The Effects of Extended Enhanced Community Quarantine on the Mental and Physical Health of Medical Technologists Working in Laboratories Testing for COVID-19 Patients in the National Capital Region, Philippines

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Abstract: - Quarantine is a public health measure that restricts the movement of individuals to prevent exposure of people to a contagious disease (CDC, 2017). Although it is an essential tool in the fight against COVID-19, it also has unwanted effects, such as the negative impact on psychological response and physical inactivity (Maugeri et al., 2020). As such is the case, it is important to study further how quarantine affects people's health, especially healthcare workers. The study aimed to identify the effects of the extended ECQ on medical technologists' mental health and physical health working in COVID-19 laboratories and hospitals. The study gathered data before and during the extended ECQ through the DASS-21 questionnaire for mental health, and IPAQ questionnaire, for physical health. Surveys containing the questionnaires and demographics were deployed through various social media, and the study was able to gather 147 respondents in the National Capital Region, Philippines. The data from the IPAQ and DASS-21 questionnaires were then analyzed using the Wilcoxon signed-rank test. The results showed that the medical technologists working in COVID 19 facilities during the extended ECQ had experienced a significant increase in severity of depression, anxiety, and stress ($p < 0.05$). Furthermore, during the extended ECQ, they had significantly lower levels of physical activity ($p < 0.05$). Hence, the implementation of the extended ECQ had caused the mental health and physical health of medical technologists working in COVID-19 laboratories and hospitals to be remarkably worse.

Keywords: — ***Quarantine, COVID-19 Pandemic, Physical Health, Mental Health.***

I. BACKGROUND OF THE STUDY

1.1 Introduction

Quarantine is a measure implemented to protect the public by preventing exposure of people to contagious diseases (CDC, 2017). On March 15, 2020, the Philippines government announced the implementation of Enhanced Community Quarantine (ECQ), the strictest lockdown measure, in the whole of Luzon and was slated to last until April 13, 2020 (Santos, 2020). Under this condition, entry bans and closure of borders were applied. Land, air, and sea travel restriction was put into effect (Prasetyo, Castillo, Salonga, Sia, & Seneta, 2020). Additionally, major mall chains in Metro Manila decided to close, but supermarkets, pharmacies, hardware stores, and select restaurants remained open.

Meanwhile, several areas outside Metro Manila decided to impose a curfew and quarantine (CNN Philippines Staff, 2020). The COVID-19 pandemic has significantly affected several areas of the economy, especially in the healthcare sector. Even though quarantine and isolation have been adopted for protecting physical health from infectious diseases, it is still

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essential to consider the mental health outcome of the people (Hossain, Sultana, & Purohit, 2020).

As a result of the outbreak, the Coronavirus disease 2019 (COVID-19), a highly transmittable disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is now considered the 21st century's third pandemic, following the Middle East respiratory syndrome coronavirus (MERS-CoV) and severe acute respiratory syndrome coronavirus (SARS-CoV) in Saudi Arabia and China, respectively. The emergence of the novel coronavirus in the City of Wuhan has spread to different countries and alerted the whole world (WHO, 2020).

In the fight against the spread of COVID-19, healthcare professionals are crucial in the healthcare system. During the ongoing pandemic, they play a significant role in assessing and managing patients diagnosed with COVID-19, patients with health needs unrelated to COVID-19, and patients with routine care needs (Bielicki et al., 2020).

One of the healthcare professionals responding to the pandemic is medical technologists. The role of medical technologists in the course of the pandemic cannot be overemphasized because they are at the forefront in providing effective and timely diagnostics (Ibeh, Enitan, Akele, & Isitua, 2020). They perform laboratory tests involving specimens from patients infected and have clinically recovered to obtain accurate and reliable data for the detection of viruses causing the disease and the underlying conditions that may affect the patient's health (Ibeh et al., 2020). Furthermore, they offer advisories to the government authorities, which serve as a guide in implementing policies regarding the containment of the disease at all levels (Ibeh et al., 2020).

As part of the job, exposure to infection is an occupational risk that is always present in medical technologists. They are constantly exposed not only to the patients but to the virus itself. The nature of the transmissibility of the disease created challenges for medical technologists as they are forced to struggle with clinical and nonclinical stressors (Hall, 2020). The front-line battle and quarantine, which leads to the prolonged separation of the medical technologists from their own families, may significantly affect their physical and mental health. In a study by Bai et al. (2004), it was discovered that being quarantined was a factor most predictive of developing acute stress disorder in hospital staff who underwent quarantine due to coming into contact with SARS. In addition, quarantined staff significantly report exhaustion, detachment from others, deteriorating work performance, and reluctance to work (Brooks et al., 2020). Many healthcare workers have been redeployed to areas outside their specialty accompanied by extra shifts and longer hours to meet the volume of patient demand. This can cause psychological distress when sustained and can cause an impact on the healthcare workers' physical health.

The COVID-19 pandemic is causing unprecedented pressure on the country's healthcare system and presents different challenges to the laboratory workforce. It is essential that the condition of medical technologists, both physical and mental, be addressed so that appropriate intervention may be given to support them. Hence, the researchers came up with the study of determining the effects of the extended community quarantine on medical technologists' mental health and physical activity in the National Capital Region (NCR) of the Philippines. To the researchers' knowledge, studies regarding the effects of the enhanced community quarantine (ECQ) on healthcare providers' mental health and physical activity, especially on medical technologists, are limited.

1.2 Objectives of the Study

The purpose of the study is to determine the effects of the enhanced-community quarantine on the mental health and physical health of medical technologists working in laboratories and hospitals that are conducting tests and collecting samples for COVID-19 patients in the NCR of the Philippines. Specifically, it aims to realize the following objectives:

- To determine whether the implementation of extended ECQ resulted in a change in the mental health status of working medical technologists at COVID-19 facilities in NCR, specifically in terms of severity of depression, anxiety, and stress.
- To determine the commonly encountered symptoms of depression, anxiety, and stress experienced by working medical technologists at COVID-19 facilities in NCR.
- To determine whether the implementation of extended ECQ caused a change in the physical health of working medical technologists at COVID-19 facilities in NCR by their change in physical activity.

1.3 Statement of the Problem

The study centers around the problem: "What are the effects of the extended enhanced community quarantine on the mental health and physical health of the medical technologists working in hospitals and laboratories testing for COVID-19 patients?" Furthermore, it will answer the following questions:
1. Do working medical technologists who undergo extended ECQ experience a change in their mental health status, specifically depression, anxiety, and stress?
2. What are the symptoms of depression, anxiety, and stress commonly encountered by working medical technologists under extended enhanced community quarantine?
3. Do working medical technologists have a change in physical activity due to the extended enhanced community quarantine?

1.4 Hypotheses of the Study

H1: There is a significant relationship between the mental health of medical technologists and the extended enhanced community quarantine.

H2: There is a significant relationship between the physical health of medical technologists and the extended enhanced community quarantine.

1.5 Limitations of the Study

This study was conducted to determine the effect of the extended enhanced community quarantine implemented from March 17 to April 30, 2020, on the mental and physical health of the front liners, particularly the medical technologists.

The medical technologists included in this study were those employed at hospitals and laboratories with license for COVID-19 testing in NCR and those employed in hospitals and laboratories that collect samples for testing in the NCR. Specific criteria may be seen in Table 1.

This research undertaking lasted for the entire duration of the academic year, 2020-2021, until the 1st semester of 2021-2022. The length of human participant involvement was the entire 2nd semester of the academic year, 2020-2021.

Table.1. Inclusion/Exclusion Criteria for Medical Technologists Considered in the Study

Inclusion Criteria	Exclusion Criteria
● Licensed Medical Technologists ● Age is above 21 ● Practiced during the enhanced community quarantine at hospitals and laboratories testing for COVID-19 testing found in the National Capital Region ● Hospitals and laboratories that gather samples from patients with COVID-19	● Unlicensed Medical Technologist ● Age is under 21 ● Did not practice during the enhanced community quarantine at hospitals and laboratories testing for COVID-19 in the National Capital Region

The source of data collection for this study was solely through online surveys, given the circumstances of the COVID-19 pandemic in the country during the undertaking of the study. Moreover, the survey for the physical and mental health of the respondents before and during the implementation of the enhanced community quarantine was conducted simultaneously as the undertaking of this study has not yet begun before and during the implementation of the enhanced community quarantine. It was also limited to the effects of the enhanced community quarantine on medical technologists' mental and physical health involved in COVID-19 testing in the National Capital Region of the Philippines during the pandemic. It did not cover the long-term effects nor effects that may arise after the pandemic and the conduction of this study.

In addition, the study did not discuss or differentiate the effects of other quarantine modifications, which include MECQ, GCQ, and MGCQ; instead, it only considered the extended enhanced community quarantine imposed in the National Capital Region of the Philippines.

1.6 Significance of the study

Medical frontliners, particularly medical technologists, are the ones who are at most risk during the COVID-19 pandemic. Hence, it is essential to look out for their well-being while attending to heavier workloads and patient demands. This study aims to determine the changes in medical technologists' physical and mental health brought about by the extended enhanced community quarantine. The research findings contribute to the establishment of knowledge and

awareness on the adverse effects of prolonged periods of quarantine on the health condition of medical technologists. Furthermore, it could be significant and beneficial to the following:

Students: The ideas presented in the study provides understanding to medical technology students about the factors that may affect their mental and physical health in their future careers, especially during extraordinary situations.

*Faculty and administrator***:** This study helps in the assessment of previous teaching strategies implemented in the program. With that, the faculty and administration may develop more effective approaches that will efficiently teach students about different coping mechanisms. This will prepare students to healthily manage more complex situations and adjust to sudden changes in the demands of their work.

Medical technologists: By participating in this research study, the medical technologists will evaluate themselves and be aware of their physical and mental well-being. This will help them to attend to their healthcare needs.

Government: The results obtained from the study will raise awareness of the current health situations of medical technologists during the pandemic. It also determines the competence and readiness of the country's healthcare system. Thus, the government may use these outcomes to improve healthcare policies and facilitate programs that would benefit healthcare personnel, especially medical technologists.

Future researchers: This study can be used to reference researchers who want to analyze the topic further or validate the research findings. This can also be used to develop tools that may address the health concerns, especially mental health, of medical technologists or other healthcare workers due to the extended enhanced community quarantine.

