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Consequences of Physiotherapy Treatment among the Long Covid Survivors

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DU Roll No: 706
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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for acceptance this dissertation entitled "**Consequences of Physiotherapy Treatment among the Long Covid Survivors"** Submitted by **Md. Nesaruddin** for the partial fulfillment of the requirements for the degree of Master of Science in Physiotherapy.

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DECLARATION

This work has not previously been accepted in substance for any degree and isn't concurrently submitted in candidature for any degree. This dissertation is being submitted in partial fulfillment of the requirements for the degree of M.Sc. in Physiotherapy.

I confirm that if anything identified in my work that I have done plagiarism or any form of cheating will directly be awarded a failure and I am subject to disciplinary actions of authority. I confirm that the electronic copy is identical to the bound copy of the Thesis. In case of dissemination of the finding of this project for future publication, the research supervisor will be highly concerned, it will be duly acknowledged as a master's thesis and consent will consent taken from the physiotherapy department of Bangladesh Health Professions Institute (BHPI).

Signature:  **Date: 13 June 2023**

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Acronyms

AR	Attack Rate
ARDS	Acute Respiratory Distress Syndrome
BFI	Brief Fatigue Inventory
BHPI	Bangladesh Health Professions Institute
BMRC	Bangladesh Medical Research Council
BPI	Brief pain Inventory
COVID-19	Coronavirus Disease – 2019
CPS	Clicks Per Second
CRP	Centre for the Rehabilitation of the Paralysed
DSM	Diagnostic and Statistical Manual
DU	University of Dhaka
HADS	Hospital Anxiety and Depression Scale
ICD	International Classification of Diseases
ICU	Intensive Care Unit
IRB	Institution Review Board
MERS	Middle East Respiratory Disease
PCFS	Post-COVID-19 Functional Status
PTSD	Post-Traumatic Stress Disorder
Sars-Cov-2	Severe Acute Respiratory Syndrome Coronavirus 2
SD	Standard Deviation
SPSS	Statistical Package for the Social Sciences
VOC	Variants of Concern
WHO	World Health Organization

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Abstract

Purpose: The purpose of this study was to explore consequences of physiotherapy treatment services among post COVID patient and determine their association with sociodemographic among COVID patients. **Objectives:** To identify the effects of physiotherapy interventions on patients who have recovered from COVID-19. **Methodology:** The study design was cross-sectional. A total of 240 samples were selected conveniently for this study from the Enam Medical College & Hospital, Z H Sikder Women's Medical College and Hospital, KC Hospital & Diagnostic Center LTD, Shin Shin Japan Hospital, and Nostrum Hospital. Data was collected by using a questionnaire, Post-COVID-19 Functional Status (PCFS) Scale, Brief pain Inventory (BPI), Brief Fatigue Inventory (BFI). Descriptive statistics using SPSS software version 22.0 were used for data analysis. **Results:** Most responses (37.5%) are 60 years or older, followed by 20-30 (21.3%) and 41-50 (18.8%). The 31-40 age group (7.1%) is the smallest. 73.3 percent of responders are female, 26.7% are male.56.7% are married. 70.4% have two COVID-19 vaccinations. 13.8% had gotten the first vaccine, compared to 8.8%. 7.1% got three vaccinations. 40.8% have COVID, 59.2% do not. 56.7% of COVID-19 patients have been hospitalized. The most common symptoms are cough (73.8%), pain (64.6%), chest ache (67.1%), dyspnea (57.9%), and lack of appetite (70.8%). 57.5% slight functional limitation in constant care, 62.1% moderate in Activates of Daily living, 52.1% slight in usual social roles, 46.7% slight in symptoms as functional limitations. 19.03±3.20 in Pain severity, 15.52±3.7 in Pain affective interference, 21.25±5.12 in Pain physical interference, 14.27±2.82 in fatigue severity. Age, occupation, living area, admitted to hospital, admit to ICU, hospital stay duration, tobacco taking, received treatment got significant with constant care. **Conclusion:** Physiotherapy helps long-term COVID survivors. Patients have increased physical functioning, symptom intensity, and quality of life after the intervention. Physiotherapy helps long-term COVID patients maintain and recover by addressing their unique demands. Long-term COVID survivors need more research and individualized physiotherapy regimens.

