional level committees have been organized for the effective measures under the central committee.

3.2   Preparedness of the health sector during COVID-19 pandemic

Despite resource limitation, the Myanmar Government has financed the costs of the COVID-19 pandemic response that cover contact tracing, testing, quarantine and treatment of COVID-19 infected patients, by reorienting the budgetary arrangements, securing public donation and international assistance. Public hospitals and COVID Centers have been arranged to be available for admission of all COVID-19 infected patients around the country. In Yangon which is the most populated city of the country, three main health facilities have primarily been designated for caring the COVID-19 patients, namely Waibargi Specialist Hospital (90 beds), South Okkalapa Specialist Hospital (80 beds) and Phaung Gyi COVID-19 Treatment Center (1200 beds).

Central Committee on prevention, control and treatment of Coronavirus Disease 2019(COVID-19) has been organized and managed by the Union level for the effective action against the Pandemic. In addition, Myanmar has already practiced International Health Regulation 2005 and is implementing Greater Mekong Sub-region Health Security Project with GMS countries. National Action Plan for Health Security (2018-2022) and Early Warning, Alert and Response System (EWARS) are also being operationalized under Ministry of Health (MoH, 2022).

3.3   Containment strategies of COVID-19

Ministry of Health, under the close supervision and guidance of the National level Central Committee, laid out the following measures for the control and containment of the disease (MoH, 2022):

1) **Strengthening on Prevention and Control activities at Point of Entries (PoE)**- Both Union level and State/Regional level government, with close assistance from health-related government officials, worked together for the disease surveillance measures at the international airport, sea-port and border gates.

2) **Strict Isolation and Quarantine procedures**- To prevent rapid spread of infection, contact persons and international travelers had to stay at separate accommodation places for certain incubation time with the support of law enforcement team, health workers, volunteers and relevant government staffs.

3) **Immediate response to Disease Outbreak and prompt action on Disease Prevention and Containment procedures**- Initially, index cases were identified and contact follow-up system was performed timely as part of containment strategy for COVID-19 infestation. When occurrence of mass transmission in some areas happened, these areas have been announced as stay-at-home areas with minimal permission to go outside to restrict the community gathering and to limit the exposure of each other's.

4) **Strengthening on Laboratory testing of COVID-19**- At the outset, public laboratories are the key units for identifying the positive victims. Laboratories had different limitations at the initial phase of the pandemic which had been strengthened by the prioritization of the government and international assistance. Even when reliable technology for rapid diagnosis, such as Rapid Diagnosis Tests, had been founded; the role of reference laboratory is quite important and had attention to improve in this sector.

5) **Hospital preparedness for effective curative measures**- Ministry of Health prepared to keep suspected and confirmed cases of COVID-19 in every State/ Regional hospital in addition to enhancing laboratory facilities. Personal Protective measures, essential medicine and drugs, medical equipment have been dumped in health centers across the country. Extension of Intensive care facilities and preparation for liquid oxygen plant are prioritized.

6) **Health Literacy Promotion**- Health literacy promotion had initiated since before confirmed case was found. Different types of IEC and guidelines have produced and disseminated across the country. MoHS website and social media have been widely used for health education. MoHA call center for

COVID-19 is initiated and COVID-19 related news and technical questions have been answered by designated spoke persons.

7) **Strengthening on COVID-19 Vaccination**- For the vaccination, persons from containment settings, IDPs and people from hard-to-reach areas are identified as priority groups. Initial target is to vaccinate 50% of eligible population above 18 years at the end of December 2021. Moreover, school aged children above 12 years old are identifies as top priority group. At the same time, health education campaign for vaccination has been launched.

8) **Inter-sectoral Coordination and Collaboration**- Ministry of Health is working closely with related stakeholder's government departments for prevention and control of COVID-19. Together with Ministry of Information and Ministry of Transport and Communication, COVID-19 related messages and news have been disseminated widely for the public. In addition, in cooperation with voluntary organization and community-based organization, necessary training for safety and security, first training have been conducted.

9) **International Coordination and Collaboration**- In accordance with the International Health Regulation, Myanmar Ministry of Health works together inter-regional countries and organizations. MoH share the epidemiological information and containment experiences.

3.4 Mortality and Morbidity of COVID-19 in Myanmar

COVID-19 is an acute respiratory infectious disease, which spreads mainly through the respiratory tract via droplets, respiratory secretions transferred from an infected person, or to a lesser degree with direct contact with contaminated fomites. The incubation period of this disease varies from 2 to 14 days (average five days). Some cases have an incubation period of 21–27 days. On October 9, 2021, a total of 238,275,286 cases of COVID-19 cases were confirmed worldwide, including 4,861,159 deaths (Htun, 2023).

Myanmar reported its first case of COVID-19 on 23 March. Myanmar was late in reporting its first case despite sharing a long and porous border with China. In the first wave, Ministry of Health (MOH) reported that there were 374 confirmed cases (0.73 per 100,000 population) and 6 deaths (0.01 per 100,000 population) with 1.60% case fatality rate (CFR) during the first wave of the epidemic and the last local transmission was found on 16 July. The second wave started on 16 August, 2020 in

Rakhine State, after almost a month without local transmissions and the disease spread to the whole country. Myanmar has seen a dramatic increase in the number of cases in the second wave compared to the first wave. There were 142,944 confirmed cases (278 per 100,000 population) with 3,210 deaths (6 per 100,000 population) and 2.25% CFR during the second wave. Myanmar has also faced a rapid-surged third wave which started at the end of May 2021. Delta variant rapidly spread throughout the country with the highest impact on lives and the economy. In the third wave, there were 391,353 confirmed cases (760 per 100,000 population) and 16,094 deaths (31 per 100,000 population) with 4.11% CFR. On 28th December 2021, the Omicron variant (B.1.1.529) was firstly detected in 4 confirmed cases who returned from Dubai, the United Arab Emirates. After detection of Omicron variants, the confirmed cases surged again starting from 28th January 2022, particularly in Yangon Region, and then the fourth wave of COVID-19 was started in Myanmar. The highest number of confirmed cases (3,563) and deaths (7) were reported in the fourth week of February 2022. Until 31st January, 2023, 9,941,945 specimens were tested for COVID-19 infection and 633,820 cases of COVID-19 confirmed cases had been reported, of which 614,299 cases were survived, and 19,490 died. Newly reported in last 7 days is 6 confirmed cases. (MoH, 2023)

3.5   COVID-19 Vaccination in Myanmar

The current 2019 coronavirus disease (COVID-19) pandemic, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is a major threat worldwide and especially to countries in Southeast Asia. In the elderly and among those with comorbidities (such as cardiovascular disease, chronic kidney disease, and chronic obstructive pulmonary disease), the mortality increases significantly. Although some drugs have been used to treat severe COVID-19 patients, no specific therapies have been approved by the world prestigious medical institutions. Development and deployment of a vaccine is therefore one of the most promising strategies in this crisis.

Vaccine development began in several research centers and pharmaceutical companies as soon as SARS-CoV-2 was identified as the causative agent and the first genome sequence was published. A total of 65 vaccines are in development globally, with 9 (including Sputnik V, Oxford-AstraZeneca and BBIBP-CorV) authorized in several countries, and the others in their second or third phase of development, as of

January 26 2021. Tagged as the most extensive vaccination campaign in history, more than 68.1 million people in 56 countries have been vaccinated to date (Randall et al.). However, the success of this campaign can be threatened by vaccine hesitancy. The World Health Organization labelled vaccine hesitancy as 1 of their 10 threats to global health in 2019; they defined it as "delay in acceptance or refusal of vaccines despite the availability of vaccination services". Vaccine hesitancy is complex and context-specific, varying across time, place, and vaccines; it is influenced by factors such as complacency, convenience, and confidence. A relevant study has shown that COVID-19 vaccine acceptance varies from country to country, with no specific trend. In developed countries, 15%–20% of the population has expressed unwillingness to receive the vaccine, while in developing countries reluctance can be as high as 63.2%.

Myanmar launched a COVID-19 vaccination program across the country in January, 2021, with the objectives of reducing the morbidity and mortality due to COVID-19, preventing the further spread of disease, and reducing the country's economic impact due to the pandemic. To promote private sector participation, private sector is also allowed to import COVID-19 vaccines according to rules and regulations and urged to take part in COVID-19 vaccination program. With the vaccines from the government procurement, donations and private sector importations, Myanmar has been implementing the COVID-19 vaccination program which follows Myanmar National COVID-19 Vaccine Deployment Plan that was developed in line with the World Health Organization guidance. A total of 24 target groups has been designated and prioritized for COVID-19 vaccination program including different age groups of people, health staff, inmates from jails and custodies, persons with disabilities, members and families of ethnic armed organizations, people in IDP camps and students (12-18 years old). All the vaccination activities are recorded and reported in the National Vaccine Management Information System-VMIS. The certificates bearing QR codes has been issuing after the completion of vaccinations. Currently there are 13 types of the Ministry approved COVID-19 vaccines including Sinovac, Sinopharm, Spunik V, Pfizer, and so on. COVID-19 vaccine, Myancopharm, is also produced locally with ready-to-fill method in collaboration of Myanmar Ministry of Industry and China Sinipharm. As of 31st January, 2023, 30,911,217 of 18 years and above population and 6,810,943 of below 18 years were injected with COVID-19 vaccines in Myanmar (MoH, 2023).

CHAPTER IV
SURVEY ANALYSIS

4.1   Survey Profile

Ministry of Health, under the close supervision and guidance of the National level Central Committee, laid out the nine strategic activities for the control and containment of the COVID 19 in Myanmar. Among these, inter-sectoral coordination and collaboration is one of the key components. According to policy guidance of the central committee of Myanmar, MoH works together with all relevant stakeholder government departments and volunteer organizations. More than 20 Union Ministries and Union Level organization reside in Naypyitaw, some have more specific assignment for the prevention and control of COVID-19.

According to census data of Ministry of Immigration and Population (2014), 1,160,000 people reside in Naypyitaw and approximately 50,000 are government employee which in turn categorized as sample population. Almost all the government employee in Naypyitaw lived in Zabuthiri Township so it can be recognized as sampling area. Among them, four key departments, which are working at quarantine center, are selected for the study. Actually, the knowledge and attitude towards practice regarding COVID-19 is very crucial among persons working closely with COVID-19 patients. In accordance with the statistical calculation, respondents of the study are chosen systematically (171 respondents). Survey data is entered and analyzed by researcher using SPSS software.

4.2   Survey Design

Survey was done at Ministry of Social Welfare, Relief and Resettlement (Department of Disaster Management and Department of Social Welfare), Ministry of Home Affairs (General Administrative Department), Ministry of Education (Basic Education Schools), Ministry of Defence as these departments had key role in disease prevention and control activities as assigned by Central Committee on prevention,

control and treatment of Coronavirus Disease 2019 (COVID-19) in order to assist the curative function of Ministry of Health.

This study was cross-sectional descriptive study and primary data collection is done. Altogether 171 respondents from Ministry of Social Welfare, Relief and Resettlement, Ministry of Home Affairs, Ministry of Education and Ministry of Defence (Military Hospital- Non-medical staff) have been chosen using Simple Random Sampling method.