1.7 Definition of terms

To establish a common framework and to facilitate better insight into the research, the following terms are defined:

Extended enhanced community quarantine - A measure implemented to subdue the spread of COVID-19 in the Philippines, which involves restricting the movement of the population. This mandatory restriction allows medical institutions, medical services, and healthcare workers such as medical technologists to work and operate under-regulated health standards and protocols.

Medical technologists – This refers to those who acquire samples and perform laboratory tests to aid in diagnosing COVID-19 Patients. They are also the subject of the current research.

Mental Health - This includes the emotional, psychological, and social well-being of an individual. Mental health affects the way a person thinks, feels, and acts. It is greatly affected by stress, worry, and fear brought about by the COVID-19 pandemic, accompanied by the uncertainty of how long the enhanced community quarantine measures will last.

Physical Health - This refers to the lifestyle factors of medical technologists, notably their ability to perform light, moderate, or vigorous physical activities daily. It includes their ability to function and perform physical activities despite the adjustments and limitations inside and outside the workplace brought about by the COVID-19 pandemic.

Quarantine - A period of isolation done to control the spread of infectious disease.

II. REVIEW OF RELATED LITERATURE

2.1 Review of Related Literature

2.1.1 Quarantine:

Public health control measures are the first line of defense to contain an infection, delay disease progression, prevent terror and death, and conserve the structure of society in the absence of pharmaceutical interventions (Tognotti, 2013). Quarantine, one of the oldest control measures, preceded the idea of public health, both as a discipline and institution, and was considered as the cornerstone of these public health measures that in the olden days was perceived as a legitimate response for the protection of commercial interests and public health (Bensimon & Upshur, 2007). The origin of quarantine, derived from the Italian word Quaranta meaning 40, dates as far as 1127 in Venice, Italy, and was popularized in the 14th century during the bubonic plague pandemic to designate the

40 days of sequestration enacted by Venetian officials on vessels coming from areas where the plague was present (Newman, 2012; Koch, 2016). The fundamental concept of quarantine from centuries ago has persisted through the years and is seen today as the foundation of its modern practice (Mackowiak & Sehdev, 2002). A more up to date concept of quarantine is described by the Centers for Disease Control (CDC) and Department of Health and Human Services (HHS) (2012) as the separation of people who are, with delicate pieces of evidence, believed to have been exposed to a quarantinable communicable disease but show no signs or symptoms of illness from others who have not been exposed. Nathawad, Roblin, Pruitt, and Arquilla (2013) further defines quarantine as a restriction of movement of individuals who have been exposed to the infectious disease but are not ill to halt the transmission of disease. A common misconception is that it can be interchangeably used with isolation, but the two words have strict definitions regarding the public health scene (Barbisch, Koenig, & Shih, 2015). Isolation is different from quarantine in that it is defined as the separation of infected individuals with a communicable disease from individuals who are not infected (CDC & HHS, 2012). According to Madan and Gupta (2020), quarantine can be applied at an individual or group level and maybe enforced as a voluntary or mandatory quarantine. They further asserted that it is achieved by requiring confinement to the house or a designated institutional facility, strictly monitoring all individuals for the incidence of any symptoms, and subsequent isolation in the case of symptom development. The duration of quarantine for a novel infectious disease depends on the current knowledge regarding its incubation time (Farewell, Herzberg, James, Ho, & Leung, 2005).

In the 21st century, quarantine is still being utilized worldwide in epidemics, such as the 2014 Ebola outbreak in West African countries, and pandemics, such as the SARS outbreak of 2003 and the recent SARS-COV-2 outbreak of 2019 (Song, Sawafta, Ebrahem & Jebril, 2020). Despite this, implementing a quarantine during an outbreak has been quite controversial (Bensimon & Upshur, 2007; Tognotti, 2013). The study of Goh et al. (2006) revealed that the quarantine implemented in Singapore was effective against dealing with the SARS outbreak of 2003. Li, Geng, Tian, and Lai (2013), by simulating a scenario where mandatory quarantine was not implemented, revealed a 5.6 times higher peak of the 2009 H1N1 pandemic in Beijing, providing further evidence of its effectiveness. However, Schabas (2004), in his study of the Toronto SARS outbreak, stated that the quarantine participated little or no role in managing the outbreak.

Furthermore, according to Barbisch et al. (2015), quarantine would be ineffective and unmanageable against diseases transmitted through airborne routes because they would spread throughout the population before they are contained. However, they further asserted that diseases transmitted through direct contact might be contained through quarantine if and only if they are adequately controlled. Hence, the evaluation of quarantine must be considered before its implementation (Reynolds et al., 2007). Reynolds et al. (2007) recommended that several conditions should first be addressed when considering quarantine measures, including offering a clear rationale to quarantined individuals, keeping the duration of quarantine to a minimum, and giving special attention to high-risk groups. The study of Day, Park, Madras, Gumel, and Wu (2006) identified three main requirements for significantly reducing the number of infections in quarantine during an outbreak: one is a significant disease reproduction number; two is that a large percentage of infections caused by an individual is preventable through quarantine, and three is that should be a massive probability that an asymptomatic infected individual will be subject to quarantine before he or she acquires symptoms and is isolated. Quarantine is most effective when tailored to specific circumstances and combined with further containment measures (Low, 2004).

The implementation of quarantine also has its positive and negative consequences. An obvious benefit of an effective quarantine is protecting or restoring public health (Giubilini, Douglas, Maslen, & Savulescu, 2017). Also, according to Giubilini et al. (2017), it safeguards human and national security. Likewise, the study of Song et al. (2020) reveals that the public supports implementing a quarantine to manage the COVID-19 outbreak. In addition, voluntary home quarantine helps reduce the burden on the emergency healthcare system (Madan & Gupta, 2020).

On the other hand, several studies also highlight the consequences of quarantine. The study of Gemer et al. (2011) reported that household members quarantined with an isolated individual increased the risk of infection and estimated increased risk of infection with a longer duration of the quarantine. Moreover, according to Cetron, Maloney, Kopakka, and Simone (2004), despite the widespread

cooperation and acceptance of the public to quarantine, it comes with a huge sacrifice to the people through consequences of income loss, feelings of isolation, stigma, and family health concerns. Furthermore, quarantine raises significant ethical concerns since it involves the containment of individuals who are only speculated to be infected, and it forces these people to be in spatial proximity to others who are genuinely infected which can cause an increased chance of infection (Giubilini, Douglas, Maslen, & Savulescu, 2017). Quarantine also has a detrimental effect on mental health (Giallonardo, 2020). Likewise, the study of Brooks et al. (2020) concluded that quarantine has adverse psychological outcomes, including post-traumatic stress symptoms, confusion, and anger. Additionally, it causes a change in lifestyle through reduced physical activity and an unhealthy diet, resulting in an increased risk of cardiovascular diseases (Mattioli, Puviani, Nasi, & Farinetti, 2020). Thus, in considering the decision to implement quarantine, leaders must recognize that if applied inappropriately, quarantine actions themselves may cause harm to both individuals and society (Barbisch et al., 2015).

2.1.2 Extended Enhanced Community Quarantine:

On March 17, 2020, the entire Luzon was placed under Enhanced Community Quarantine (ECQ) due to the COVID-19 pandemic, which would last until April 13, 2020 (Calimon & Masangkay, 2020). Under the ECQ, a strict stay-at-home order was implemented wherein all gatherings were not allowed, all public transportations were suspended, and the businesses open were limited to essential establishments (Egwolf & Austriaco, 2020). Furthermore, residents were not allowed to leave their homes except emergencies, border closure and entry bans were enforced, and police officers and military personnel were positioned at designated checkpoints to make sure that the people did not break the ECQ rules (Prasetyo, Castillo, Salonga, Sia, and Seneta, 2020). The ECQ did not end on April 13; and instead, it was extended three times, and the guidelines were modified twice. On April 7, 2020, the ECQ in Luzon was extended to April 30 by the recommendation of the Inter-Agency Task Force (IATF) (Patag & Romero, 2020). It was further extended to May 15 but only on 'high-risk' areas including Manila, Central Luzon, CALABARZON, and some parts of Luzon; the rest of the areas deemed 'moderate to low-risk' were placed under general community quarantine (Lopez, 2020). The ECQ was also extended to some parts of Visayas and Mindanao. The last extension proceeded from May 16 to 31 and placed Metro Manila, Laguna, and five other provinces to modified, enhanced community quarantine (MECQ). While Cebu and Mandaue City remained in ECQ, the country was placed in GCQ (Lopez, 2020). From July 1 onwards, a few provinces remained under GCQ while the rest were placed under modified general community quarantine (MGCQ) (CNN, 2020). The quarantine implemented in the Philippines was considered the most extended lockdown worldwide (Prasetyo et al., 2020). The changes made to the term to designate the quarantine implemented around the areas in the Philippines corresponded with changes in the guidelines. MECQ, compared to ECQ, was less stringent since it allowed limited movement and transportation for essential services and goods, and some establishments were allowed to operate with a maximum of 50% workforce (Lopez, 2020).

In contrast to the previous quarantine designations, the GCQ is more relaxed since it permits government and more establishments and industries to operate with a maximum capacity of 75%, transportation continues for government work and some industries, and people are allowed to leave home for work and essential services (Ranada, 2020). MGCQ is the most relaxed since it permits the resumption of socioeconomic activities with minimal public health standards. Specifically, it permits people to travel usually, a continuation of work in private and public sector with 100% capacity, public transportation is permitted, and regular physical classes may be implemented, but the mentioned modifications still require health safety precautions such as wearing of facemask and physical distancing (Ranada, 2020; Romero, Mendez, and Crisostomo, 2020). Regarding the effect of the quarantine on the Philippines due to the pandemic, it is expected that there will be subdued growth for the economy by 2020 (Duddu, 2020). Furthermore, a considerable number of workers got displaced, and as of October 7, it is estimated that 3.5 million workers have lost their jobs or suffered reduced pay in the Philippines since the start of the quarantine (Jaymalin & Romero, 2020). Egwolf and Austriaco (2020) mentioned that studies worldwide had demonstrated the effectiveness of social distancing practices and community-wide lockdowns in pacifying the COVID-19 pandemic. Furthermore, the results of their study showed that the ECQ imposed by the government in the Philippines has been successful in limiting transmission in Manila.