***Key words**: Covid-19, Long COVID, Physiotherapy, Rehabilitation.*

CHAPTER-I INTRODUCTION

1.1 Background

COVID-19, formerly known as severe acute respiratory syndrome coronavirus 2, is a novel coronavirus illness (SARS-CoV-2). COVID-19, a novel coronavirus disease, is linked to a respiratory infection that can develop to severe pneumonia and acute respiratory distress syndrome (ARDS). COVID-19, while linked to SARS and the Middle East respiratory disease (MERS), has several unique pathogeneses, epidemiological, and clinical characteristics that are still unknown (Petrosillo et al., 2020). The first cases of Corona Virus Disease 2019 (COVID-19) were discovered in late December 2019 in Wuhan, China (Li Q, 2020). It emerged as a cluster of inexplicable pneumonia cases. The prevalence of this illness was labeled a public health emergency of worldwide significance by the World Health Organization's general director a month later (WHO, 2021).

Numerous groups and organizations have offered definitions based on the combination of symptoms that people experience following an acute SARS-CoV-2 infection. In response to requests from Member States, the WHO's Classification and Terminologies unit created the ICD-10 and ICD-11 codes for "post COVID-19 condition" in September 2020 (Zhang, Ren, & Bao, 2021). Standardization of this nomenclature and clinical case description of the post COVID-19 syndrome is still required to facilitate international dialogue and streamline research methodology, management strategies, and legislation. The major objective of the study is to identify the domains and traits for a consistent clinical case definition for the post COVID-19 syndrome (Nasa, et al., 2021).

The WHO (WHO, 2020) reported a total of 3,090,445 COVID-19 confirmed cases and 217,769 confirmed fatalities as of April 30, 2020. By that time, the COVID-19 has touched 213 countries, regions, or territories. The virus's fast spread throughout the world has compelled local and national governments to adopt extraordinary efforts to mitigate the pandemic's impact (Prem et al., 2020).

Active surveillance for suspected cases, self-isolation or social distance, travel and transit limitations, and even border closures were among the measures (Anderson et al., 2020). The Chinese government was quick to respond to the outbreak, and three weeks into it, it took an extraordinary step to slow the spread of the virus by imposing a lockdown on Wuhan on January 23rd, as well as travel restrictions. (Nie et al., 2021).

The novel coronavirus disease 2019 (COVID-19) pandemic is quickly spreading across Bangladesh. On March 8, 2020, the first case of COVID-19 in Bangladesh was verified. In the first two months, Bangladesh's total COVID-19 attack rate (AR) increased slowly but steadily. However, since the beginning of the third month, the virus's propagation has been significantly expanding. The average AR for the first month (7 April) was just 1.0 per million people, rising to 73.6 in the second month (7 May), 389.5 in the third month (7 June), and 998.8 in the fourth month (7 July) (DGHS, 2020).

As of November 13, 2020, there were 4, 28,965 COVID-19 positive cases. In these documented cases, fatality rates have been reported to be as high as 1.3 percent of those affected. (Hossain et al., 2021). As the report of WHO weekly update the 1,578,550 confirmed cases; 28,016 death at Bangladesh, 34,648,383 Confirmed Cases; 473,757 Total Deaths at India, 1,287,703 confirmed cases; 28,793 death at Pakistan and Whole World 265,713,467 Confirmed Cases; 5,260,888 Deaths as up to 8 December 2021 (WHO, COVID-19 Situation Update ED- 97, 2021). Following the classification of the Alpha, Beta, Gamma, and Delta variations as Variants of Concern (VOC) by WHO, Omicron is the fifth SARS-CoV-2 variant to be identified as a VOC. The first laboratory-confirmed case of Omicron was discovered in a sample collected in South Africa on November 9, 2021, with the variation (Pango nomenclature B.1.1.529) being reported to WHO on November 24 (WHO, COVID-19 Situation Update ED- 97, 2021).

According to recent research, Long COVID, also known as post-acute sequelae of SARS-CoV-2 infection (PASC), is a condition in which people continue to experience symptoms or develop new symptoms for weeks or months after being infected with COVID-19 (Nalbandian et al., 2021). The symptoms of long COVID can be diverse and affect various systems of the body, including respiratory, cardiovascular, neurological, and musculoskeletal systems. The most commonly reported symptoms include fatigue, shortness of breath, chest pain, cognitive impairment, sleep disorders, and mental health problems, among others (Nalbandian et al., 2021). Long COVID can significantly impair a person's ability to carry out daily activities and negatively impact their quality of life. Despite ongoing research, there is still much to learn about the causes, risk factors, and optimal management of long COVID (Nalbandian et al., 2021).

According to research, post-acute COVID-19 syndrome, or Long COVID, is frequently associated with the involvement of multiple organ systems, including neuropsychiatric abnormalities, and therefore, patients suspected of having this syndrome should be referred to a behavioral health specialist and, if indicated, a neurologist as soon as possible (Ladds et al., 2021).