Pre-structured, closed ended, multiple choice questionnaire was pre-tested at similar settings in Naypyitaw. The time spent for every interview, mis-interpretation on questions by the respondents and difficulties in asking questions by interviewers were noted and revised according to these findings. To ensure the data quality, checklists and questionnaire guidelines were also used. The level of awareness and preparedness activities has been recorded by multiple choice questions; and Linkert's Scale has been used to describe the level of perception. Consent form and information sheet were distributed together with the questionnaire. The response sheets were anonymous. Face to face interviews using that final version of questionnaire were undertaken by 3 interviewers (including me). The 2 interviewers have been trained before the survey and they were instructed to carry the question guide with them during the interview. I, also underwent as field supervisor, checked completeness of records on a daily basis. Collected data was checked, cleaned and entered using SPSS software. Data cleaning, recoding and restructuring of some variables to make them amenable for analysis were carried out using SPSS Statistics software version 22 for Windows.

The questionnaire composed with four parts. Part I had 12 questions exploring socio-demographic characteristics of respondents. Sources of social media and leisure time activities of the respondents were also counted. For the Part II, 11 knowledge questions were structured. Knowledge about causal organism and incubation period of COVID-19 had been asked in addition to six groups of knowledge questions on general description about COVID-19, symptoms (physical features) of the disease, high risk group for infection, high risk group for sever symptoms (physical features), prevention measures and transmission route (transfer of disease from one person to another). Knowledge score was categorized as low, medium and high score based on mean data. Source of information where respondents obtained COVID-19 related

information were also explored. Part III consisted of 11 attitude related questions. Individual perception upon risk of transmission, perceived risk for individual and families, worry and panic points during COVID-19 had been recorded. Attitude regarding disease condition, coping capacity for COVID-19, control strategy of Myanmar and worry for daily life during pandemic were asked. Based on the mean score, positive response and less positive response were categorized. In the part IV, 9 practice questions had been developed. Daily practice for COVID-19 prevention, usual habit during last week and intended activities if respondents seem to suspect infestation were explored as group of question. In accordance with mean score, low, medium and high score of practice were counted. Habitual practices were also classified.

Sample size calculation and sampling procedures to obtain the minimum require sample size were as described using the following formula from http://www.raosoft.com/samplesize.html:

$$x = Z\left(^c/_{100}\right)^2 r(100 - r)$$

$$n = {}^{N\,x}/_{((N-1)E^2 + x)}$$

$$E = Sqrt\left[{}^{(N-n)x}/_{n(N-1)}\right]$$

E is margin of error, i.e.5%;

N is the population size, i.e. 500000;

$Z\left(^c/_{100}\right)$ is the critical value for the Confidence level (c = 80%);

Response distribution= 50%

Therefore, **Sample size, n = 163**

By adding 5% for incomplete responses, **171 respondents** have been selected for the study.

4.3   Survey Results

In this study, the government employee from Ministry of Social Welfare, Relief and Resettlement, Ministry of Home Affairs, Ministry of Education and Ministry of Defence are requested to participate and altogether one hundred seventy-one persons voluntarily answered the survey questions.

4.3.1   Socio-Demographic Characteristics of the respondents

4.3.1.1 Basic Demographic Characteristics

The researcher inquired the socio-demographic characteristics such as age, sex, education, marital status, monthly income, nature of the job, residency, usage of social media to get health information, leisure time activities and chronic disease condition etc.

Table 4.1 Demographic Characteristics of the respondents

Particulars	Number of respondents	Percentage of respondents (%)
Job Group		
MoSWRR	51	29.8%
MoE (Basic Education Schools)	46	26.9%
MoD (Military Hospital)	40	23.4%
MoHA	34	19.9
Total	171	100.0%
Gender		
Male	66	38.6%
Female	105	61.4%
Total	171	100.0%
Age		
18-25 years	17	9.9%
26-35 years	88	51.5%
36-45 years	49	28.7%
Above 46	17	9.9%
Total	171	100.0%

Particulars	Number of respondents	Percentage of respondents (%)
Education		
Undergraduate	10	5.9%
Graduate-Science	81	47.4%
Graduate-Art	72	42.1%
Post-Graduate	8	4.7%
Total	171	100.0%
Marital Status		
Single	74	43.3%
Married	93	54.4%
Divorces/Widow	4	2.4%
Total	171	100.0%
Monthly Income (MMK)		
< 150000	4	2.3%
150000-250000	108	63.2%
250000-350000	49	28.7%
>350000	10	5.9%
Total	171	100.0%
Job Nature		
Minimal exposure with others	4	2.3%
Exposure only with single office room	29	17.0%
Exposure with regular work-mate	88	51.5%
Exposure with different people	50	29.2%
Total	171	100.0%
Residency		
Hostel	72	42.1%
Staff Quarter	62	36.3%
Separate House	37	21.6%
Total	171	100.0%

Particulars	Number of respondents	Percentage of respondents (%)
Condition of Chronic Disease		
Hypertension/Heart disease/Lung disease/any other disease present	22	12.9%
No Chronic disease	135	78.9%
Do not know	14	8.2%
Total	171	100.0%

Source: Survey Data, SPSS output

According to the **Table 4.1**, Respondents are from four different job groups. Majority are from Ministry of Social Welfare, Relief and Resettlement (51, 29.8%) followed by Ministry of Education in which 46 persons have participated (26.9%). 40 respondents (23.4%) are from Ministry of Defence and 34 persons (19.9%) represents Ministry of Home Affairs. Female respondents (61.4%) outweighed the male respondents (38.6%). 51.5% of the respondents are between 26- 35 years old followed by aged between 36-45 years which occupied 28.7%. As the respondents are government employees and more than ninety percent (>90%) are graduates and post graduates. Similarly, more than 90% have income between 150000 to 350000 MMK (150000 to 250000 MMK- 63.2% and 250000 to 350000 MMK- 28.7%) which revealed office staffs and junior officers are participating in the study. When classifying the nature of job among respondents, 51.5% has only communicated with regular work-mate but nearly 29% has exposure with different people in their jobs. Regarding residency status, only 21.6% lived in separate houses. When inquiring chronic disease condition, majority 78.9% did not have any chronic disease.

4.3.1.2 Social media and leisure time activities of the respondents

The study also explored the different types of media that was used by respondents to get information. As shown in the **Table 4.2**, more than 46 % of the respondents responded they used at least 2 to 3 media platform and another 25.7% used more than 4 types of media. Only 15.2% of the respondents replied that they used Facebook alone.

Table 4.2 Usage of Social Media and Leisure activities of the respondents

Particulars	Number of respondents	Percentage of respondents (%)
Usage of Social Media to get information		
Facebook	26	15.2%
Viber/ Messenger	13	7.6%
Text message/ Internet	2	1.2%
Not use media	7	4.1%
Use 2-3 types of media	79	46.2%
Use >4 types of media	44	25.7%
Total	171	100.0%
Leisure activities		
Privately used time	21	12.3%
Amuse with friends/ outgoing	8	4.7%
Watching movies at residence / Listening radio	18	10.6%
Using Social media/ Play game with phone	27	15.8%
No regular practice	33	19.3%
2-3 leisure activities	54	31.6%
>4 leisure activities	10	5.8%
Total	171	100.0%

Source: Survey Data, SPSS output

In addition, leisure activities of the respondents were also recorded. Nearly thirty percent of the respondents replied that they had 2 to 3 leisure activities. Moreover, 15.8% responded that they used social media and another 10.6% were used to listening radio as their leisure activities. Against that, nearly 19% of the respondents did not have regular leisure activities.

4.3.2 Knowledge regarding COVID-19 among respondents

4.3.2.1 Different category of knowledge regarding COVID-19

Altogether there are 11 knowledge related questions in part II of the questionnaire. The general description about COVID-19, high risk group for

infection, high risk group for sever symptoms, symptoms of the disease, prevention measures and transmission route are the main category observed in the study.

Table 4.3. Knowledge on description about COVID-19

Descriptions about COVID 19	Respondents who identified	
	Correctly n (%)	Incorrectly n (%)
COVID 19 is a severe disease. (Correct Statement)	154 (90.1)	17 (9.9)
COVID 19 vaccine can prevent severe form of disease. (Correct Statement)	150 (87.7)	21 (12.3)
There is a vaccine for COVID 19. (Correct Statement)	148 (86.5)	23 (13.5)
All persons suffering from COVID 19 become dead. (Wrong Statement)	159 (93.0)	12 (7.0)
COVID 19 is easily curable disease.(Wrong Statement)	97 (56.7)	74 (43.3)
Treatment can reduce the symptoms alone among COVID 19 patients. (Wrong Statement)	43 (25.1)	128 (74.9)
There is no specific preventive or curative medicine for COVID 19. (Wrong Statement)	82 (48.0)	89 (52.0)

Source: Survey Data, SPSS output

Table 4.3 described the number of respondents who knew the description about COVID-19 correctly or not. There are 3 correct statements and 4 wrong statements. More than 90% of respondents correctly identified as COVID-19 is sever disease and the fact that all the persons suffering from COVID-19 are not dead. In contrast, the respondents (74.9%) did not know that COVID-19 treatments are effective to reduce symptoms, other related manifestations and complication of disease. Moreover, nearly half of the respondents (52%) did not know there is specific preventive and curative medicine.

Table 4.4. Knowledge about risk groups for COVID-19 infestation

Statements about risk group	Respondents who identified	
	Correctly (Number)(%)	Incorrectly (Number)(%)
Persons not vaccinated against COVID 19 (Correct Statement)	155 (90.6)	16 (9.4)
Have any kind of chronic diseases (Correct Statement)	152 (88.9)	19 (11.1)
Old ages (Correct Statement)	137 (80.1)	34 (19.9)
Residents of cold countries (Wrong Statement)	43 (25.1)	128 (74.9)
Residents of tropical countries (Wrong Statement)	91 (53.2)	80 (46.8)
Urban dwellers (Wrong Statement)	56 (32.7)	115 (67.3)
Rural residents (Wrong Statement)	104 (60.8)	67 (39.2)
Persons travelling frequently(Wrong Statement)	29 (17.0)	142 (83.0)

Source: Survey Data, SPSS output

The responses regarding knowledge about risk groups for COVID-19 infestation has described in **Table 4.4**. There are 3 correct statements and 5 wrong statements. In general, 90.6% of respondents knew that unvaccinated persons have higher risk for COVID-19 infestation. Similarly, more than eighty percent of respondents identified correctly that old ages and persons with chronic disease have more risk for disease infestation. In contrast, 83% wrongly thought that frequent travelers are risky, 74.9% wrongly knew that residents from cold countries have more risk for COVID-19 and 67.3% wrongly believed that urban dwellers have more risk.

Table 4.5. Knowledge about risk group who may have severe symptoms (illness) of COVID-19

Statements about risk group	Respondents who identified	
	Correctly (Number) (%)	Incorrectly (Number)(%)
Old ages (Correct Statement)	154 (90.1)	17 (9.9)
Persons not vaccinated against COVID 19 (Correct Statement)	150 (87.7)	21 (12.3)
Having any lung diseases (Correct Statement)	150 (87.7)	21 (12.3)
Having diabetes/ hypertension (Correct Statement)	146 (85.4)	25 (14.6)
Persons having weak immunity (Correct Statement)	146 (85.4)	25 (14.6)
Pregnant/ Children (Wrong Statement)	31 (18.1)	140 (81.9)
Residents of cold countries (Wrong Statement)	43 (25.1)	128 (74.9)
Everybody (Wrong Statement)	115 (67.3)	56 (32.7)

Source: Survey Data, SPSS output

Table 4.5 revealed the knowledge of the respondents regarding risk groups who may have severe symptoms (disease manifestation or illness) if infected by COVID-19. There are 5 correct statements and 3 wrong statements. According to table, more than 80% have responded correctly on all five risk groups (correct statement), i.e. old ages, non-vaccinated, with lungs disease/ diabetes/ hypertension/weak immunity who may have severe illness if infected by COVID-19. Otherwise, 81.9% wrongly knew that pregnant mother or children are high risk groups who may have severe symptoms and 74.9% wrongly thought that residents from cold countries had more risk.