2.1.3 COVID-19 Pandemic:

On March 11, 2020, the World Health Organization (WHO) declared the novel coronavirus (COVID-19) outbreak as a global pandemic. Coronavirus disease 2019 (COVID-19) is an infectious disease caused by the new coronavirus, SARS-CoV-2. Most who are infected will experience mild to moderate respiratory illnesses, and recovery usually occurs without the need for special treatment. Those who are more likely to develop serious illness include older people and underlying medical conditions (cardiovascular disease, diabetes, cancer, chronic respiratory disease). The confirmed cases had continually increased at an alarming rate, and as of September 6, 2020, 26,763,217 cases of COVID-19 have been reported, including 876,616 deaths (WHO, 2020). The disease spreads primarily by respiratory droplets during close face-to-face contact.

Furthermore, it can be spread by asymptomatic, presymptomatic, and symptomatic carriers. Moreover, the average time for symptoms to appear from the time of exposure is five days. Diagnosis of the virus can be made by detection of the virus via reverse transcription-polymerase chain reaction (RT-PCR) testing. The problem with this is that false-negative test results can occur in up to 20-67% of patients (Wiersinga, Rhodes, Cheng, & Peacock, 2020).

Looking back at the beginnings of the disease, it was first recognized in December 2019, and it was quickly found to be caused by a novel coronavirus with a similar structure to the one caused by severe acute respiratory syndrome (SARS). Although detailed clinical and epidemiologic descriptions of the first 425 cases from the epicenter of the outbreak, the city of Wuhan in Hubei province, China, were obtained, there were limitations associated with reporting the evolution of the emerging pathogen in its earliest stages in real-time. Nevertheless, more details about the disease emerged (Fauci, Lane, & Redfield, 2020). It was found that the median age of patients was 59 years old, with higher morbidity and mortality among those elderly and with comorbidities. Among the patients, 56 percent were male. There were no cases of children younger than 15 years of age, which could mean either children are less likely to be infected or the symptoms they present are so mild that they were not detected. The reports indicated that the case fatality rate is approximately 2% (Fauci et al., 2020).

Apart from knowing the course of the disease, it is known that SARS-CoV-2 is a coronavirus, a large, enveloped, single-stranded RNA virus, that can be found in humans and other mammals like dogs, cars, chickens, cattle, pigs, and birds. Early in the infection, the virus targets the nasal, bronchial epithelial cells and pneumocytes through its viral structural spike (S) protein that binds to the angiotensin-converting enzyme 2 (ACE2) receptor. Type 2 transmembrane serine protease (TMPRSS2), which is found in host cells, promoted the uptake of the virus by cleaving ACE2 and activating the protein of SARS-CoV-2, allowing the entry of the virus into host cells. Like other respiratory viral diseases, individuals may have profound lymphopenia as SARS-CoV-2 infects and kills T lymphocytes. In the latter stages of infection, the viral replication accelerates, and epithelial-endothelial barrier integrity is compromised. Autopsy demonstrated diffuse thickening of alveolar walls with airspaces infiltrated with macrophages and mononuclear cells. All in all, characteristic features include endothelial barrier, dysfunctional alveolar-capillary oxygen transmission, and impaired oxygen diffusion capacity (Wiersinga, Rhodes, & Cheng, 2020).

Ever since the first reports of COVID-19 in Wuhan, Hubei province, China, there have been discussions on the origin of the virus, SARS-CoV-2 or HCoV-19. It is the seventh of the known coronaviruses to infect humans apart from SARS-CoV, MERS-CoV, HKU1, NL63, OC43, and 229E. The latter four are associated with mild disease. Based on structural studies and biochemical experiments, SARS-CoV-2 appears to bind to the human receptor ACE2 optimally. Although it is improbable that the virus emerged from laboratory manipulation, there are two plausible explanations of its origins. First is natural selection in an animal host before zoonotic transfer. Since many of the early cases were linked to the Huanan market in Wuhan, it is possible that an animal source was in that place. Knowing that bat coronaviruses are similar to SARS-CoV-2, it is said that bats serve as reservoir hosts for their progenitor. Another potential reservoir is the Malayan pangolins (Manis javanica) that were illegally imported into Guangdong province. They also contain coronaviruses similar to SARS-CoV-2 (Andersen, Rambaut, Lipkin, et al., 2020).

Generally, controlling the spread of this infectious disease can be done by increasing awareness, protective clothing, effective treatments, and vaccination. The strategies that can be employed to contain the infection spread are hospitalization,

quarantine, and safety measures. Even though the world has taken severe measures to stop the spread of COVID-19, many individuals and developing nations were not fully aware of the risk of viral transmission to the communities (Khan, Siddique, Ali, Xue, & Nabi, 2020). Treatments include Remdesivir, which improved recovery time from 15 to 11 days; and dexamethasone therapy, which reduced 28-day mortality in patients receiving supplemental oxygen compared to the usual care (Wiersinga, Rhodes, & Cheng, 2020).

2.1.4 Healthcare Workers:

Healthcare workers serve as the core of the healthcare system, wherein every function is undertaken and mediated by them. They are responsible for the treatment, as well as for preventive and curative care. Without them, it would be challenging to attain public health and patient satisfaction (Anand & Bärnighausen, 2011). The healthcare industry is considered one of the most hazardous working environments. Healthcare workers are continuously exposed to other health and safety hazards. These hazards include exposure to organisms capable of causing disease and chemicals that may be deleterious in cases of excessive contact or exposure. Aside from these, their long working hours contribute to the levels of stress in the workplace (Joseph & Joseph, 2016).

This pandemic has proven to all of us the vital role of health care workers in relieving suffering and saving lives. A country or a hospital can only keep its patients safe as long as its healthcare workers are given safe working conditions (Ghebreyesus, 2020). Emerging viral diseases could impose significant effects on healthcare workers, such as in the case of the SARS-CoV-2 (Suwantarat & Apisarnthanarak, 2015). Being on the frontlines, healthcare workers are at an increased risk of being infected with the SARS-CoV-2. Moreover, they have to work under extreme stress levels, as they have to deal with inadequacies regarding optimal protective equipment and the absence of other colleagues who are also infected with the virus or who are under quarantine. Furthermore, they are forced to adapt and make clinical and ethical decisions that would significantly affect their patients (Krystal & McNeil, 2020).
In the Philippines, despite having the longest lockdown, the COVID-19 cases still rise. This led to the healthcare system being on a critical level in the National Capital Region. As the country's healthcare system is being overwhelmed, the healthcare workers experience depression and fatigue brought about by the burden of deciding for the lives of their patients. Moreover, the frontliners deal with the lack of personal protective equipment and the inadequacy of wages and respect being given to them (Biana & Joaquin, 2020). Healthcare workers deal with pressure, stress, insomnia, anger, denial, and fear (Kang, Li, Hu et al., 2020). As mentioned in a news article published August 02, 2020, the country's government has been neglecting the plea of the healthcare workers who are trying to seek relief from the continuous rise in COVID-19 cases since the first quarter of the year, with some officials insisting that the medical workers should do better jobs.

2.1.5 Medical Technologists:

Medical technologists, also known as medical laboratory scientists or clinical laboratory scientists, play a pivotal role in healthcare. These healthcare professionals stand at the forefront as they are responsible for collecting and testing clinical specimens retrieved from uninfected, infected, or clinically recovered individuals (Ibeh, Enitan, Akele, & Isitua, 2020). Medical technologists contribute an essential part in the diagnostic, preventive, and therapeutic services of patients through releasing accurate and timely results, providing adequate information, monitoring patient response on the development of the disease, contributing to the Quality Assurance of the healthcare system, and performing laboratory equipment validations among others (Uchejeso, Maduka, Bassey, & Obiora, 2019). The assessments provided by medical technologists allow the physicians to recommend the proper course of action and treatment plan for the patient. Thus, behind the accurate and reliable laboratory results that lead to the diagnosis, treatment, and recovery of patients are the medical technologists. In fact, according to Ibeh et al. (2020), medical technologists are "disease detectives" as they are the ones who aid in identifying the etiology of the disease through conducting analysis and examinations on tissues and body fluids such as blood.

Moreover, the role of medical technologists does not only revolve around providing laboratory tests or monitoring disease and treatment progressions of patients. Medical technologists also play a critical role in testing the efficacy and safety of antiviral agents and developing vaccines to combat infectious diseases (Ibeh, Enitan, Akele, & Isitua, 2020). For instance, they aid in critical surveillance and control programs of diseases, such as Ebola, HIV, and Malaria, as Uchejeso et al.

(2019) stated. Similarly, they also have a critical role in the recently emerging COVID-19.

With the outbreak of COVID-19 has affected millions worldwide in a matter of months, the role of medical technologists cannot be overemphasized. The entire healthcare system has been overwhelmed with the pandemic, and medical technologists are at the frontline in controlling the spread of infection, identifying conditions that may complicate the infection, and developing and discovering treatments and vaccines effective for COVID-19. According to Ibeh et al. (2020), medical technologists are also responsible for advising government authorities on guidelines and implementation of policies regarding risks and the containment of COVID-19 at all levels.

The role of medical technologists in this pandemic exposes them to constant occupational risk. Not only are they exposed to potentially infected patients but even to the virus itself inside the laboratory, posing a higher risk for infection. A study by Ran et al. (2020) emphasized that healthcare workers who are at the High-Risk Department (HRD) are more susceptible to respiratory infectious diseases as they experience more significant exposure. Additionally, because of the COVID-19 pandemic, healthcare workers such as medical technologists have been working long hours– compromising their health and safety and potentially increasing the risk for COVID-19 infection (Ran, Chen, Wang, Wu, Zhang, & Tan, 2020). Villanueva et al. (2020) conducted a study at tertiary infectious disease referral hospitals in Manila, showing that 38% of the healthcare workers who tested positive were medical technologists. Despite them being classified as low-risk, they still tested positive and presented COVID-19 symptoms. The outbreak, indeed, has had many impacts, including the safety and even the willingness of healthcare workers to continue to work (Schwarts, King, & Yen, 2020).