Table 4.6. Knowledge about symptoms (Illness/Characteristics/Physical features) and prevention of COVID-19

Particulars	Respondents who identified correctly		
	more than 6 responses	4 to 6 responses	1 to 3 responses
Knowledge about Symptoms of COVID-19	88(51.5%)	77(45%)	6(3.5%)
Knowledge about Prevention of COVID-19	64(37.4%)	100(58.5%)	7(4.1%)

Source: Survey Data, SPSS output

Above table, **Table 4.6** described number of respondents who can identify the correct symptoms or prevention of COVID-19. The frequent presentations of COVID-19 (such as Fever, Dry cough, Shortness of breath, No taste/ No smell, Headache, Sore throat, Diarrhea) and unusual manifestation (such as Difficulty in urinating, Blood pressure increase/decrease, Irregular heartbeat, Rash, Pain in abdomen) have been described for inquiring knowledge about symptoms of COVID-19. More than 96% (165 persons) correctly identified majority of frequent and unusual symptoms (Illness/ Characteristics/ Physical features) of COVID-19 (51.5% knew more than 6 correct answers and 45% knew 4-6 correct answers). Even 3.5% knew at least 1 to 3 manifestations of COVID-19.

The seven correct preventive measures(Washing hand with soap and water for 20 seconds, Touching nothing while being outside the home, Avoiding physical contact and greetings, Social distancing at least 6 feet, Staying at home except for emergencies, Always wearing facial mask, Avoid going to crowded places as much as possible) and five wrong measures (Not using public transportation, Not touching the surface of the household utensils, Drinking alcohol/beer regularly, Taking malaria prophylaxis, Taking antibiotics before any illness) have been asked to reflect the knowledge of the respondents on prevention of COVID-19. Nearly 96% (164 persons) correctly identified majority of preventive measures against COVID-19 (37.4% knew more than 6 correct answers and 58.5% knew 4-6 correct answers). Similarly, 4.1% knew at least 1 to 3 preventive measures against COVID-19.

Table 4.7. Knowledge about wrong preventive measures regarding COVID-19

Statements on wrong preventive measures	Respondents who identified	
	Correctly (Number)(%)	Incorrectly (Number)(%)
Drinking alcohol/beer regularly (Wrong Statement)	133 (77.8)	38 (22.2)
Taking malaria prophylaxis (Wrong Statement)	136 (79.5)	35 (20.5)
Taking antibiotics before any illness (Wrong Statement)	137 (80.1)	34 (19.5)

Source: Survey Data, SPSS output

While exploring the knowledge on prevention of COVID-19, the three common wrong beliefs were also described in the questionnaire and results were mentioned in the **Table 4.7**. Certain amount of respondents (77% to 80%) correctly knew that drinking alcohol or taking malaria drugs or taking antibiotics weren't prevent COVID-19. In contrast, nearly 20% of the respondents did not know these statements were wrong beliefs.

Table 4.8. Knowledge about transmission of COVID-19

Statements about transmission	Respondents who identified	
	Correctly (Number)(%)	Incorrectly (Number)(%)
COVID 19 can transmit from person to person. (Correct Statement)	169 (98.8)	2 (1.2)
COVID 19 is transmitted through the droplets particles of the infected person during sneezing or coughing. (Correct Statement)	165 (96.5)	6 (3.5)
COVID 19 can transmit from animals to humans (Wrong Statement)	67 (39.2)	104 (60.8)
COVID 19 is not contagious. (Wrong Statement)	167 (97.7)	4 (2.3)
COVID 19 can transmit to persons with weak immunity. (Wrong Statement)	81 (47.4)	90 (52.6)

Statements about transmission	Respondents who identified	
	Correctly (Number)(%)	Incorrectly (Number)(%)
Once infected with COVID 19, immunity acquired and it is impossible to get infected again. (Wrong Statement)	146 (85.4)	25 (14.6)
COVID 19 can also transmit through the faeces of an infected person. (Wrong Statement)	88 (51.5)	83 (48.5)
Regular taking Vitamin C and Zincs supplements can prevent COVID 19. (Wrong Statement)	97 (56.7)	74 (43.3)

Source: Survey Data, SPSS output

Table 4.8 described the knowledge about transmission of COVID-19 among respondents. There are 2 correct statements and 6 wrong statements. 98.8% of the respondents knew that COVID-19 can transmit from person to person, 96.5% knew that COVID-19 is transmitted through droplets particles and 97.7% knew the wrong description that COVID-19 is not contagious. In contrast, nearly 50% of respondents wrongly believed that COVID-19 can transmit to person with weak immunity, COVID-19 can transmit through faeces (stools) and taking Vitamin C/ Zinc can prevent transmission of COVID-19.

Table 4.9 Knowledge about causal organism and incubation period of COVID-19

Particulars	Number of respondents (n)	Percentage of respondents (%)
Causal organism of COVID-19		
Virus (Correct Answer)	130	76.0%
Weak immunity (Wrong Answer)	32	18.7%
Parasite (Wrong Answer)	1	0.6%
Cannot answer	8	4.7%
Total	171	100.0%

Particulars	Number of respondents (n)	Percentage of respondents (%)
Incubation period of COVID-19 (time between infection or contact with the agent and the onset of symptoms or signs of infection)		
Fourteen days (Correct Answer)	26	15.2%
Thirty days (Wrong Answer)	1	0.6%
Seven days (Wrong Answer)	79	46.2%
Three days (Wrong Answer)	59	34.5%
Cannot answer	6	3.5%
Total	171	100.0%

Source: Survey Data, SPSS output

Table 4.9 described the knowledge about causal organism of COVID-19 and incubation period (time between infection or contact with the agent and the onset of symptoms or signs of infection) of COVID-19. Seventy-six percentage of the respondents knew that COVID-19 disease was caused by Virus but certain amount 18.7% wrongly believed that the disease will occur when there was weak immunity. On the other-hand, only 15.2% of the respondents knew that the correct incubation period (time between infection or contact with the agent and the onset of illness of infection) was 14 days. Majority of the respondents (80.7%) wrongly believed that incubation period was between 3 to 7 days.

4.3.2.2 Knowledge level on different perspective about COVID-19

This study measured six different facts of knowledge such as general description (7 questions), high risk group for infection (8 questions), high risk group for severe illness (8 questions), features of disease (12 questions), prevention measures (12 questions) and mode (ways) of COVID-19 transmission (8 questions). Each correct response got score 3, the total score of each respondents had been summed up. After calculating individual score, the mean score of the respondents was calculated; and knowledge score was identified as low or medium or high level depending on their mean score.

Table 4.10 Knowledge level on different perspective about COVID-19

Particulars	Respondents with			Remark
	Low Score Number(%)	Medium Score Number(%)	High Score Number(%)	
Knowledge level on description about COVID-19	2 (1.2%)	28 (16.4%)	141 (82.5%)	Low (7-10) Medium (11-16) High (17-21)
Knowledge level on high risk group for infection of COVID-19	14 (8.2%)	56 (32.7%)	101 (59.1%)	Low (9-15) Medium (16-21) High (22-27)
Knowledge level on high risk group for severe illness	10 (5.8%)	35 (20.5%)	126 (73.7%)	Low (8-14) Medium (15-20) High (21-24)
Knowledge level on symptoms of COVID-19	6 (3.5%)	77 (45.0%)	88 (51.5%)	Low (3-9) Medium (10-20) High (21-36)
Knowledge level on prevention of COVID-19	7 (4.1%)	100 (58.5%)	64 (37.4%)	Low (3-9) Medium (10-20) High (21-36)
Knowledge level on transmission of COVID-19	2 (1.2%)	25 (14.6%)	144 (84.2%)	Low (8-12) Medium (13-18) High (19-24)

Source: Survey Data, SPSS output

As shown in the **Table 4.10**, majority of the respondents were fall in their higher score in almost every group of questions. However, respondents are knowledgeable on general descriptions (82.5% had high score) and ways of transmission of COVID-19 (84.2% had high score). It was followed by the knowledge level on high risk groups who may have severe illness i.e. 73.7% of respondents. Against that, 45% of the respondents had medium knowledge score on symptoms of COVID-19 and majority (58.5%) had medium score on prevention of COVID-19.

4.3.3 Attitude regarding COVID-19 among respondents

4.3.3.1 Different attitude regarding COVID-19

According to **Table 4.11**, when inquiring self-determined risk of transmission, only 14.6% believed that they had high risk and another 46.2% believed that they had moderate self-determined risk of transmission. In contrast, 26.9% thought they had low risk and 12.3% had already infected.

Table 4.11 Attitude for transmission and severity of COVID-19

Particulars	Number of respondents (n)	Percentage of respondents (%)
Self-determined risk of transmission for respondents himself/herself		
Low risk (Self-determined risk)	46	26.9%
Moderate Risk (Self-determined risk)	79	46.2%
High Risk (Self-determined risk)	25	14.6%
Already infected	21	12.3%
Total	171	100.0%
Self-determined risk of transmission for household members/ work environment		
Not Know	20	11.7%
Limited Risk (Self-determined risk)	44	25.7%
Moderate Risk (Self-determined risk)	93	54.4%
High Risk (Self-determined risk)	14	8.2%
Total	171	100.0%
Self-determined severity if COVID-19 infected		
Not Know	47	27.5%
Mild Symptoms (Self-determined severity)	46	26.9%
Moderate Symptoms (Self-determined severity)	63	36.8%
Severe Symptoms(Self-determined severity)	15	8.8%
Total	171	100.0%

Source: Survey Data, SPSS output

In comparison with self-determined risk of transmission for others, 8.2% believed that people in their household or their work environment had high risk for transmission and 54.4% believed that their household members or workmates had moderate risk of transmission.

When exploring self-determined severity, altogether 63.7% suggested that they may have mild (26.9%) and moderate (36.8%) symptoms if they were infected.

Table 4.12 Attitude for prioritization of COVID-19 in daily life

Particulars	Number of respondents (n)	Percentage of respondents (%)
Family members prioritize COVID-19 prevention.	166	97.1%
Majority from working environment prioritize COVID-19 prevention.	165	96.5%
Majority from residential place prioritize COVID-19 prevention.	150	87.7%
People from Naypyitaw prioritize COVID-19 prevention.	140	81.9%

Source: Survey Data, SPSS output

Table 4.12 stated attitude regarding consideration of COVID-19 in the daily life of respondents. In general, majority (97%) believed their family members prioritized the prevention of COVID-19 but the percentage declined when asking broader view for people from work environment, residential place or Naypyitaw as a whole.

4.3.3.2 Worries regarding COVID-19

Fifteen facts which people usually afraid were asked to reflect the worries of the respondents and described in **Table 4.13**.