COVID-19 pandemic highlighted the importance of medical laboratory science and medical technologists in combating novel viruses. However, as of April 2020, there are only around three registered medical technologists per 10,000 people in the Philippines' National Capital Region (Statista, 2020). This concern on the low number of medical technologists in healthcare has been ongoing for some time, not only in the Philippines but also worldwide. The number of new technologists entering healthcare is insufficient to keep up with demand (Carden, Allsbrook, & Thomas, 2009). Moreover, unfortunately, despite their vital role in healthcare, medical technologists are still often unrecognized behind the scenes as opposed to other healthcare professionals such as physicians and nurses. Matsuo et al. (2020) explained that during the COVID-19 pandemic, the prevalence of burnout is higher among nonphysicians, including medical technologists, as these professions have lower control dimensions and desire appreciation, respect, or social support. Nonetheless, the role of medical technologists remains fundamental in diagnostic medicine, especially in the fight against the COVID-19 pandemic.

2.1.6 Mental Health:

According to the World Health Organization, mental health is a state of well-being that allows an individual to realize his or her own abilities, cope with the stresses of everyday life, work in a fruitful and productive way, and contribute to his/her community. It includes the emotional, psychological, and social aspects of our well-being. It can affect the way we think, feel and act. Mental health is essential at every stage of our lives, spanning childhood to adulthood (CDC, 2018).

Even before the current pandemic, COVID-19, mental health conditions account for approximately 13% of the global burden of disease. Quarantine, one of the containment measures, has a detrimental effect on the mental condition of the general population worldwide (Giallonardo et al., 2020). It was described as an unpleasant thing for the population to experience despite being beneficial to public health if properly conducted (De Lima et al., 2020). It is known to be a stressful experience for those who have to undergo it. Undergoing this process entails separation from loved ones, loss of freedom, lack of certainty over one's disease status, and boredom. There are many stressors, including frustration, fear of infection, longer duration of quarantine, inadequate supplies, financial loss, inadequate information, and stigma. All these can occasionally bring about dramatic effects like suicide, considerable anger, and lawsuits following the imposition of quarantine (Brooks, Webster, Smith, Woodland, Wessely, Greenberg, & Rubin, 2020). Considering the effects of quarantines from the past outbreaks, insomnia, stress, irritability, low mood, and confusion are expected consequences (León, 2020). A study found that children quarantined were found to have higher mean post-traumatic

stress scores than those who were not. 28% of the parents who were quarantined reported enough to establish a diagnosis of trauma-related mental health disorders compared to the 6% of parents who weren't (Brooks, Webster, Smith, Woodland, Wessely, Wessely, Greenberg, & Rubin, 2020). From a psychological view, people feel constrained and persistently focused on the state of disease, leading to the development of psychosomatic symptoms, including anxiety, loneliness, insomnia, and depression (Li et al., 2020).

Front-line healthcare workers suffer from insomnia, anxiety, burnout, depression, and other stress-related conditions. Worries about the future, frustration, and loneliness are the usual reactions and increase the risk of developing several mental disorders such as affective disorders, anxiety, and post-traumatic stress disorders (Giallonardo et al., 2020). In a research study by Wu et al. (2009), hospital staff quarantined due to SARS reported anxiety when dealing with patients, exhaustion, irritability, detachment, insomnia, indecisiveness, poor concentration, and reluctance to do so the job and work performance deterioration. Studies have shown that the effect of undergoing the process of quarantine serves as a predictor of post-traumatic stress disorder symptoms among healthcare workers even three years later. Another study by Bai et al. surveyed stress in 338 hospital workers who have undergone a 9-day quarantine during the SARS outbreak. This revealed that the act of quarantine highly contributed to the development of acute stress disorder.

In the Philippines, healthcare workers, including medical technologists, answer the call of duty while battling anxiety and fear. On top of being constantly exposed to the virus, they experience fear, denial, insomnia, stress, anger, and pressure (Biana & Joaquin, 2020). Symptoms of stress related to quarantine have been linked with various negative psychological outcomes, including irritability, insomnia, low mood, and being emotionally exhausted. During this pandemic, the extended community quarantine unleashed a mental health crisis marked by depression, anxiety, and stress.

A study by Jemal et al. reported that healthcare workers have a high prevalence of depression, anxiety, and stress due to the COVID-19 pandemic. DASS-21 is a screening instrument designed to measure distress along the axes of three related negative states, which are depression, anxiety, and stress. The assessment of the severity of the core symptoms of the three subscales is the primary function of this scale. This scale was utilized to evaluate the psychological distress experienced among medical workers in China during the COVID-19 pandemic (Si et al., 2020). In a study conducted by Coker et al., this instrument was validated and found to have high Cronbach's alpha values of 0.81 for depression, 0.89 for anxiety, and 0.78 for stress subscales, making it reliable.

2.1.7 Physical Health:

Physical health involves a person's ability to perform physical activities and social roles without hindering biological health indicators, body pain, and other physical limitations (Abernethy, Capio, & Sit, 2014). However, this traditional concept changed through the years due to the advances and developments in healthcare. Physical health is not only limited to the physical body being free of disease or disability anymore. Instead, it is more accurately defined as "the ability to perform daily tasks and live comfortably in one's body" (Nishat, 2020).

Physical health is determined by lifestyle factors, including physical activity (Mental Health Foundation, 2016). These factors are required for humans to maintain optimal body function. According to Isaksonn et al. (2019), regular physical activity increases life expectancy and reduces the risk of acquiring non-communicable diseases, as most NCDs are caused by having a sedentary and unhealthy lifestyle. Furthermore, those engaged in physical activities are more likely to have better interpersonal relationships because physical activity reduces stress and anxiety levels, improves cognitive function, and increases self-efficacy, thus promoting prosocial behavior (Papa, 2017). This is associated with Albert Bandura's Social Cognitive Theory, where he states that an individual's behavior is influenced by his thoughts, emotions, and environmental factors (Oden, Ward, & Raisingani, 2019).

Before the COVID-19 pandemic, physical inactivity was already known as a health crisis causing approximately 3.2 million deaths per year (WHO). Healthcare workers are among these people who are physically inactive daily. According to the World Health Organization (2018), it is essential for adults aged 18 to 64 to do at least 150 minutes of physical activity every week. Healthcare workers do not meet this WHO recommendation as their insufficient physical activity is influenced by factors including time, working hours, and pure negligence. Their exercise is limited to doing household chores and running errands (Saridi et al., 2019).

As COVID-19 continues to cause deaths worldwide, community quarantines and other health protocols like social distancing are implemented to control the spread of the virus (CDC, 2019). Quarantine has brought changes to the lifestyle of people (Mattioli et al., 2020). This "new normal" increases the incidence of a sedentary lifestyle because opportunities to be physically active, mostly done outdoors, were limited (Arena, Hall, Laddu, Lavie, & Phillips, 2020). Diet is also modified because of the reduced availability of goods, limited access to food stores, and switch to unhealthy food (Mattioli et al., 2020).

Extension of the community quarantine in the Philippines was implemented because of the failure in controlling the transmission of the virus. Public health control measures are still strictly observed as COVID-19 cases continuously increase. Due to this, the country's healthcare system is overwhelmed, and the hospital capacity is already in the "warning zone" (Department of Health, 2020). Thus, overloaded hospitals put healthcare workers at a higher risk of contracting the virus. According to Shaukat, Ali, & Razzal (2020), healthcare workers are also susceptible to developing physical and mental health problems. This situation has a large impact on the physical health of HCWs since heavier workloads result in accumulated fatigue, less time for self-care, and non-fulfillment of basic needs, including proper nutrition (Giannis et al., 2020).

In a study by Qi et al. (2020), the International Physical Activity Questionnaire was used to evaluate the physical activity, health-related quality of life, and stress among adults in China during the COVID-19 pandemic. The development of this questionnaire in 1998 was supported by reliability and validity testing conducted in 12 countries, a total of 14 sites, among six continents in the year 2000. The obtained data suggest that the said questionnaire has good measurement properties. The resulting intraclass correlation coefficients (ICC) greater than 0.70 indicate the IPAQ-SF's reliability (Qi et al., 2020).

2.2 Theoretical Study

The study uses depression, anxiety, and stress to assess the mental health of medical technologists. The extent where mental health disorders are prevalent during the community quarantine is to be gauged as well. Mental health disorders develop as a combination of multiple factors. There are theories brought forth to explain how such factors are vital in its development.

Albert Bandura's notion of the triadic reciprocal causation explains that dysfunctional behavior, similar to any behavior, is the learned result between the interactions of the person, the environment, and the individual's behavioral factors. This concept assumes that an individual's action or behavior is due to these three (3) variables (Fiest, Fiest, & Robert, 2018).

Another model, from the ideas of Eric Kandel regarding the alteration of cells in response to the environment, is the Diathesis-Stress Model. According to this model, particular individuals may inherit tendencies to manifest certain traits or behaviors, which can be triggered or activated under stressful conditions (Barlow, Durand, & Hofmann, 2018).

2.3 Conceptual Framework

The extended enhanced community quarantine has brought significant changes to the lifestyle and environment of medical technologists. These changes affect the physical activity done, behavioral and emotional factors. The changes in the person's physical activity can affect their physical health. Meanwhile, behavioral and emotional factors can contribute to the mental health effect in response to the changes in one's lifestyle and environment.

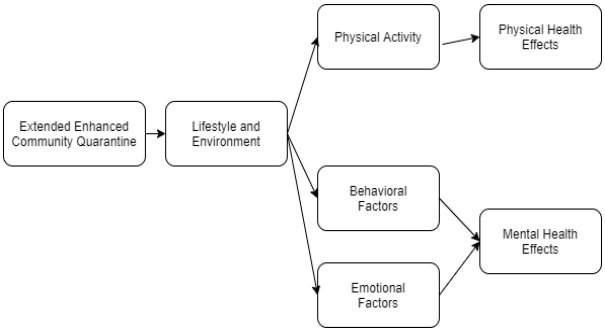

Fig. 1. Effects of the Extended Enhanced Community Quarantine

III. RESEARCH METHODS

3.1 Research Design

The study utilized a longitudinal design. The use of a longitudinal design is appropriate for the study since it measures data from the same individuals at two points in time, allowing the determination of the physical and mental effects

of the extended enhanced community quarantine to the medical technologists working in hospitals and laboratories testing for COVID-19 in the NCR. Specifically, the study gathered data from before implementing the extended enhanced community quarantine and during the extended enhanced community quarantine; hence, it is classified further as a retrospective longitudinal study. By gathering data from before and during the extended enhanced community quarantine (March 17 to April 30, 2020), the study was able to exhibit the "effect" or the change brought by the implementation of the quarantine, specifically in terms of the physical and mental health of the medical technologists working in hospitals and laboratories testing for COVID-19 in NCR. Also, the study followed a quantitative approach since data was gathered through a self-administered questionnaire that consists of only close-ended questions, and the data were analyzed statistically. The independent variable in the study was the extended enhanced community quarantine since it is a measure that is suspected to instigate the change in the medical technologists' mental health and physical health. On the other hand, the dependent variable was the medical technologists' mental health and physical health since they are the survey factors.

3.2 Subjects and Study Site

The target population of this study was the medical technologists working in hospitals and laboratories testing for and collecting samples from COVID-19 patients in the National Capital Region, Philippines. The researchers chose this population because NCR is the most affected region by the COVID-19 pandemic and had undergone the longest enhanced community quarantine; thus, the medical technologists in this region are the ones who have experienced most of the consequences of extended enhanced community quarantine. The researchers were able to calculate a recommended sample size of 352 using the data from Statista (April 2020), which indicates that there are three (3) medical technology professionals per 10,000 population in NCR, and the total population in NCR as provided by the Commission on Population and Development, which was at 13,956,707 as of June 9, 2021. However, a convenience sampling method was used to select medical technologist respondents since the state of the pandemic during the undertaking of the study caused the researchers only to have a limited reach to the population. In this non-probability type of sampling technique, the study was able to identify medical technologists in hospitals and laboratories testing for COVID-19 that can be communicated through the internet. One hundred forty-seven (147) medical technologists working in NCR-based facilities performing COVID-19 testing participated in the study.

3.3 Data Measure or Instrumentation

The researchers designed an online questionnaire using google forms to evaluate the effects of the extended enhanced community quarantine on medical technologists' mental and physical health during the COVID-19 outbreak. It consists of socio-demographics, Depression, Anxiety, Stress Scale (DASS-21), and International Physical Activity Questionnaire (IPAQ) Short Form. Two sets of DASS-21 and IPAQ-SF were included in the survey. One of which was to assess medical technologists' physical and mental health before the extended enhanced community quarantine and the other to assess their physical and mental health during the extended enhanced community quarantine.

3.3.1 Socio-demographics:

Socio-demographic data that were obtained included age, gender, years in profession, and hospital/laboratory where the participant was working. Moreover, information regarding the individual's involvement in COVID-19 testing was collected.

3.3.2 Depression, Anxiety, and Stress Scale (DASS-21):

Depression, Anxiety, and Stress Scale (DASS-21) were used to assess the mental health status of medical technologists. The 21-item questionnaire includes seven questions for each subscale. The depression scale assessed hopelessness, the inability to feel pleasure, self-deprecation, generalized dissatisfaction, lack of involvement, and inertia. The anxiety scale evaluated situational anxiety, autonomic arousal and subjective experiences involving anxious effects. Lastly, the stress scale assessed nervous arousal, being easily agitated, and the struggle in relaxing. A Likert scale ranging from 0 (did not apply to me at all-never) to 3 (applied to me very much or most of the time- almost always) was used by the respondents to rate their experiences, which served as scores for each of the questions. The obtainment of the final score was done by multiplying the total scores in each subscale by 2. Based on a classification scoring system, higher levels of

disorder were indicated by higher scores. The conditions of the individuals were categorized into normal, mild, moderate, severe, and extremely severe according to the scores of their responses.

*3.3.3 International Physical Activity Questionnaire (IPAQ)***:**

The researchers utilized a modified version of the International Physical Activity Questionnaire (IPAQ) - Short Form to evaluate the physical activity of the healthcare workers, particularly the medical technologists. The short version of the IPAQ consists of 4 activity domains: (1) leisure-time physical activity; (2) domestic and gardening (yard) activities; (3) work-related physical activity; and (4) transport-related physical activity. Moreover, the questionnaire has seven open-ended questions regarding the individual's physical activity for a period of 7 days, particularly questions that assess activities such as walking, sitting, and moderate-intensity and vigorous-intensity physical activities. The sum of the duration (expressed in minutes) and the frequency (expressed in days) of walking, sitting, moderate-intensity and vigorous-intensity physical activities were needed to compute the total score. Based on the Compendium of Physical Activities by Ainsworth et al. (2000), a particular value was used for each type of activity. The said values used were: 3.3 METs for walking, 4.0 METs for moderate-intensity, and 8.0 METs for vigorous-intensity. The MET score for each category was obtained by multiplying the MET value by the number of minutes, which was then multiplied by the number of days. The levels of physical activity were classified into three (3): high, moderate, or low, wherein (1) the high category is characterized by (a) vigorous-intensity physical activity, such as heavy lifting, digging, aerobics, or fast bicycling among others, on at least 3 out of 7 days, reaching a minimum Total Physical Activity of 1500 MET-minutes/week or (b) $\geq$ 7 days of walking, moderate-intensity, vigorous-intensity physical activities, or a combination of the three, reaching a minimum Total Physical Activity of 3000 MET-minutes/week; (2) the moderate category includes individuals who had either (a) $\geq$ 3 days of vigorous-intensity physical activity for a minimum of 20 minutes per day, (b) $\geq$ 5 days of moderate-intensity physical activity or walking for a minimum of 30 minutes per day, or (c) $\geq$ 5 days of a combination of walking, moderate-intensity or vigorous-intensity physical activities, having a minimum Total Physical Activity of 600 MET-minutes/week; and lastly the (3) low category, being the lowest level of the three, includes individuals who did not meet the criteria for both high and moderate categories.

A pilot testing was performed before the actual data gathering procedure using this instrument. Thirty medical technologists working in hospitals and laboratories testing for COVID-19 in NCR participated in the said testing. The researchers utilized Cronbach's Alpha, a test used to measure scale reliability, to validate the instrument. The results obtained for DASS-21 before and during the extended ECQ were 0.947 and 0.967, respectively, which indicate that the questions have a very high level of internal consistency. For IPAQ-SF before and during the extended ECQ, the results obtained were 0.646 and 0.683, respectively, which indicate that the questions have a moderate level of internal consistency.

3.4 Data Gathering Procedure

The undertaking of this study began after the approval of the research ethics committee. From April 13 to May 27, an online survey was disseminated and informed consent on various social media platforms to reach the potential respondents of this study. Once the potential respondents have given their consent, they have initially requested to fill up the survey with their socio-demographic profile and asked whether or not they are involved in COVID-19 testing. This assisted the researchers in identifying the respondents who fit the required criteria and ensured that each respondent was qualified to participate in the study.

Following the socio-demographic survey was the survey proper, which was divided into two sets. The first set served as an assessment of their physical and mental health before the enhanced community quarantine, whereas the second set served as an assessment of their physical and mental health during the extended enhanced community quarantine. The researchers utilized existing instruments and tools to assess the respondents' mental and physical health, specifically DASS-21 and IPAQ-SF, respectively. The collected data were then gathered, categorized, and analyzed as the basis for the research.

3.5 Ethical Consideration

The researchers submitted an initial manuscript of this study to the Ethics Committee for review, revision, and research approval. The approval from the committee indicated that the researchers could proceed with the study.

The study did not pose any danger to the researchers who will conduct the study since data collection was only done through the internet. Regarding the research participants, informed consent was distributed on online platforms and emails along with the survey. Before the conduction of the survey proper, the potential respondents were asked to read the informed consent to be properly briefed regarding the objectives of the study and the ethical considerations, which included their anonymity, confidentiality, privacy, and voluntary participation. The potential respondents were informed regarding their right to withdraw from the study at any time, even after they agreed to the informed consent.

The researchers ensured that the data acquired were only used in the study, and anonymity and confidentiality of data were observed throughout its course by sharing information only among themselves. The researchers did not divulge any name or identity in collecting, interpreting, and reporting results to those not involved in the study. It was ensured that there was no manipulation of data, methods, and results during the undertaking of this study. The researchers declare no conflict of interest.

3.6 Data Analysis

The non-parametric Wilcoxon signed-rank test was used to compare the DASS-21 and IPAQ-SF scores before and during the implementation of the extended ECQ. A p-value of < 0.05 was used to indicate that the analyses were significant. The test was appropriate for the study since the data acquired was not normally distributed due to the sampling technique applied and questionnaires that used ordinal and continuous variables. Furthermore, the test was capable of comparing paired data from two different time points. The R programming language was the software used to proceed with data analysis.

The determination of commonly encountered symptoms was achieved by adding up the scores per question of medical technologists categorized by their severity on the mental health problem and ranking the scores in descending order. The calculation of scores was made by the DASS-21 questionnaire where each respondent who answered "3" (applied to me very much or most of the time) added three points to their total score, "2" (applied to me to a considerable degree or a good part of the time) added two points to their total score, "1" (applied to me to some degree, or some of the time) added one point to their total score, and "0" (Did not apply to me at all) added zero or no points to their total score. Furthermore, the rank suggests the commonness of the answer, i.e., the higher the rank the more common it is seen in that particular severity group.

IV. RESULTS AND DISCUSSION

A. Results

4.1 Demographics

Table.2. Demographic Profile of the Respondents (n=147)

	X	SD
Age	27	6.0
Sex	f	%
Male	53	36
Female	94	64
Years in profession		
1-3 years	67	45.6
4-6 years	53	36.1
7-10 years	10	6.8
> 10 years	17	11.6
COVID-19 testing in facility		
Directly involved	98	66.7
Not directly involved	49	33.3

Table 2 shows the demographics of the 147 working medical technologists in NCR who responded to the survey. The mean (X) age of the respondents is 27, with a standard deviation of 6.0. Regarding sex, 53 (36%) of the respondents are male, while 94 (64%) are female. In regards to years in the profession, 67 (45.6%) worked for 1-3 years, 53 (36.1%) worked for 4-6 years, 10 (6.8%) worked for 7-10 years, and 17 (11.6%) worked for more than ten years. Among the respondents, 98 (66.7%) are directly involved in COVID-19 testing, whereas 49 (33.3%) are indirectly involved in COVID-19 testing.