Table 4.13 Worries of respondents regarding COVID-19

Particulars	Number of respondents (n)	Percentage of respondents (%)
COVID-19 is deadly disease	103	60.2%
Separated with family if infected by COVID-19	59	34.5%
Family cannot take care if infected by COVID-19	54	31.6%
No specific treatment for COVID-19	52	30.4%
COVID-19 is easily transmissible among human	52	30.4%
Limited curative facilities for COVID-19	41	24.0%

Source: Survey Data, SPSS output

It is found that 60% replied that they afraid COVID-19 as it was deadly disease. Around 30% of respondents worried to live separately or family cannot take care the ill person if they were infected. Additionally, thirty percent of respondents worried for having non-specific treatment or limited curative facilities. It was reflecting the common worry of the human beings for the uncertainty of lives.

4.3.3.3 Different category of attitude about COVID-19

The responses for the attitude regarding COVID-19, attitude regarding coping capacity of institution against COVID-19 and attitude regarding control strategies of Myanmar have been described under this section. Eight statements have been asked with 5 responses and these were described in **Table 4.14.** Nearly half of the respondents thought that COVID-19 was not emphasized by media and it was hopeless. But 35% though that COVID-19 was spreading slowly. When asking disease was close or not, old or new anxiety and thinking about disease, majority (approximately 33% each) responded as neutral. For all the statements, the mean scores were between 2.75 to 3.64.

Table 4.14 Attitude regarding COVID-19

Particulars	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Mode	SD
Disease is close to you	46 (26.9)	13 (7.6)	59 (34.5)	12 (7.0)	41 (24.0)	2.94	3	1.480
Not emphasized by media	33 (19.3)	8 (4.7)	27 (15.8)	22 (12.9)	81 (47.4)	3.64	5	1.563
Hopeless	34 (19.9)	9 (5.3)	28 (16.4)	14 (8.2)	86 (50.3)	3.64	5	1.597
Old anxiety	48 (28.1)	21 (12.3)	57 (33.3)	19 (11.1)	26 (15.2)	2.73	3	1.380
Spreading slowly	41 (24.0)	10 (5.8)	38 (22.2)	22 (12.9)	60 (35.0)	3.29	5	1.574
Almost never think about	48 (28.1)	12 (7.0)	57 (33.3)	21 (12.3)	33 (19.3)	2.88	3	1.444
No worries	46 (26.9)	5 (2.9)	42 (24.6)	29 (17.0)	49 (28.7)	3.18	5	1.551
No concern	52 (30.4)	9 (5.3)	46 (26.9)	29 (17.0)	35 (20.5)	2.92	1	1.505
No stress	56 (32.7)	13 (7.6)	49 (28.7)	23 (13.5)	30 (17.5)	2.75	1	1.475

Source: Survey Data, SPSS output

Table 4.15 Attitude regarding coping capacity of organization against COVID-19

Particulars	Strongly Dis-confident	Dis-confident	Neutral	Confident	Strongly Confident	Mean	Mode	SD
Your Doctor	37 (21.6)	7 (4.6)	46 (26.9)	30 (17.5)	51 (29.8)	3.30	5	1.483
Your Department	36 (21.1)	19 (11.1)	51 (29.8)	19 (11.1)	46 (26.9)	3.12	3	1.463
Government departments	37 (21.6)	9 (5.3)	64 (37.4)	18 (10.5)	43 (25.1)	3.12	3	1.423
Government Hospitals	39 (22.8)	13 (7.6)	49 (28.7)	24 (14.0)	46 (26.9)	3.15	3	1.482
Private Hospitals	34 (19.9)	12 (7.0)	53 (31.0)	26 (15.2)	46 (26.9)	3.22	3	1.434
Ministry of Health	31 (18.1)	9 (5.3)	45 (26.3)	20 (11.7)	66 (38.6)	3.47	5	1.492
Rural Health Centers of Government	46 (26.9)	18 (10.5)	49 (28.7)	23 (13.5)	35 (20.5)	2.90	3	1.462
Private clinics	43 (25.1)	10 (5.8)	52 (30.4)	29 (17.0)	37 (21.6)	3.04	3	1.453
Basic Education Schools	44 (25.7)	21 (12.3)	45 (26.3)	25 (14.6)	36 (21.1)	2.93	3	1.466
Universities	46 (26.9)	21 (12.3)	46 (26.9)	24 (14.0)	34 (19.9)	2.88	1, 3	1.460
Pre-primary schools	50 (29.2)	23 (13.5)	47 (27.5)	19 (11.1)	32 (18.7)	2.77	1	1.457
Transportation sector	50 (29.2)	25 (14.6)	47 (27.5)	18 (10.5)	31 (18.1)	2.74	1	1.445

Particulars	Strongly Dis-confident	Dis-confident	Neutral	Confident	Strongly Confident	Mean	Mode	SD
Media	45 (26.3)	11 (6.4)	63 (36.8)	19 (11.1)	33 (19.3)	2.91	3	1.415
Financial services	57 (33.3)	13 (7.6)	53 (31.0)	20 (11.7)	28 (16.4)	2.70	1	1.451
Public services	48 (28.1)	15 (8.8)	52 (30.4)	26 (15.2)	30 (17.5)	2.85	3	1.434

Source: Survey Data, SPSS output

According to above **Table 4.15**, 38.6% of the respondents believed the coping capacity of Ministry of Health and 29.8% believed that of their family doctor. Coping capacity of other organizations were much lower than these TWO. In contrast, the coping capacity of financial services was not believed by 33.3%, that of pre-primary school and transportation sectors were 29.2% each and that of Universities was 26.9%. Majority of the responses cumulated for Neutral one according to survey data. The overall mean scores were between 2.70 to 3.47.

Table 4.16 Attitude regarding control strategy against COVID-19

Particulars	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Mode	SD
Persons, who have travelled to area with high infectivity of COVID 19, should be quarantined for a period of time.	25 (14.6)	9 (5.3)	17 (9.9)	12 (7.0)	108 (63.2)	3.99	5	1.507
Persons returning from countries with too much confirmed cases of COVID 19 should be quarantined for a period of time, even if they did not have fever.	21 (12.3)	9 (5.3)	15 (8.8)	15 (8.8)	111 (64.9)	4.09	5	1.434
Foreigners coming from countries with too much confirmed cases of COVID 19 should be quarantined for a period of time.	23 (13.5)	3 (1.8)	13 (7.6)	21 (12.3)	111 (64.9)	4.13	5	1.414
Entry of persons from countries with high infectivity of COVID 19 should be temporarily restricted.	24 (14.0)	6 (3.5)	17 (9.9)	9 (5.3)	115 (67.3)	4.08	5	1.477

Particulars	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Mode	SD
Individual rights should be restricted to contain the spread of COVID 19.	60 (35.1)	12 (7.0)	24 (14.0)	27 (15.8)	48 (28.1)	2.95	1	1.664
Individual rights for residency should be to contain the spread of COVID 19.	46 (26.9)	14 (8.2)	34 (19.9)	23 (13.5)	54 (31.6)	3.15	5	1.597
Travel restriction to highly infectious areas should be applied to contain the spread of COVID 19.	24 (14.0)	3 (1.8)	17 (9.9)	21 (12.3)	106 (62.0)	4.06	5	1.455
On campus learning at schools should be cancelled when the infectivity of COVID 19 was high.	25 (14.6)	7 (4.1)	21 (12.3)	23 (13.5)	95 (55.6)	3.91	5	1.471
In-Personal visits to religious buildings should not be allowed when the infectivity of COVID 19 was high.	24 (14.0)	8 (4.7)	25 (14.6)	22 (12.9)	92 (53.8)	3.88	5	1.471
Public events should not be allowed when the infectivity of COVID 19 was high.	27 (15.8)	6 (3.5)	10 (5.8)	13 (7.6)	115 (67.3)	4.07	5	1.517

Particulars	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Mode	SD
When the infectivity of COVID 19 was high, except for the emergency, health and job-related issues, everybody should stay at home.	25 (14.6)	7 (4.1)	12 (7.0)	9 (5.3)	118 (69.0)	4.10	5	1.498
Awareness of the spread of the COVID 19can help to reduce the spread of the disease	22 (12.9)	5 (2.9)	9 (5.3)	13 (7.6)	122 (71.3)	4.22	5	1.416
COVID 19 regulations of Myanmar are too much restricted.	38 (22.2)	20 (11.7)	56 (32.7)	24 (14.0)	33 (19.3)	2.96	3	1.389

Source: Survey Data, SPSS output

The attitude for the commonly applied control strategies of Myanmar were asked and described in the above **Table 4.16**. According to table, 71.3% of the respondents accepted that awareness of the spread of COVID 19 can help to reduce the spread of the disease. 69% agreed that everybody should stay at home when the infectivity of COVID-19 rose again. 67.3% responded that public events should not be allowed and persons from countries with high infectivity responded to be restricted temporarily. The overall mean scores for attitude regarding control strategy against COVID-19 were between 2.95 to 4.13.

Table 4.17 Attitude (Worries) for different issues during COVID-19

Particulars	Very Anxious	Anxious	Neutral	Un-concerned	Strongly Un-concerned	Mean	Mode	SD
Loosing loved ones	30 (17.5)	1 (0.6)	17 (9.9)	16 (9.4)	107 (62.6)	3.99	5	1.530
Deterioration of the health care system due to burden of Covid 19	27 (15.8)	3 (1.8)	33 (19.3)	24 (14.0)	84 (49.1)	3.79	5	1.464
Schools closing again	28 (16.4)	7 (4.1)	26 (15.2)	24 (14.0)	86 (50.3)	3.77	5	1.504
Closing of work places due to COVID 19	29 (17.0)	9 (5.3)	26 (15.2)	23 (13.5)	84 (49.1)	3.73	5	1.523
Travel Restrictions	24 (14.0)	8 (4.7)	27 (15.8)	23 (13.5)	89 (52.0)	3.85	5	1.455
Difficult to operate small and medium enterprises.	24 (14.0)	7 (4.1)	23 (13.5)	24 (14.0)	93 (54.4)	3.91	5	1.452
Difficulty in purchasing food.	23 (13.5)	3 (1.8)	20 (11.7)	17 (9.9)	108 (63.2)	4.08	5	1.427
Difficulty in purchasing non-food items.	28 (16.4)	4 (2.3)	20 (11.7)	18 (10.5)	101 (59.1)	3.94	5	1.511
Possibility of the country's economic decline is high and various difficulties may rise.	25 (14.6)	2 (1.2)	13 (7.6)	19 (11.1)	112 (65.5)	4.12	5	1.446

Particulars	Very Anxious	Anxious	Neutral	Un-concerned	Strongly Un-concerned	Mean	Mode	SD
The public's resilience will decrease and other negative effects may occur.	21 (12.3)	13 (7.6)	20 (11.7)	19 (11.1)	98 (57.3)	3.94	5	1.452
Due to the rising commodity prices, income and expenditure are no longer balanced.	22 (12.9)	9 (5.3)	11 (6.4)	17 (9.9)	112 (65.5)	4.10	5	1.446
Will be hard to go to foreign countries for scholar, business or health problems.	21 (12.3)	11 (6.4)	23 (13.5)	22 (12.9)	94 (55.0)	3.92	5	1.433

Source: Survey Data, SPSS output

Above **Table 4.17** revealed worries of the respondents during COVID-19. The twelve responses have been asked and majority of respondents answered that they have Strongly unconcerned on the responses. Notably, loosing loved ones, purchasing foods, possibility of economic decline and imbalance income have been responded as feeling unconcerned by more than 60% of respondents.