4.2 Mental Health

4.2.1 Depression:

Table.3. Depression Distribution Before and During the Extended ECQ

Severity	Before		During	
	Frequency	Relative %	Frequency	Relative %
Normal	61	41.50%	62	42.18%
Mild	30	20.41%	19	12.93%

Moderate	25	17.01%	26	17.69%
Severe	14	9.52%	18	12.24%
Extremely Severe	17	11.56%	22	14.97%
Total	147	100%	147	100%

Table.3. shows the distribution of working medical technologists in NCR based on the interpretation of their depression scores before and during the implementation of the extended ECQ. Before the extended ECQ, 61 (41.50%) of the respondents had a depression score that falls within normal, 30 (20.41%) within mild, 25 (17.01%) within moderate, 14 (9.52%) within severe, and 17 (11.56%) within extremely severe. On the other hand, during the extended ECQ, 62 (42.18%) of the respondents had a depression score that falls within normal, 19 (12.93%) within mild, 26 (17.69%) within moderate, 18 (12.24%) within severe, and 22 (14.97%) within extremely severe.

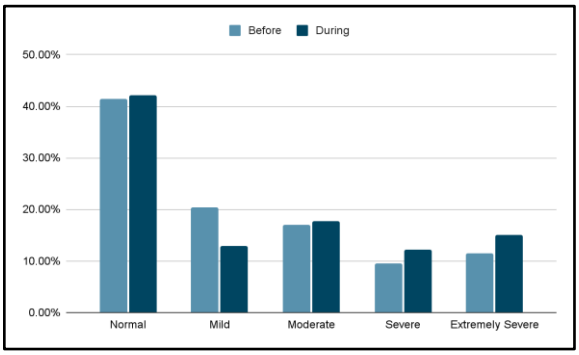

Fig.2. Bar graph comparing depression distribution before and during the quarantine

Figure.2. shows the comparison between the relative frequencies of depression of working medical technologists living in NCR before and during the implementation of the extended ECQ. Before the extended ECQ, there were more medical technologists with mild levels of depression (20.41% > 12.93%) while during the extended ECQ, more medical technologists experienced no depression (42.18% > 41.50%), moderate depression (17.69% > 17.01%), severe depression (12.24% > 9.52%), and extremely severe depression (14.97% > 11.56%).

Table 4.1 Depression Analysis Before and During the Extended ECQ Using Wilcoxon Signed Rank Test

	W^+	P-value
Depression Scores	2313	0.03655
Depression Severity	364	0.04375

*Significant at p-value < 0.05 (two-tailed)

Table.4.2 Depression Analysis Before and During the Extended ECQ Using Wilcoxon Signed Rank Test

	W^+	P-value
Depression severity before extended ECQ < Depression severity during extended ECQ	364	0.02188

*Significant at p-value < 0.05 (one-tailed)

Tables 4.1 and 4.2 summarize the depression of working medical technologists before and during the extended ECQ using the Wilcoxon signed-rank test. In table 4.1, the results show that the depression scores of working medical technologists, which is the score that the respondents obtained before being interpreted, before and during the extended ECQ, showed a significant difference (W+= 2313; p-value= 0.03655). Likewise, the result of the comparison between the depression severity of medical technologists before and during the extended ECQ demonstrated a significant difference (W+= 364; p-value= 0.04375). These results suggest a change in the severity of depression experienced by working medical technologists under the extended ECQ. Thus, table 4.2 supplements this result by demonstrating that the depression severity of medical technologists before ECQ is significantly lower (W+= 364; p-value= 0.02188) than the depression severity during the ECQ. Hence, the results indicate that the severity of depression experienced by medical technologists before the extended ECQ is lesser compared with those during the extended ECQ.

Table.5. Symptoms of Depression

Question	Normal		Mild		Moderate		Severe		Extremely Severe	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
3. I couldn't seem to experience any positive feeling at all	22	2	21	2	32	3	36	1	51	6
5. I found it difficult to work up the initiative to do things	28	1	18	3	30	4	32	4	54	5
10. I felt that I had nothing to look forward to	7	5	11	6	37	1	36	1	57	1
13. I felt down-hearted and blue	20	3	22	1	36	2	34	3	51	6
16. I was unable to become enthusiastic about anything	16	4	15	4	29	5	32	4	57	1
17. I felt I wasn't worth much as a person	2	7	12	5	24	6	27	6	57	1
21. I felt that life was meaningless	3	6	6	7	20	7	26	7	55	4

Table 5 ranks the scores achieved by medical technologists in the set of questions for depression categorized according to severity. For medical technologists categorized as normal or no depression, the most commonly encountered symptom (28 points) is the difficulty to raise initiative to do activities (Q5). On the other hand, working medical technologists who are mild in severity had mostly felt down-hearted and blue (Q13; 22 points).

In moderate severity, medical technologists had primarily felt that they had nothing to look forward to (Q10; 37 points). Those who are categorized as severe could not experience any positive feelings (Q3; 36 points) and felt that they had nothing to look forward to (Q10; 36 points). Lastly, the extremely severe level of depression in working medical technologists frequently demonstrates as having nothing to look forward to (Q10; 57 points), unable to become enthusiastic about anything (Q16; 57 points) and felt that their lives were meaningless (Q21; 57 points).

4.2.2 Anxiety:

Table.6. Anxiety Distribution Before and During the Extended ECQ

Severity	Before		During	
	Frequency	**Relative %**	**Frequency**	**Relative %**
Normal	45	30.61%	39	26.53%
Mild	13	8.84%	9	6.12%
Moderate	36	24.49%	33	22.45%
Severe	24	16.33%	16	10.88%
Extremely Severe	29	19.73%	50	34.01%
Total	147	100%	147	100%

The distribution of the respondents' anxiety scores before and during the extended ECQ is presented in Table 6.

The findings showed that before the extended ECQ, most respondents, 45 (30.61%), had a normal anxiety score. Out of the remaining participants, 36 (24.49%) were under moderate, 29 (19.73%) were under extremely severe, 24 (16.33%) were under severe, and 13 (8.84%) were under mild. Contrastingly during the extended ECQ, 50 (34.01%) of the respondents had an extremely severe anxiety score while 39 (26.53%) were under normal, 33 (22.45%) were under moderate, 16 (10.88%) were under severe, and 9 (6.12%) were under mild.

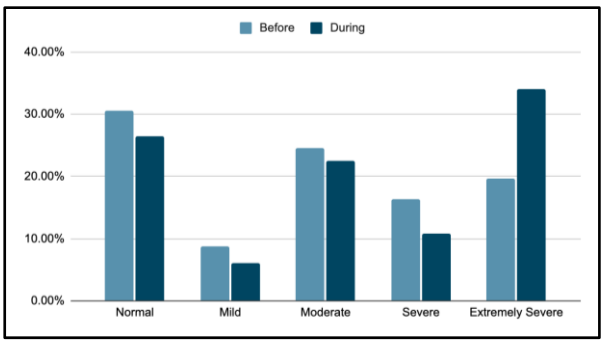

Figure.3. Bar graph comparing anxiety distribution before and during the quarantine

Figure 3 represents the differences in percentage distribution of the respondents based on the severity of their anxiety before and during the implementation of the extended ECQ. Before the extended ECQ, there were more medical technologists without anxiety (30.61% > 26.53%) while during the extended ECQ, less medical technologists experienced mild anxiety (6.12% < 8.84%), moderate anxiety severity (22.45% < 24.49%), and severe anxiety (10.88% < 16.33%). However, those who experienced extremely severe anxiety greatly increased (34.01% > 19.73%).

Table.7.1 Anxiety Analysis before and During the Extended ECQ Using Wilcoxon Signed Rank Test

	W^+	P-value
Anxiety Scores	2303	0.003577
Anxiety Severity	547	0.000411

*Significant at p-value < 0.05 (two-tailed)

Table.7.2 Anxiety Analysis before and During the Extended ECQ Using Wilcoxon Signed Rank Test

	W^+	P-value
Anxiety severity before extended ECQ < Anxiety severity during extended ECQ	547	0.0002053

*Significant at p-value < 0.05 (one-tailed)

The summary of the analysis between the anxiety scores of the respondents and the corresponding interpretation before and during the extended ECQ is presented in Table 7.1. and 7.2. Table 7.1 exhibits that the analysis of the anxiety scores of the respondents, which are referred to as the scores before the interpretation, before and during the extended ECQ obtained a p-value below 0.05, indicating a significant difference (W+=

2303; p-value= 0.003577). It is also shown that the result of the analysis between the anxiety severity of the respondents before and during the extended ECQ revealed a significant difference (W+= 547; p-value= 0.000411). These findings indicate a significant change in the severity of anxiety of the working medical technologists in NCR during the extended ECQ. Table 7.2 shows that the anxiety severity experienced by the respondents before the implementation of the extended ECQ is significantly lower (W+= 547; p-value= 0.0002053) than anxiety severity during the extended ECQ, which supports the initial results. With this, it can be said that the anxiety experienced by the working medical technologists in NCR before the extended ECQ is less severe in comparison to the anxiety experienced during the implementation.

Table.8. Symptoms of Anxiety

Questions	Normal		Mild		Moderate		Severe		Extremely Severe	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
2. I was aware of dryness of my mouth	17	1	10	1	41	1	31	1	94	5
4. I experienced breathing difficulty	6	5	7	2	21	5	12	6	91	6
7. I experienced trembling	2	7	3	5	24	4	10	7	81	7
9. I was worried about situations in which I might panic and make a fool of myself	8	3	4	4	34	3	26	2	100	2
15. I felt I was close to panic	3	6	2	7	21	5	19	4	97	3
19. I was aware of the action of my heart in the absence of physical exertion	7	4	7	2	38	2	16	5	97	3
20. I felt scared without any good reason	9	2	3	5	20	7	24	3	105	1

Table 8 shows the ranking of the scores attained by medical technologists in the questions for anxiety according to severity. The most frequently encountered symptom for working medical technologists was classified as normal or without anxiety was dryness of the mouth (Q2; 17 points). Similarly, the same symptom was most commonly experienced by medical technologists with mild (10 points), moderate (41 points), and severe (31 points) anxiety. For working medical technologists classified with extremely severe anxiety, the most commonly encountered symptom was feeling scared without any good reason (Q20; 105 points).

4.2.3. Stress:

Table.9. Stress Distribution Before and During the Extended ECQ

Severity	Before		During	
	Frequency	Relative %	Frequency	Relative %
Normal	96	65.31%	80	54.42%
Mild	15	10.20%	16	10.88%
Moderate	22	14.97%	21	14.29%
Severe	11	7.48%	19	12.93%
Extremely Severe	3	2.04%	11	7.48%
Total	147	100%	147	100%

Table 9 exhibits the distribution of the survey respondents according to the classification of the stress scores before and during the implementation of the extended ECQ. The results revealed that before the extended ECQ, 96 (65.31%) of the respondents had stress scores that were classified as usual, 15 (10.20%) as mild, 22 (14.97%) as moderate, 11 (7.48%) as severe, and 3 (2.04%) as highly severe. During the extended ECQ, the findings showed that respondents who had stress scores classified as severe and highly severe increased to 19 (12.93%) and 11 (7.48%), respectively. 80 (54.42%) of the respondents had scores that fall within average, 16 (10.88%) within mild, and 21 (14.29%) within moderate.

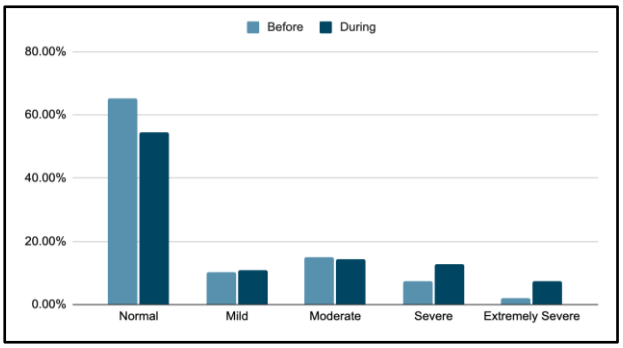

Figure.4. Bar graph comparing stress distribution before and during the quarantine

The percentage distribution of the classification of the respondents' stress scores before and during the extended ECQ is presented in figure 4. Before the extended ECQ, there were more medical technologists with no stress (65.31% > 54.42%), and moderate stress (14.97% > 14.29%) while during the extended ECQ, more medical technologists experienced mild stress (10.88% > 10.20%), severe stress (12.93% > 7.48%), and extremely severe stress (7.48% > 2.04%).

Table.10.1 Stress Analysis before and During the Extended ECQ Using Wilcoxon Signed Rank Test

	W^+	P-value
Stress Scores	2187.5	0.004344

Stress Severity	218	0.013408

*Significant at p-value < 0.05 (two-tailed)

Table.10.2 Stress Analysis before and During the Extended ECQ Using Wilcoxon Signed Rank Test

	W^+	P-value
Stress severity before extended ECQ < Stress severity during extended ECQ	218	0.006693

*Significant at p-value < 0.05 (one-tailed)

Tables 10.1 and 10.2 summarize the analysis of working medical technologists' stress before and during the extended ECQ. Table 10.1 presents the stress scores, the score obtained before the interpretation, and the stress severity. The result showed a significant difference in both the stress score (W+= 2187.5; p-value= 0.004344) and stress severity (W+=218; p-value= 0.013408) of working medical technologists before and during the extended ECQ. These values indicate a significant change in the severity of stress experienced by medical technologists during the extended ECQ. Moreover, table 10.2 presents that the severity of stress experienced by medical technologists before the extended ECQ is significantly lower (W+= 218; p-value= 0.006693) than the severity of stress during the extended ECQ supplementing the initial results. Thus, the results indicate that the severity of stress experienced by working medical technologists before the extended ECQ is lesser than the severity of stress experienced during the extended ECQ.

Table.11. Symptoms of Stress

Question	Normal		Mild		Moderate		Severe		Extremely Severe	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
1. I found it hard to wind down	64	1	26	1	43	1	44	1	28	5
6. I tended to over-react to situations	42	3	21	2	32	4	40	4	32	1
8. I felt that I was using a lot of nervous energy	34	6	19	4	31	6	39	5	30	2
11. I found myself getting agitated	40	4	17	6	35	3	42	2	30	2
12. I found it difficult to relax	57	2	21	2	38	2	41	3	29	4
14. I was intolerant of anything that kept me from getting on with what I was doing	39	5	19	4	32	4	36	6	27	6
18. I felt that I was rather touchy	21	7	15	7	20	7	24	7	25	7

The ranking of scores obtained by working medical technologists in the questions for stress according to severity is shown in Table 11. The majority of the working medical technologists categorized as normal or without stress found it hard to wind down (Q1; 64 points). This is also the most common symptom encountered by those who have mild (26 points), intermediate (43 points), and severe (44 points) stress. However, working medical technologists under the highly severe category mainly experience a tendency to overreact to situations (Q6; 32 points).

4.3 Physical Health

Table.12. MET Score Distribution Before and During the Extended ECQ

Level of Physical Activity	Before		During	
	Frequency	Relative %	Frequency	Relative %
Low	41	27.89%	62	42.18%
Moderate	71	48.30%	54	36.73%
High	35	23.81%	31	21.095%
Total	147	100%	147	100%

The distribution of MET scores categorized based on the three levels of physical activity as stated in the IPAQ-SF analysis guidelines is shown in Table 12. The gathered data demonstrated that before the ECQ was implemented, out of 147 respondents, 41 (27.89%) engaged in physical activities classified as low, 71 (48.30%) engaged in physical activities classified as moderate, and 35 (23.81%) engaged in physical activities classified as high. As the ECQ was implemented, the results showed that 62 (42.18%) of the respondents were classified under low, 54 (36.73%) were classified under moderate, and 31 (21.09%) were classified under high.

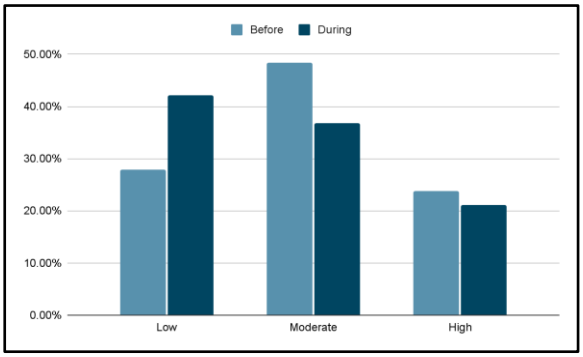

Figure.5. Bar graph comparing physical activity distribution before and during the quarantine

Figure 5 depicts the percentage distribution of the respondents per category of physical activity before and during the ECQ was effectuated. Before the extended ECQ, more medical technologists have moderate physical activity (48.30% > 36.73%) and high physical activity (23.81% > 21.09%). However, when extended ECQ was implemented, more medical technologists became less active (42.18% > 27.89%).

Table.13.1 MET Score Analysis Before and During the Extended ECQ Using Wilcoxon Signed Rank Test

	W^+	P-value
MET Scores	3712	0.002979
Level of physical activity	858	0.00269

*Significant at p-value < 0.05 (two-tailed)

Table.13.2 Physical Activity Analysis before and During the Extended ECQ Using Wilcoxon Signed Rank Test

	W^+	P-value
Level of physical activity before extended ECQ < Level of physical activity during extended ECQ	858	0.001345

*Significant at p-value < 0.05 (one-tailed)

Tables 13.1 and 13.2 presents the physical activity level of working medical technologists before and during extended ECQ. Table 13.1 presents the MET score (score before interpretation) and level of physical activity. The results indicate that there is a significant difference (p-value <0.05) in both MET score (W+= 3712; p-value= 0.002979) and level of physical activity (W+= 858; p-value= 0.00269) of working medical technologists before and during the extended ECQ. These values indicate a significant change in the physical activity of the working medical technologists in NCR during the extended ECQ. Table 13.2 shows that the physical activity levels of working medical technologists before extended ECQ are significantly higher (W+= 858; p-value= 0.001345) than during extended ECQ. Therefore, the results reveal that working medical technologists' physical activity before the extended ECQ is greater than those during the extended ECQ.

B. Discussion

The research study aimed to determine the effects of the extended ECQ on medical technologists' mental and physical health based in NCR hospitals and laboratory testing for COVID-19 patients. The effects on mental health and physical health were investigated using a survey consisting of DASS-21 and IPAQ-SF. The results obtained in the survey answers demonstrate a significant difference between mental health, specifically in the severity of depression, anxiety, and stress, and physical health in terms of physical activity of the respondents before and during the extended ECQ. Moreover, extended ECQ has harmed the respondents' mental and physical health.

Table 2. Demographics:

The data that the present study gathered revealed that most medical technologists in NCR are young, given that the majority (45.6%) only have a working experience of 1 to 3 years and the mean age of the sample population is 27. It also showed that there are more females than males (64% > 36%). A research brief by the University of the Philippines Population Institute (UPPI) and Demographic Research and Development Foundation Inc. (2020) reported that the health profession in the Philippines is dominated by females and the young. They mentioned that 75% of the health workforce are women and 65% are under the age of 35. Similarly, the Philippine Statistics Authority Fact Sheet on Women and Men in the Philippines 2021 demonstrated that 75% of the medical and allied tertiary education graduates are females.

Table 3. Depression Distribution Before and During the Extended ECQ
Table 4.1 and 4.2 Depression Analysis Before and During the Extended ECQ Using Wilcoxon Signed Rank Test
Table 6. Anxiety Distribution Before and During the Extended ECQ
Table 7.1 and 7.2 Anxiety Analysis Before and During the Extended ECQ Using Wilcoxon Signed Rank Test
Table 9. Stress Distribution Before and During the Extended ECQ
Table 10.1 and 10.2 Stress Analysis Before and During the Extended ECQ Using Wilcoxon Signed Rank Test

Medical technologists are part of the frontline healthcare workers employed during the COVID-19 quarantine to help the sick get tested and treated accordingly. The present study results demonstrated that depression, anxiety, and stress experienced by medical technologists working in COVID-19

facilities were consistently worse during the extended ECQ than before the extended ECQ. This is indicated by the increase in levels of severity across depression, anxiety and stress. The study of Chowdhury et al. (2021), which also utilized DASS-21, supports the results of the current study in which Bangladeshi nurses working in hospitals during the COVID-19 outbreak experienced a high prevalence of depression, anxiety, and stress (50.5%, 51.8%, and 41.7%, respectively). They explained that this mental distress might result from loneliness due to quarantine, thoughts of insecurity or lack of control and poor self-esteem, concern over family and friends, higher infection rate, and workloads.