4.3.3.4 Attitude level on different perspective about COVID-19

When measuring the level of attitude, 9 questions were asked for disease conditions, 15 institutions were asked for coping capacity, 14 containment strategies were asked for containment strategies against COVID-19. For every particular question, strongly agree or agree to correct statement got score 3, neutral got score 2 and disagree or strongly disagree got score 1. Then, the total score of each respondents had been summed up. After calculating individual score, the mean score of the respondents was calculated; and attitude score was identified as positive or less positive depending on their mean score.

The following table **(Table 4.18)** reflected that disease conditions and coping capacity were more on negative side however, the control strategies were seem to be satisfied by respondents. Attitude for worries about COVID-19 was also explored and 129(75.4%) had more worries than the rest 42 (24.6%).

Table 4.18 Attitude level about COVID-19

Particulars	Respondents with		Remark
	Positive Attitude Number(%)	**Less Positive Attitude Number(%)**	
Attitude for COVID-19 disease conditions	61 (35.7%)	110 (64.3%)	Positive (14-18) Less Positive (9-13)
Attitude for coping capacity of COVID-19	68 (39.8%)	103 (60.2%)	Positive (23-30) Less Positive (15-22)
Attitude for control strategy of Myanmar regarding with COVID-19	137 (80.1%)	34 (19.9%)	Positive (19-26) Less Positive (12-18)

Source: Survey Data, SPSS output

4.3.4 Practice regarding COVID-19 among respondents

When inquiring the self-determined (perceived) practice for COVID prevention **(Table 4.19)**, 71% responded they obeyed the preventive measures ordered by MoH. However, they felt it became difficult to practice preventive measures in daily life.

Table 4.19 Self-determined practice for COVID-19 prevention

Variables	Positive Response Number(%)	Negative Response Number(%)	Remark
Difficult to prevent COVID-19 infection in daily life.	81 (47.4%)	90 (52.6%)	**Positive**- responded as easy or very easy **Negative-**responded as difficult or very difficult
Obey preventive measures guided by Ministry of Health	122 (71.3%)	49 (28.7%)	**Positive-** responded as obey or fully obey **Negative-** responded as disobey or totally disobey

Source: Survey Data, SPSS output

The following table **(Table 4.20)** stated that 87 persons (50.9%) responded that it was easy to wash hand regularly. On the other hand 42.1% said that it was depend on the situation and 7% responded it was difficult. In addition to the perception for hand washing, the reasons for difficult proper hand washing were asked. 62 persons (36.3%) responded that they have limited practice to wash hand. Certain amount 54(31.6%) and 45(26.3%) responded that insufficient hand washing facility and insufficient sanitizer to wash hand properly. 41 (24.0%) also said that they thought to wash hand only when dirty.

Table 4.20 Response for correct handwashing to prevent COVID-19

Particulars	Number of respondents (n)	Percentage of respondents (%)
Not easy	12	7.0%
Easy	87	50.9%
Depend on situation	72	42.1%
Total	171	100.0%

Source: Survey Data, SPSS output

4.3.4.1 Prioritization during pandemic

The priority needs were asked with the condition that the Health authority may announce homestay for two weeks. Multiple answers have allowed. As shown in **Table 4.21**, majority 91.8% responded to collect food followed by water and medicine. In comparison, cash and internet facility was just limited importance. Moreover, 91.8% of the respondents also replied that they can tolerate to stay at home if the order came out.

Table 4.21 Prioritization during homestay

Particulars	Number of respondents (n)	Percentage of respondents (%)
Having Food	157	91.8%
Having Water	149	87.1%
Having Medicine	149	87.1%
Having Cash	50	29.2%
Having Internet facility	27	15.8%

Source: Survey Data, SPSS output

When inquiring the recent practices, 13 responses included in the questionnaire and respondents had to answer all description whether they had done recently or not. (**As described in Table- 4.22**) Majority (73%) responded that they purchased medicine and essential drugs recently. The second highest one was avoiding vacation (53.2%). The other responses, such as avoid social gathering, avoid using public transportation, avoid social visit, avoid to meet with persons coming from highly infectious areas, were within the range 48 – 36%. Based on the quires, they did not want to buy non-food items or sanitizer generally. When comparing perceived needs and actual purchasing, the top most priority became medicine and drugs as during the subsequent waves of COVID-19, it is reflecting the fear of the people from not able to buy essential drugs or vitamins in their daily life.

Table 4.22 Actual practice done during COVID-19 pandemic

Particulars	Number of respondents (n)	Percentage of respondents (%)
Stockpiling Over-the-counter drugs and medical supplies	125	73.1%
Avoid holiday trips	91	53.2%
Buying more medicines that you take regularly	82	48.0%
Avoid in-person communication with people from countries/regions with high infectivity rate of COVID19	82	48.0%
Avoiding social events where many people may attend	81	47.4%
Not using public transport	79	46.2%
Buying more food	64	37.4%
Warning relatives and friends to avoid social visit	63	36.8%
Avoid business trips	52	30.4%
If you are living separately with family, avoid family visit even if you feel well.	51	29.8%
If you had sons and daughters, not allowed in-persons gathering with their friends	50	29.7%
Buying more non-food items	42	24.6%
Purchase and storage of insecticides	37	21.6%

Source: Survey Data, SPSS output

4.3.4.2 Different kind of Practices during COVID-19

In this study, practice regarding prevention of COVID-19 had been asked in three different approaches. Respondents had to answer their daily practice for prevention of COVID-19, their usual practice done within last week and intended practice if suspected COVID-19 infestation.

Firstly, daily practice of the respondents was explored. The findings (**Table 4.23**) showed that the highest response was observed for the practice of using hand sanitizer when soap and water are unavailable, with 167 individuals (97.7%). This was closely followed by the practice of always wearing a mask when going outside, with 164 individuals (95.9%). Other significant practices reported by the respondents included avoiding crowded places unless necessary, with 159 individuals (93.0%). Additionally, 156 individuals (91.2%) emphasized the need to wash hands with soap for at least 20 seconds, stay at home when experiencing fever, and avoiding close contact with ill people. Furthermore,157 individuals (91.8%) each, highlighted the importance of cover the mouth and nose when coughing and sneezing, and maintain a balanced diet.

Table 4.23 Daily Practice for prevention of COVID-19

Particulars	Number of respondents (n)	Percentage of respondents (%)
Wash your hands with soap for 20 seconds	156	91.2%
If soap and water is not available, wash hands with hand sanitizer	167	97.7%
Not touching eyes, nose and mouth with unwashed hands	138	80.7%
If you had fever, stay at home	156	91.2%
If you had to go outside, follow social distancing with 6 feet apart	143	83.6%
Always wear a mask when going outside	164	95.9%
Not going to crowded places unless it is really necessary	159	93.0%

Particulars	Number of respondents (n)	Percentage of respondents (%)
If you are sick, taking medicines recommended by someone who has been infected by COVID 19	93	54.4%
Having a meal with balance diet	157	91.8%
Covering the mouth and nose when coughing and sneezing	157	91.8%
Avoiding close contact with ill people	156	91.2%
Doing regular exercises	122	71.3%
Regular vaccination against seasonal flu	111	64.9%

Source: Survey Data, SPSS output

On the other hand, the practice of taking medicines recommended by someone who has been infected by COVID-19 received the lowest response, with only 93 individuals (54.4%). Similarly, regular vaccination against seasonal flu was reported by 111 individuals (64.9%). Detailed information is shown in above **Table 4.23**, which provided daily practices for prevention of COVID-19.

Table 4.24 Practice done within last week

Particulars	Number of respondents (n)	Percentage of respondents (%)
Avoid travelling and staying at home most of the time	135	78.9%
Not attending social events/ public affairs as much as possible	129	75.4%
If you have to go out, stay at least six feet apart from others	117	68.4%
Educating others about the symptoms of COVID 19	129	75.4%
Washing hands frequently with soap and water or hand sanitizer	157	91.8%
Seeking more information regarding COVID 19	136	79.5%
Advise persons with fever not to go office, school/ regular outside activities	142	83.0%
Not focusing on anything in particular	143	83.6%

Source: Survey Data, SPSS output

Table 4.24 showed the practices reported by respondents within the last week. The highest percentage, 157 individuals (91.8%), reported the practice of frequently washing hands with soap and water or hand sanitizer. This was closely followed by 143 respondents (83.6%) who mentioned not focusing on anything in particular. Furthermore, 142 respondents (83.0%) practiced advising individuals with fever not to engage in office, school, or regular outside activities. Seeking more information regarding COVID-19 was reported by 136 individuals (79.5%), while 135 respondents (78.9%) indicated avoiding travel and staying at home for the majority of the time. However, only 117 respondents (68.4%) selected the practice of maintaining a minimum distance of six feet from others when going out.

Table 4.25 Intended Practice if suspect COVID-19 infection

Particulars	Number of respondents (n)	Percentage of respondents (%)
I will check fever and go to the nearest hospital/clinic	139	81.3%
Will not go out unless absolutely necessary	149	87.1%
Isolation, observation; and if necessary and I will contact with Health department for treatment	146	85.4%
Isolation at home instead of going to work; Inform those who have been in contact	150	87.7%
Will take antibiotics that are ready at home	58	33.9%
Will take Traditional drugs	42	24.6%
Will take the medicine recommended by previously infected persons	61	35.7%
Will follow the instructions of MoH	157	91.8%
Undergo COVID test	158	92.4%

Source: Survey Data, SPSS output

The study also examined the intended practices of respondents if they suspect a COVID-19 infection. Most respondents, 158 individuals (92.4%), indicated that they would undergo a COVID test as their preferred course of action. This was closely followed by 157 respondents (91.8%) who expressed their intention to follow the instructions provided by the Ministry of Health (MoH).

However, a smaller number of respondents reported alternative practices. Only 42 individuals (24.6%) stated that they would resort to traditional drugs, while 58 respondents (33.9%) mentioned their intention to use antibiotics that were readily available at home. For detailed of the intended practices in case of suspected COVID-19 infection was shown in **Table 4.25**.

4.3.4.3 Practice level for COVID-19

The study assessed the practice level for COVID-19 among the respondents by using three sets of practice questions. These sets included 13 questions related to daily practice, 8 questions regarding activities conducted within the last week, and 9 questions concerning intended activities if suspecting COVID-19 infection. The practice questionnaire had been set with all correct answers and informed to choose all applicable response. If the respondents ticked one response, he or she got score 3. Then all score were compiled for each individual. After calculating individual score, the mean score of the all respondents was calculated; and the practice levels were categorized as low, medium, and high depending on their mean score.

The findings (**Table 4.26**) revealed that a majority of the respondents demonstrated a high practice score in daily preventive measures for COVID-19, with 138 respondents (80.7%) falling into high category. Similarly, for preventive activities done within the last week, 126 individuals (73.7%) exhibited a high practice level. Additionally, when considering intended measures in case of suspecting COVID-19 infection, 122 respondents (71.3%) reported a high practice level.

Table 4.26 Practice level for COVID-19

Particulars	Respondents with			Remark
	Low score Number (%)	Medium score Number (%)	High score Number (%)	
Score on Daily practice for prevention of COVID-19	5 (2.9%)	28 (16.4%)	138 (80.7%)	Low (1-9) Medium (10-19) High (20-26)
Score on Preventive activities done within last week	11 (6.4%)	34 (19.9%)	126 (73.7%)	Low (1-5) Medium (6-10) High (11-16)
Score on Intended practice if suspected COVID-19 infestation	6 (3.5%)	43 (25.1%)	122 (71.3%)	Low (1-6) Medium (7-12) High (13-18)

Source: Survey Data, SPSS output

4.3.5 Relation between socio-demographic factors and KAP

4.3.5.1 Relation between socio-demographic factors and different types of knowledge

Relation between different demographic factors and general information were analyzed against different perspectives of knowledge level using Pearson Chi-Square test described in **Table 4.27**.

Regarding knowledge on the incubation period, job (p = 0.008), residency type (p = 0.003), and age (p = 0.001) were found to be significantly associated factors. In terms of knowledge about high-risk groups for severity, residency type (p = 0.003), marital status (p = 0.001), and monthly income level (p = 0.021) were identified as significant socio-demographic factors. Furthermore, knowledge levels about the description of COVID-19 were associated with sex (p = 0.047) and job nature (p = 0.002). Education emerged as a statistically significant factor associated with knowledge levels on both symptoms (p = 0.039) and high-risk groups for infection (p = 0.041).

Table 4.27 Association between Socio-demographic factors and different types of knowledge

Independent Variable	Dependent Variable	χ^2 value	p value
Job Groups (Different departments)	Correct Knowledge on Incubation period	11.720	0.008**
Residency type	Correct Knowledge on Incubation period	11.409	0.003**
Residency type	Knowledge about high risk group for severity	15.914	0.003**
Age group	Correct Knowledge on Incubation period	16.460	0.001***
Education level	Knowledge about symptoms	16.232	0.039*
Sex	Knowledge level about description of COVID-19	6.123	0.047*

Independent Variable	Dependent Variable	χ^2 value	p value
Job nature	Knowledge level about description of COVID-19	21.026	0.002**
Education level	Knowledge level about high risk group for infection	16.105	0.041*
Marital status	Knowledge level about high risk group for severity	21.875	0.001***
Monthly income level	Knowledge level about high risk group for severity	14.857	0.021*

Table note: Statistical association was calculated using Pearson Chi-square test (χ^2) and statistically significant at *p < 0.05, **p < 0.01, ***p < 0.005, ****p < 0.001 level.

Source: Survey Data, SPSS output

4.3.5.2 Relation between socio-demographic factors and different types of attitude

The study analyzed the association between socio-demographic factors and attitude levels using the Pearson Chi-Square test, as presented in **Table 4.28**. The results indicated significant associations between certain socio-demographic variables and specific aspects of attitude towards COVID-19. Self-Determined risk for the transmission of COVID-19 was found to be associated with job group (p $= 0.044$) and education (p $= 0.033$). Additionally, the presence of a chronic disease was related to attitudes towards disease conditions (p $= 0.033$). Job group emerged as a significant factor associated with attitudes towards the control strategy implemented in Myanmar for COVID-19 (p $= 0.026$), as well as attitudes of worry (p $= 0.003$). Furthermore, residency was associated with attitudes of worry (p $= 0.029$). However, attitude towards coping capacity was not found to be associated with any socio-demographic characteristics.

Table 4.28 Association between Socio-demographic factors and different types of attitude

Independent Variable	Dependent Variable	χ^2 value	p value
Job Groups (Different Departments)	Self-Determined risk for transmission of COVID-19	25.453	0.044*
	Attitude level for control strategy of Myanmar regarding with COVID-19	9.246	0.026*
	Attitude for worry	14.152	0.003**
Education level	Self-Determined risk for transmission of COVID-19	26.549	0.033*
Presence of Chronic disease	Attitude level for COVID-19 disease conditions	6.850	0.033*
Residency type	Attitude for worry	7.075	0.029*
All Socio-demographic Variables	Attitude level for coping capacity of COVID-19	No Association	> 0.05

Table note: Statistical association was calculated using Pearson Chi-square test (χ^2) and statistically significant at *p < 0.05, **p < 0.01, ***p < 0.005, ****p < 0.001 level.

Source: Survey Data, SPSS output

4.3.5.3 Relation between socio-demographic factors and different score group of practice

The analysis examined the association between socio-demographic characteristics and different practice, as presented in **Table 4.29**. Job group was found to be associated with perceived practice in following preventive measures guided by MoH (p = 0.017) and positive daily practice for prevention (p = 0.035). Additionally, education showed associations with daily practice for prevention (p = 0.014) and intended practice measures when suspected COVID-19 infestation (p = 0.035). However, no significant associations were observed between preventive measures conducted within the last week and any of the independent variables examined.

Table 4.29 Association between Socio-demographic factors and different score group of practice

Independent Variable	Dependent Variable	χ^2 value	p value
Job Groups (Different Departments)	Score on Daily practice for prevention	13.546	0.035*
	Obey preventive measures guided by Ministry of Health	10.141	0.017*
Education level	Score on Daily practice for prevention	15.966	0.014*
Education level	Score on Intended practice measures when suspect COVID-19 infestation	13.551	0.035*
All independent variables	Score on Preventive activities done within last week	-	> 0.05

Table note: Statistical association was calculated using Pearson Chi-square test (χ^2) and statistically significant at *p < 0.05, **p < 0.01, ***p < 0.005, ****p < 0.001 level.

Source: Survey Data, SPSS output

4.3.6 Relation between different types/ levels of knowledge, attitude and practice

The associations between different variables were examined using **Table 4.30**. Knowledge on the prevention of COVID-19 was found to be associated with the attitude towards coping capacity of COVID-19 (p = 0.020). Furthermore, the knowledge level on the description of COVID-19 showed an association with the intended practice measures (p = 0.011). Regarding attitude for worry, significant associations were observed with the knowledge level about high-risk groups (p = 0.012) and the knowledge level about the transmission of the disease (p = 0.013). Additionally, correct knowledge on the incubation period was associated with both daily practice for prevention (p = 0.026) and intended practice measures (p = 0.025).

Table 4.30 Association between knowledge vs attitude and knowledge vs practice

Independent Variable	Dependent Variable	χ^2 value	p value
Knowledge on prevention of COVID-19	Attitude for coping capacity of COVID-19	7.809	0.02*
Knowledge level on high risk group for infection	Attitude (worries) level during COVID-19	8.850	0.012*
Knowledge level on transmission of COVID-19	Attitude (worries) level during COVID-19	8.623	0.013*
Correct Knowledge on Incubation period	Score on Daily practice for prevention	7.332	0.026*
Correct Knowledge on Incubation period	Score on Intended practice measures when suspect COVID-19 infestation	7.349	0.025*
Knowledge level on description of COVID	Score on Intended practice measures when suspect COVID-19 infestation	8.125	0.011*

Table note: Statistical association was calculated using Pearson Chi-square test (χ^2) and statistically significant at *p < 0.05, **p < 0.01, ***p < 0.005, ****p < 0.001 level.

Source: Survey Data, SPSS output

Table 4.31 showed significant associations between attitude and practice. Perceived practice to follow recommendations from MoH was found to be associated with attitude towards worry ($p < 0.001$), attitude towards control strategies ($p < 0.001$), and attitude towards coping capacity ($p < 0.001$). Furthermore, attitude towards disease conditions was associated with daily practice for prevention ($p = 0.008$). In addition, attitude towards the risk of transmission was associated with intended practice measures ($p = 0.006$). Moreover, attitude towards coping capacity showed an association with preventive activities conducted within the last week ($p = 0.004$).

Table 4.31 Association between attitude vs practice

Independent Variable	Dependent Variable	χ^2 value	p value
Attitude for disease condition	Obey preventive measures guided by Ministry of Health	5.300	0.021*
Attitude for disease condition	Score on Daily practice for prevention	9.679	0.008**
Attitude for disease condition	Score on Intended practice measures when suspect COVID-19 infestation	11.457	0.003***
Attitude (worries) level during COVID-19	Obey preventive measures guided by Ministry of Health	44.432	0.000****
Attitude (worries) level during COVID-19	Score on Daily practice for prevention	10.099	0.006**
Attitude for coping capacity of COVID-19	Obey preventive measures guided by Ministry of Health	13.130	0.000****
Attitude for coping capacity of COVID-19	Preventive activities done within last week	11.128	0.004***
Self-determined risk of transmission	Score on Daily practice for prevention	20.705	0.023*

Independent Variable	Dependent Variable	χ^2 value	p value
Self-determined risk of transmission	Score on Intended practice measures when suspect COVID-19 infestation	24.610	0.006**
Attitude for control strategy of Myanmar regarding with COVID-19	Obey preventive measures guided by Ministry of Health	53.478	0.000****

Table note: Statistical association was calculated using Pearson Chi-square test (χ^2) and statistically significant at *p < 0.05, **p < 0.01, ***p < 0.005, ****p < 0.001 level.

Source: Survey Data, SPSS output

CHAPTER V

CONCLUSION

This study aims to assess the knowledge, attitude and practice level of government employee from Naypyitaw towards COVID-19. The rationale, specific objective, relevant global literature review, the situation of COVID-19 and control measures of Myanmar and survey results were described in relevant chapters. Based on these, the investigator would like to summarize the findings. Moreover, the appropriate recommendation would like to suggest for further researcher.

5.1   Findings

In this study, the government employees from four ministries are requested to participate and altogether one hundred seventy-one persons voluntarily answered the survey questions.

5.1.1   Socio-demographic characteristics

Total of 171 participants, from four different Ministries, were participated and nearly half of them were between the age group of 26 to 35 years. There were only 29.2% of the participants, reported that their jobs were exposure with different people in their daily work time. Moreover, 46.2% of participants said that they were using 2 or more media, including facebook, viber and text message, to get health information. So, health educators and health administrator should use the communication platforms such as the social media and text messaging from different mobile operators for distribution of the important and urgent health information.

5.1.2   Knowledge regarding COVID-19 among the participants

The majority of the participants (89.5%) are graduates and it becomes positive factors for high knowledge score. Majority of the respondents get high score in every group of questions, however, only 37.4% of the respondents fall in the higher quartile

regarding disease prevention. It may reflect that general knowledge is acceptable among respondents but health educators may need to focus on COVID-19 prevention measures. Majority can answer correctly SARS-CoV-2 virus cause COVID-19 but only few people know the correct incubation period (within 14 days contact with infected persons) i.e. important to cut off the transmission by quarantine. It seemed that technical jargons, like incubation period, are not familiar by the general population.

When determining the levels of knowledge on different perspective about COVID-19, most of the participants got high score regarding general description, risk group and disease transmission of COVID-19. However, more than half of them were in the medium score group regarding disease prevention. So, it can he said that the participants had a fair degree of understanding of COVID-19 disease, but they still needed more health information regarding disease prevention.

5.1.3 Attitude regarding COVID-19 among participants

Regarding perceived attitude for transmission, severity and consideration of COVID-19, most of the participant considered as moderate risk for themselves and their environment. So, it may be due to the data collection period coincided with the COVID-19 under control and the pandemic intensity was subsiding. Likewise, as a consequence of the previous worse pandemic wave in Myanmar, the participants reported that they felt a great deal of panic regarding COVID-19 as a deadly disease and they feared being separated from their families if they were infected.

According to the findings, generally, most of the participants believed on the Ministry of Health and the health care professionals regarding coping capacity of organization against COVID-19 and accepted the commonly applied control strategies in Myanmar. When observing the attitude levels, nearly two-third (60-64%) had less positive attitude for disease condition and coping capacity of institutions though 80% had positive attitude for the control strategy of Myanmar. This may reflect the government staff did not believe the coping capacity of most of the institutions and they aren't expecting high yield output from the public institutions. This point is very important for policy makers who want to build trust between people and the government. Professional development of public institution may need to strengthen by changing the mindset of public servants. In addition, majority the respondents seem to

satisfy the recent containment strategies of MoH of Myanmar after comparison with control strategy of the world countries.