Furthermore, Brooks et al. (2020) enumerated stressors during quarantine, which may have also played a role in worsening the medical technologists' mental health. These included the duration of the quarantine, fears of infection, frustration and boredom, inadequate supplies, and inadequate information. The extended ECQ in NCR brought by the pandemic resulted in an increased number of patients, which subsequently caused an increase in workload that may have been a factor that contributed to the worsening of depression, anxiety, and stress experienced by the medical technologists. An increased workload in life-threatening situations can disrupt healthcare workers' mental health (Vizheh et al., 2020). Another possible factor that may have exacerbated the mental health of the medical technologists is the fear brought by the pandemic. Healthcare workers experience more significant mental distress as they fear being infected with the COVID-19 virus (Lenzo, Quattropani, Sardella, Martino & Bonanno, 2021). Furthermore, their mental distress is aggravated by fear of carrying the virus and transmitting it to workers and family members (Chew et al., 2020). This fear of transmission is incredibly high in the case of COVID-19 because asymptomatic carriers can transmit it.

The prevalence of mental distress in medical technologists working in NCR, the Philippines, during the quarantine was found out to be higher compared to other previous studies (<10%) (Lenzo et al., 2021; Chew et al., 2020; Tee et al., 2020). This difference may be attributed to the prolonged quarantine time in NCR. According to Brooks et al. (2020), longer quarantine time results in poorer mental outcomes since individuals experience stressors longer, and extending the length of quarantine more than the authorities originally intended may make these feelings worse. Other reasons for the disparity in prevalence may be due to the demographics and time the surveys were done (Chowdhury et al., 2021; Tee et al., 2020). The study of Tee et al. (2020), which made use of the DASS-21 on Filipino demographics, mentioned that factors including recently imposed quarantine by a health authority, female gender, being in the age range of 12-21 years, single status, students, prolonged stay at home, poor self-reported health status, excessive, unnecessary concern towards COVID-19, concern regarding the health of family members, and discrimination by foreign countries resulted in increased levels of stress, anxiety, and depression. In contrast with the mentioned study, the present study does not have a normally distributed data due to limitations in data gathering brought about by current circumstances. However, similarly, there was a higher number of female respondents than male respondents, which may have affected the results of the present study. The study of Hammond et al. (2021) in healthcare workers of Australia and New Zealand, and Lai et al. in healthcare workers of China (2020) demonstrated similar results in which females have more severe results in depression, anxiety, and stress. The higher number of medical technologists directly involved in testing for COVID-19 (66.7%) may have also played a positive role in the results. The study of Lai et al. (2020) supports this claim in which it revealed that frontline healthcare workers or those who are directly engaged in COVID-19 patients in China had worse mental health outcomes compared with second-line healthcare workers. Further evidence is the study of Lenzo et al. (2021), in which frontline healthcare workers in Italy had higher depression, anxiety, and stress compared to second-line healthcare workers. Hence, some factors in the demographics may have played a role in the obtained results of the present study. However, the correlation between demographics and the change seen in mental health severity of medical technologists (e.g., which gender exhibited the most significant change in mental health) was not part of the objectives of the present study.

Table 12. MET Score Distribution Before and During the Extended ECQ
Table 13.1 MET Score Analysis Before and During the Extended ECQ Using Wilcoxon Signed Rank Test
Table 13.2 Physical Activity Analysis Before and During the Extended ECQ Using Wilcoxon Signed Rank Test

The findings for the physical activity levels of medical technologists revealed that their activity is relatively lower

during the extended ECQ compared to before the ECQ was implemented. Before the said implementation, this study found that the relative percentages of respondents who get to do moderate and high physical activities (48.30% and 23.81%, respectively) were at greater levels compared to the levels during extended ECQ (36.73% and 21.09%, respectively). In contrast, the relative percentages of respondents who have low physical activities were lower before the implementation of extended ECQ (27.89%) than during ECQ (42.18%).

In a similar study conducted by Maugeri et al. (2020), IPAQ results are consistent with the findings of this study, revealing that quarantine caused a drastic decrease in the activity of the respondents who were classified as highly and moderately active individuals before the pandemic. Maugeri et al. (2020) explain that the quarantine limits the regular and habitual levels of the population doing moderate and high physical activities. This finding can be related to the situation in NCR during extended ECQ wherein quarantine restrictions were enforced by the government making home workout the only means to stay active. Additionally, the study by Maugeri et al. (2020) found an increase in MET score of those doing low physical activity during extended ECQ, which means that the increase in energy spent by the individuals previously categorized under low physical activity levels can be explained by the more significant amount of low-intensity housework needed to be done by those forced to stay at home due to quarantine restrictions.

The study of Castañeda-Babarro, Arbillaga-Etxarri, Gutierrez-Santamaria, and Coca (2020) also stated that moderate and vigorous activities decreased by 2.6% and 16.8%, respectively, during the quarantine period. Moreover, a significant increase (23.8%) was observed in the sedentary time or low activity level. This is likely caused by the changes in the daily activities of the respondents, such as walking, cycling, or going to work. The prolonged involuntary stay at home due to imposed quarantine regulations also encourages sedentary behavior (Castañeda-Babarro et al., 2020). That said, the current study is further supported by the results obtained from the study of Castañeda-Babarro et al. (2020).

In line with the hypothesis, this study has also found a significant decrease in the respondents' physical activity during extended ECQ compared to before extended ECQ. Giustino et al. (2020) report a similar finding among the physically active Sicilian population using an adapted version of IPAQ-SF. The study found a significantly lower physical activity among the active Sicilian population during quarantine than before the quarantine period. This result could be attributed to different factors such as lack of a coach/training partner/instructor, no access to equipment, lack of enough space for physical activity, and different settings (Giustino et al., 2020).

The reduction in moderate and vigorous physical activity and increase in low physical activity has been a trend during the quarantine period. In this study, the decreased physical activities of medical technologists may be attributed to the extended ECQ, which imposed limited and restricted outdoor movement for a sustained period. Woods et al. (2020) stated that extended periods of quarantine and social distancing brought about a reduction in physical activity that may potentially compromise mental health and increase the risk of immune, respiratory, cardiovascular, and musculoskeletal system damage. This decrease in physical activity affects the body's physiological system and can be detrimental to the overall health of medical technologists, especially during the pandemic. A study conducted by Srivastav et al. (2020) during the COVID-19 lockdown reported that regular physical activity might reduce sickness and reduce the risk of upper respiratory tract infection, as regular exercise can enhance the immune response. Hence, it may be implied that although the extended ECQ reduced the spread of COVID-19 infection, it may increase the chance of infection by reducing the immunity of medical technologists with significantly reduced physical activities.

V. SUMMARY, CONCLUSION, AND RECOMMENDATION

5.1 Summary

In this research study, the effects of extended ECQ on medical technologists' mental and physical health working in hospitals and laboratories that involve COVID-19 testing in NCR were determined. To determine the effect of the extended ECQ on mental health, the severity of depression, anxiety, and stress were measured before and during the extended ECQ. On the other hand, the effect of the extended ECQ on physical health was found by measuring physical activity before and during the extended ECQ. For this, the researchers used two survey questionnaires: DASS-21 for mental health and IPAQ-SF for physical health. The DASS-21 is a 21-item

questionnaire, having seven questions under each subscale. The said questionnaire utilizes a Likert scale ranging from 0-3 to rate the respondents' experiences, which also served as the score for each item. The most common mental health symptoms for depression, anxiety, and stress were also identified through the DASS-21 questionnaire.

On the other hand, the IPAQ-SF is made up of seven open-ended questions, which assesses the physical activity for seven days. The questionnaire mainly involves questions regarding activities such as moderate-intensity and vigorous-intensity activities, walking, and sitting. The survey was deployed through google forms and disseminated through social media platforms from April 13 to May 27, and it was able to gather the responses of 147 medical technologists working in NCR-based hospitals or laboratories that perform COVID-19 testing. These medical technologists were selected based on a convenience sampling technique due to limitations in reaching out to the population brought about by the pandemic. The data gathered from the respondents using the DASS-21 and IPAQ-SF questionnaires were then analyzed using the Wilcoxon signed rank test, wherein a p-value of < 0.05 was considered significant. The p-values obtained from the analysis of depression, anxiety, stress, and physical activity were < 0.05, thus indicating that the implementation of extended ECQ had a notable effect on medical technologists' mental and physical health. Results revealed that extended ECQ caused an increase in the severity of depression, anxiety, and stress experienced by the respondents. Furthermore, a downward trend was observed in the findings for physical activity, indicating that the respondents are more physically active before the implementation of extended ECQ.

5.2 Conclusion

Based on the analysis of the data gathered, the extended ECQ had a negative effect on both the mental and physical health of medical technologists working in hospitals and laboratories testing for COVID-19 in NCR. The severity of depression, anxiety, and stress, which assesses mental health, increased during the extended ECQ compared to those experienced by the working medical technologists before the ECQ. Furthermore, the amount of physical activity done by the medical technologists is relatively lower during the extended ECQ than their activity before the implementation. Thus, it can be concluded that the implementation of the extended ECQ caused significant changes, particularly aggravating the mental and physical well-being of medical technologists who participated in this study. Findings from this study can be applied to other emergencies or conditions (ex. Other public health emergencies, natural disasters causing lockdown). This paper can be beneficial for building on how the pandemic affects the mental and physical health of medical technologists to guide clinicians and policymakers on how to improve their well-being.

5.3 Recommendations

To better understand the effects of extended ECQ on medical technologists, the researchers recommend including respondents from other places in the country where ECQ was implemented, aside from NCR. Interviews should be executed in future studies to explore different other parameters relating to assessing the effects of extended ECQ on medical technologists' mental and physical health. This would yield a greater degree of understanding regarding their experiences during the implementation. Correlating the demographics used with the mental health and physical health changes may also prove helpful in identifying which factors contributed to the effects. Furthermore, the factors inferred from other research included in the present study may also be added to the demographics. Aside from evaluating the effects on mental and physical health, it is also suggested to consider the possible long-term effects of extended ECQ on overall wellness, including emotional and social health, for instance, medical technologists.

Moreover, using a random sampling technique instead of convenience sampling to achieve normally distributed samples and avoid bias, becoming more representative of the population, is also recommended.

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