5.1.4   Practice regarding COVID-19 among participants

As COVID-19 can spread from droplet infection, proper hand washing practice is one of the simplest ways for prevention of COVID-19. Only tiny amount of respondents, 7% responded proper handwashing is not easy. When exploring the limitation for hand washing, one-third of the respondents said that they have limited practice to wash hand frequently and approximately 30 % responded that there were insufficient handwashing facilities. Interestingly, 24% responded that they need hand wash only when hand are dirty. Based on these findings, we can say that government should enact strict policy to set up more hand washing facilities in the public areas or offices and we may need to encourage frequent hand washing practice among employee.

When comparing practice level score, all the practice questionnaire are responded as positive manners i.e. choose correct statements which may be available among working environment. However, daily practice score had much higher percentage in contrast to intended practice when suspicious of COVID infestation. The researcher cannot conclude whether the response had bias or not as it was set up with close ended multiple-choice questions.

5.1.5   Relation between socio-demographic factors and KAP levels

After exploring different characteristics for knowledge, attitude and practice, cross-tab calculation using Pearson Chi-square test were done to find out the association between variables, specifically socio-demographic characteristics and score group of KAP. Based on the results, job group, residency type and age group were associated with correct knowledge of incubation period. But without able to cluster, we cannot specifically identify which job group or age group or residency type have higher capacity to identify correct knowledge.

Similarly, sex group and nature of the job had association with knowledge about description of the disease and it may be due to the higher proportion of female participants and job group of the exposure of regular work-mate. As for the more graduated persons were participated in this study, education variable was found to associate with knowledge about symptoms and knowledge about high risk group. On

the other hand, residency type, marital status and monthly income associated with knowledge about group for severe symptoms. Most of the associations were dispersed and it was insufficient to conclude. In general thinking, education and residency type were associated with two knowledge variables; so it is interesting to explore deeply in further study qualitatively or quantitatively.

When the researcher explored the association between socio-demographic characteristics and attitude level, the job group comprising of different departments was associated with the attitude regarding perceived risk of transmission, attitudes towards control strategies and worry about COVID-19. In turn, the status of different educational level was associated with perceived risk for transmission, as well as residency type was in relation to worry about COVID-19, are both factors to consider. Surprisingly, there was no association between the variable of level of attitude for coping capacity with any socio-demographic characteristics. When these facts are taken into account, job group, residency, and education may have an influence on the respondents' knowledge and attitude. However, job group was often an immutable variable, thus in order to share health-related information, one must concentrate on formal or informal education as well as residency.

Again, in the analysis of association between socio-demographic characteristics and practice level, the variables, such as job and education, associated with practice levels. Moreover, preventive activities done within last week did not associate with any variables of socio-demographic characteristics.

Therefore, it can be assumed that socio-demographic characteristics, namely job, residency type and educational level, mainly influence the knowledge about COVID-19 in spite limited influence on attitude or practice to prevent COVID-19.

5.1.6 Relation between different levels of knowledge, attitude and practice

This study additionally assessed the association of the levels of knowledge against the score groups of practice or attitude. The only two variables, namely level of knowledge regarding high risk group and about disease transmission was in association with the level of attitude of worry about COVID-19 infection. On the other hand, knowledge about COVID-19 disease description and correct knowledge about incubation period associated with practice levels, including daily practice and intended practice measures.

Moreover, when the researcher identified the relation between attitude and practice, all four group of attitude level associated with perceived practice to obey recommendation in the daily life. Daily practice was also in association with attitude for risk of transmission and that of disease condition. Attitude for risk of transmission also associated with intended practice and attitude for coping capacity associated with preventive activities done last week.

So, in this study, it can be concluded that all the attitude level associated with real practice, supporting with a significant association (p value < 0.001) between the variable of perceived practice to obey recommendation and the attitude for control strategy. Contrarily, it can be inferred that belief in the policy may have an impact on actual COVID-19 prevention practices and that fear or worry alone cannot affect practice.

5.2   Recommendations

Based on the results and finding of the study, the researcher would like to recommend on issues for raising knowledge among non-medical government employees in order to achieve maximum prevention among them and their families.

First of all, the educational status is very important for health literacy. So the government should arrange opportunity for learning in the work environment. If formal education pathway cannot be modified, it should focus on non-formal education to enhance health literacy by different approaches such as health education campaign at work places or residences, health awareness campaign through audio-visual media or social media. Moreover, according to the findings, specific measures for the prevention of COVID-19 and important epidemiological knowledge (such as incubation period) should focus for health literacy among Government Employees.

On the other hand, the respondents in the study have limited trust in the health care system of Myanmar. So, policy makers may need to reform health care system or coping system for health crisis by enhancing health manpower or investment for health infrastructure. Majority of the respondents believe that they or their families are obeying the COVID-19 rules and regulation but the other person did not obey enough. So, health educators can develop check-list to assess their daily practice for COVID-19 prevention and advocate utilizing in their daily life.

After combating against COVID-19 for more than two years, it becomes difficult to obey strict rules even for the government employee who used to follow order. So, policy maker should carefully consider the pros and cons of each order depend on the infectivity and hard-immunity of the community, vulnerability of the community groups and collateral damages/ consequences of the order. Hygiene practice should be focused both for the government employee and selected community and should undergo social marketing through social media or audio-visual media. Necessary water and sanitation facilities or infrastructure should be developed under the policy guidelines.

This study revealed attitude level greatly influencing the actual practice among government employee. Policy makers should focus on behavior change communication not only for communicable diseases but also non-communicable diseases.

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YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF APPLIED ECONOMICS
MPA PROGRAMME

Questionnaire for A Study on Knowledge, Attitude and Practice towards COVID-19 among Government Employees in Naypyitaw

Name of Ministry/ Department --

Part 1: Demographic data of the Respondent

1. Age   ………………

2. Gender

 i. Male   ii. Female

3. Education level   ………………

4. Type of the job

 i. Office job mainly ii. Public service

 iii. Others (Specify)………………………………………….

5. Nature of the job

 i. rarely communicate with others in my job

 ii. communicate with the colleagues only in the same office room

 iii. communicate with more or less the same people most of the days

 iv. communicate with different people on a daily basis

6. Marital status

 i. Single   ii. Married   iii. Divorced

 iv. Widow/widower v. Do not want to answer

7. Accommodation

 i. Dormitory   ii. Stay with the family(staff Housing)

 iii. Stay with the family (at private residence) iv. I do not want to answer

8. Number of people living in the same dormitory/ same house during last week

    i. Only me   ii. ……………….(number)

9. Do you have lung /heart problem/diabetes/hypertension/any chronic diseases

    i. Yes (Please mention if "Yes"…………………………………………..)

    ii. No   iii. Do not know   iv. Do not want to answer

10. Monthly income

    i. $\leq$ 150,000 MMK   ii. 150,000 to 250,000 MMK

    ii. 250,000 to 300,000 MMK   iv. $\geq$ 350,000

11. Type social media using frequently (can choose more than one)

    i. Facebook   ii. Telegram   iii. Viber

    iv. Messenger   v. Text messaging   vi. Internet browser

    vii. Do not use it   viii. Others

12. Leisure time activities (can choose more than one)

    i. Rest alone   ii. Spending time with friends/Outdoors

    iii. Watching TV   iv. Listening to radio

    v. Using the internet/social media   vi. Playing gaming on the phone or computer

    vii. No regular habit

Part 2: Knowledge of Covid 19

13. What is your response for following descriptions?

Sr. No.	Descriptions about COVID 19	False	True	Don't know
i.	COVID 19 is a severe disease.			
ii.	All persons suffering from COVID 19 become dead.			
iii.	COVID 19 is easily curable disease.			
iv.	Treatment can reduce the symptoms alone among COVID 19 patients.			
v.	There is a vaccine for COVID 19.			
vi.	There is no specific preventive or curative medicine for COVID 19.			
vii.	COVID 19 vaccine can prevent severe form of disease.			

14. COVID 19 disease is caused by-

    i. Virus   ii. Fungus   iii. Parasite   iv. Weak immunity

    v. There's no real disease: the news are just to scare people   vi. No comment

15. Any member of your family or you; have been infected by COVID 19?

    i. Infected (Laboratory confirmed)   ii. Infected (Based on the symptoms)

    iii. Never infected   iv. Don't know

16. Persons who have higher risk of infection (even follow the COVID 19 rules) are-

Sr. No.	Statements	False	True	Don't know
i.	Persons not vaccinated against COVID 19			
ii.	Have any kind of chronic diseases			
iii.	Residents of cold countries			
iv.	Residents of tropical countries			
v.	Old ages			
vi.	Urban dwellers			
vii.	Rural residents			
viii.	Persons travelling frequently			
ix.	All of above			

17. People who have more chances to have severe symptoms if infected by COVID-
    19-

Sr. No.	Statements	False	True	Don't know
i.	Old ages			
ii.	Pregnant/ Children			
iii.	Everybody			
iv.	Persons not vaccinated against COVID 19			
v.	Having any lung diseases			
vi.	Having diabetes/ hypertension diseases			
vii.	Residents of cold countries			
viii.	Persons having weak immunity			

18. Age group among which the symptoms of COVID 19 may be severe-

    i. $\leq$ 15 years   ii. between 16 and 30 years

    iii. between 31 and 50 years   iv. 50 years and older

    v. Not sure

19. Symptoms (Illness/Characteristics/Physical features) of Covid 19 are-

Sr. No.	Statements	False	True	Don't know
i.	Fever			
ii.	Difficulty in urinating			
iii.	Dry cough			
iv.	Blood pressure increase/decrease			
v.	Shortness of breath			
vi.	No taste/ No smell			
vii.	Irregular heart beat			
viii.	Headache			
ix.	Rash			
x.	Sore throat			
xi.	Diarrhea			
xii.	Pain in abdomen			

20. Preventive measures of COVID 19 are-

Sr. No.	Statements	False	True	Don't know
i.	Washing hand with soap and water for 20 seconds			
ii.	Not using public transportation			
iii.	Not touching the surface of the household utensils			
iv.	Touching nothing while being outside the home			
v.	Avoiding physical contact and greetings			
vi.	Social distancing at least 6 feet			
vii.	Staying at home except for emergencies			
viii.	Always wearing facial mask			
ix.	Avoid going to crowded places as much as possible			
x.	Drinking alcohol/beer regularly			
xi.	Taking malaria prophylaxis			
xii.	Taking antibiotics before any illness			

21. Usual common source of information about Covid 19 (Can choose all relevant response) -

i. Telephone SMS   ii. Friends

iii. Family members   iv. Neighbors

v. Colleagues from work   vi. Government hospitals/clinics

vii. Private hospitals/clinics   viii. Television programs

ix. Printed media   x. Radio programs

xi. Internet pages   xii. Social media

xiii. Books/Publications   xiv. Leaflets/Signs board

xv. Religious schools   xvi. Health literacy activities

xvii. Loudspeaker announcement in the community

22. Please response the following regarding transmission of Covid 19(transfer of
    disease from one person to another)-

Sr. No.	Statements	False	True	Don't know
i.	COVID 19 can transmit from person to person.			
ii.	COVID 19 can transmit from animals to humans			
iii.	COVID 19 is not contagious.			
iv.	COVID 19 is transmitted through the droplets particles of the infected person during sneezing or coughing.			
v.	COVID 19 can transmit to persons with weak immunity			
vi.	Once infected with COVID 19, immunity acquired and it is impossible to get infected again			
vii.	COVID 19 can also transmit through the feces of an infected person			
viii.	Regular taking Vitamin C and Zincs supplements can prevent COVID 19.			

23. Incubation period of COVI 19 (time between the exposure to the COVID 19 virus
and the onset of first symptoms) is -

      i. Within three days   ii. Within seven days

      iii. Within fourteen days   iv. Within thirty days

Part 3: Attitude of Covid 19

24. Your possibility to be infected with COVID 19

      i. No possibility   ii. Low possibility

      iii. Moderate possibility   iv. High possibility

      v. Already infected COVID 19

25. If you think, you had limited possibility for COVID 19 infection, what is your
reason?

      i. Young age   ii. Hot weather of Myanmar

      iii. Infectivity of COVID 19 in Myanmar is declining

      iv. Not travelling too much   v. COVID 19 is not really severe

      vi. Already infected by COVID 19   vii Other…

26. Do you worry to be infected by COVID 19

    i. Not worry   ii. Moderate worry

    iii. Strongly worry   iv. Cannot decide

27. Do you worry whether your household member to be infected by COVID 19

    i. Not worry   ii. Moderate worry

    iii. Strongly worry   iv. Cannot decide

28. If you are infected with Covid 19 (choose one answer)

    i. No worries   ii. Fairly worried

    iii. Very worried   iv. No answer

29. Please choose most fear facts regarding COVID 19 (Can choose THREE facts)

    i. Deadly disease

    ii. No specific curative treatment

    iii. Increasing crime rate in the community

    iv. Potential unemployment/reduced income

    v. Food insecurity

    vi. Travel restrictions

    vii. Limitations for medical treatment

    viii. Difficulty to avoid crowded places

    ix. Easily transmissible from person to person

    x. Most likely to be hospitalized

    xi. Undergo quarantine if suspected for infection

    xii. Separated from the family when infected

    xiii. Family wasn't allowed to take care the infected person

    xiv. Complication of COVID 19 is unknown

    xv. Being shunned like a sinner by the community

30. What is your attitude with the following statements?

    i. Most of your family members are currently concerned for preventive measures of COVID 19 (Agree/disagree)

    ii. Most people in your workplace are currently concerned for preventive measures of COVID 19 (Agree/disagree)

    iii. Most people in your neighborhood are currently concerned for preventive measures of COVID 19 (Agree/disagree)

    iv. Most people in Nay Pyi Taw are currently concerned for preventive measures of COVID 19 (Agree/disagree)

31. How will you rate your feeling for COVID 19 with the following statements?

Disease is close to you [1] [2] [3] [4] [5] far away

Old anxiety [1] [2] [3] [4] [5] New anxiety

Spreading slowly [1] [2] [3] [4] [5] Spreading rapidly

Almost never think about [1] [2] [3] [4] [5] Always thinking

No worries [1] [2] [3] [4] [5] Much worries

No concern [1] [2] [3] [4] [5] Much concern

No Stress [1] [2] [3] [4] [5] Much stress

Not emphasized by media [[1] [2] [3] [4] [5] Emphasized by the media

Hopeless [1] [2] [3] [4] [5] Cope well

32. How will you rate your confidence in the capacity of the following individuals and organizations to deal with COVID 19?

Particulars	No confidence ↔ Very confidence (choose one answer)
Your Doctor	[1] [2] [3] [4] [5]
Your Department	[1] [2] [3] [4] [5]
Government departments	[1] [2] [3] [4] [5]
Government Hospitals	[1] [2] [3] [4] [5]
Private Hospitals	[1] [2] [3] [4] [5]
Ministry of Health	[1] [2] [3] [4] [5]
Rural Health Centers of Government	[1] [2] [3] [4] [5]
Private clinics	[1] [2] [3] [4] [5]
Basic Education Schools	[1] [2] [3] [4] [5]
Universities	[1] [2] [3] [4] [5]
Pre-primary schools	[1] [2] [3] [4] [5]
Transportation sector	[1] [2] [3] [4] [5]
Media	[1] [2] [3] [4] [5]
Financial services	[1] [2] [3] [4] [5]
Public services	[1] [2] [3] [4] [5]

33. How will you rate your attitude for the following COVID 19 control measures?

Particulars	Disagree ↔ Agree (choose one answer)
Persons, who have travelled to area with high infectivity of COVID 19, should be quarantined for a period of time.	[1] [2] [3] [4] [5]
Persons returning from countries with too much confirmed cases of COVID 19 should be quarantined for a period of time, even if they didn't have fever.	[1] [2] [3] [4] [5]
Foreigners coming from countries with too much confirmed cases of COVID 19 should be quarantined for a period of time.	[1] [2] [3] [4] [5]
Entry of persons from countries with high infectivity of COVID 19 should be temporarily restricted.	[1] [2] [3] [4] [5]
Individual rights should be restricted to contain the spread of COVID 19.	[1] [2] [3] [4] [5]
Individual rights for residency should be to contain the spread of COVID 19.	[1] [2] [3] [4] [5]
Travel restriction to highly infectious areas should be applied to contain the spread of COVID 19.	[1] [2] [3] [4] [5]
On campus learning at schools should be cancelled when the infectivity of COVID 19 was high.	[1] [2] [3] [4] [5]
In-Personal visits to religious buildings shouldn't be allowed when the infectivity of COVID 19 was high.	[1] [2] [3] [4] [5]
Public events shouldn't be allowed when the infectivity of COVID 19 was high.	[1] [2] [3] [4] [5]
When the infectivity of COVID 19 was high, except for the emergency, health and job related issues, everybody should stay at home.	[1] [2] [3] [4] [5]
Awareness of the spread of the COVID 19can help to reduce the spread of the disease	[1] [2] [3] [4] [5]
COVID 19 regulations of Myanmar are too much restricted.	[1] [2] [3] [4] [5]

34. Rate your anxiety on the following issues-

Particulars	Very anxious ↔ Unconcerned (choose one answer)
Loosing loved ones	[1] [2] [3] [4] [5]
Deterioration of the health care system due to burden of Covid 19	[1] [2] [3] [4] [5]
Schools closing again	[1] [2] [3] [4] [5]
Closing of work places due to COVID 19	[1] [2] [3] [4] [5]
Travel Restrictions	[1] [2] [3] [4] [5]
Difficult to operate small and medium enterprises.	[1] [2] [3] [4] [5]
Difficulty in purchasing food.	[1] [2] [3] [4] [5]
Difficulty in purchasing non-food items.	[1] [2] [3] [4] [5]
Possibility of the country's economic decline is high and various difficulties may rise.	[1] [2] [3] [4] [5]
The public's resilience will decrease and other negative effects may occur.	[1] [2] [3] [4] [5]
Due to the rising commodity prices, income and expenditure are no longer balanced.	[1] [2] [3] [4] [5]
Will be hard to go to foreign countries for scholar, business or health problems.	[1] [2] [3] [4] [5]

Part 4: Practice regarding Covid 19

35. In the current situation, what is your opinion to prevent the spread of COVID 19? (Choose one answer)

    Very Hard [1] [2] [3] [4] [5] Very easy

36. Your compliance with the recommendations of MoH for the prevention of COVID 19 is- (choose one answer)

    Poor compliance [1] [2] [3] [4] [5] Fully obeyed

37. Please tick the following statements if you have done for the prevention of COVID 19 recently (Tick all the applicable)

    i. Wash your hands with soap for 20 seconds [   ]

    ii. If soap and water is not available, wash hands with hand sanitizer [   ]

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iii. Not touching eyes, nose and mouth with unwashed hands [   ]

iv. If you had fever, stay at home [   ]

v. If you had to go outside, follow social distancing with 6 feet apart [   ]

vi. Always wear a mask when going outside [   ]

vii. Not going to crowded places unless it's really necessary [   ]

viii. If you are sick, taking medicines recommended by someone who has been
    infected by COVID 19 [   ]

ix. Having a meal with balance diet [   ]

x. Covering the mouth and nose when coughing and sneezing [   ]

xi. Avoiding close contact with ill people [   ]

xii. Doing regular exercises [   ]

xiii. Regular vaccination against seasonal flu [   ]

38. Please tick the following statements if you had done during last week (Tick all the applicable)

i. Avoid travelling and staying at home most of the time [   ]

ii. Not attending social events/ public affairs as much as possible [   ]

iii. If you have to go out, stay at least six feet apart from others [   ]

iv. Educating others about the symptoms of COVID 19 [   ]

v. Washing hands frequently with soap and water or hand sanitizer [   ]

vi. Seeking more information regarding COVID 19 [ ]

vii. Advise persons with fever not to go office, school/ regular outside activities

[   ]

viii. Not focusing on anything in particular [   ]

39. If you suspected, you've been infected by COVID 19; what would you do (Tick all the applicable)

i.   I will check fever and go to the nearest hospital/clinic [   ]

ii. Will not go out unless absolutely necessary [   ]

iii. Isolation, observation; and if necessary and I will contact with Health
    department for treatment [   ]

iv. Isolation at home instead of going to work; Inform those who have been in
    contact [   ]

v.   Will take antibiotics that are ready at home [   ]

vi. Will take Traditional drugs [   ]

vii. Will take the medicine recommended by previously infected persons [   ]

viii. Will follow the instructions of MoH [   ]

ix. Undergo COVID test [   ]

40. Washing your hand with soap and water for 20 seconds is- (choose an answer)

    i. Difficult   ii. Easy

    iii. Depends on situation   iv. Difficult to answer

41. Please choose the difficulties you or your community have for washing hands properly (Tick all the applicable)

    i. No habit to wash hands frequently [   ]

    ii. No facility to wash hands [   ]

    iii. Scarce of water [   ]

    iv. Cannot afford to buy soap [   ]

    v. Cannot afford to buy hand sanitizer [   ]

    vi. Hand sanitizer is not issued from work/office [ ]

    vii. Think that washing hands is only needed when it's dirty [ ]

42. If you're instructed to stay at home for two weeks, your priority needs for that period are- (choose three priorities)

    i. Food [   ]

    ii. Water [   ]

    iii. Medicine [   ]

    iv. Internet [   ]

    v. Cash [   ]

    vi. Cannot be isolated at home for a long period [   ]

43. What is your actual practice for the following?

Particulars	[1] = **Not consider** [2] = **May consider** [3]= **Already Done**
Stockpiling Over-the-counter drugs and medical supplies	[1] [2] [3]
Buying more medicines that you take regularly	[1] [2] [3]
Buying more food	[1] [2] [3]
Buying more non-food items	[1] [2] [3]

Particulars	[1] = **Not consider** [2] = **May consider** [3]= **Already Done**
Purchase and storage of insecticides	[1] [2] [3]
Avoid in-person communication with people from countries/regions with high infectivity rate of COVID19	[1] [2] [3]
Avoiding social events where many people may attend	[1] [2] [3]
Not using public transport	[1] [2] [3]
Avoid holiday trips	[1] [2] [3]
Avoid business trips	[1] [2] [3]
If you are living separately with family, avoid family visit even if you feel well.	[1] [2] [3]
Warning relatives and friends to avoid social visit	[1] [2] [3]
If you had sons and daughters, not allowed in-persons gathering with their friends	[1] [2] [3]

Questionnaire complete.

Thanks for your kind participation.

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