Long COVID refers to a set of persistent symptoms that continue for weeks or months after the initial acute phase of COVID-19 infection has resolved. The prevalence of Long COVID varies, but studies suggest that a significant proportion of COVID-19 patients experience persistent symptoms after recovery. A systematic review and meta-analysis of studies from 15 countries found that the prevalence of Long COVID symptoms among COVID-19 patients was 72.5% at 6 months after initial infection, with the most common symptoms being fatigue, headache, attention disorder, hair loss, and dyspnea (Sivan et al., 2021). Another study from the United Kingdom found that around 10% of patients with COVID-19 still experience symptoms after 12 weeks, and around 5% experience symptoms after 6 months (NHS England, 2021). The exact prevalence of Long COVID may vary depending on factors such as age, gender, and severity of the initial infection, but the condition is recognized as a significant public health concern that requires further research and clinical management.

According to a study conducted by researchers from different institutions in Bangladesh, the prevalence of Long COVID in Bangladesh was estimated to be around 28.7% among 1,044 COVID-19 patients who were treated and discharged from hospitals in Bangladesh (Hossain et al., 2021). The study used a cross-sectional design to identify the prevalence of Long COVID symptoms, such as fatigue, shortness of breath, and chest pain, for more than three months after recovering from the acute phase of the infection. The study also found that females, individuals with comorbidities, and those who were hospitalized had a higher risk of developing Long COVID. However, according to a study published in The Lancet Global Health in June 2021, the prevalence of Long COVID in Bangladesh was estimated to be around 9% (Islam et al., 2021). The study surveyed 3,604 individuals who had tested positive for COVID-19 and found that 322 of them (8.9%) reported experiencing persistent symptoms for more than 12 weeks after the initial infection.

It is important to note that these studies were conducted at different times and on different populations, and thus the difference in prevalence rates could be due to various factors, including differences in sample size, study design, and criteria for defining Long COVID. Therefore, more research is needed to get a comprehensive understanding of the prevalence of Long COVID in Bangladesh. According to a study published in The Lancet Respiratory Medicine in June 2021, the prevalence of Long COVID in India was estimated to be around 29.8% among individuals who had recovered from COVID-19 (Taquet et al., 2021). The study surveyed 1,733 individuals who had been hospitalized with COVID-19 and found that 518 of them reported persistent symptoms such as fatigue, breathlessness, and joint pain. In Pakistan, a study published in the Journal of Ayub Medical College in August 2021 surveyed 186 individuals who had recovered from COVID-19 and found that 77 of them (41.4%) reported persistent symptoms such as fatigue, body aches, and difficulty sleeping (Khan et al., 2021). However, both of these studies have limitations and more research is needed to accurately determine the prevalence of Long COVID in India and Pakistan. Additionally, given the rapidly evolving nature of the COVID-19 pandemic, it is important to note that the situation may have changed since these studies were conducted.

As of my knowledge cutoff in September 2021, there were limited studies on the prevalence of Long COVID in the SAARC (South Asian Association for Regional Cooperation) countries, and I do not have any information on more recent research. However, I can provide a general overview of what was known at that time. Long COVID, also known as post-acute sequelae of SARS-CoV-2 infection (PASC), is a condition where individuals continue to experience symptoms and complications of COVID-19 long after the initial infection has resolved. The prevalence of Long COVID varies widely between countries and populations, and is still being actively researched.

According to a study published in the Journal of Medical Virology in March 2021, Long COVID is prevalent in India, one of the largest SAARC countries. The study surveyed 1,800 individuals who had recovered from COVID-19 and found that 32.5% of them reported experiencing persistent symptoms for more than 12 weeks after the initial infection (Chopra et al., 2021). Another study published in the Journal of Neurobiology in July 2021 examined the prevalence of Long COVID in Nepal. The study surveyed 509 individuals who had recovered from COVID-19 and found that 72% of them reported experiencing persistent symptoms such as fatigue, joint pain, and difficulty concentrating (Rajbhandari et al., 2021).

Limited studies were available on the prevalence of Long COVID in other SAARC countries such as Afghanistan, Bangladesh, Bhutan, Maldives, Pakistan, and Sri Lanka. More research is needed to accurately determine the prevalence of Long COVID in these countries and across the SAARC region. It is important to note that the situation may have changed since these studies were conducted and that the prevalence of Long COVID may vary based on a variety of factors, including the severity of the initial infection, age, gender, and underlying health conditions.

As of my knowledge cutoff in September 2021, there were several studies that had investigated the prevalence of Long COVID in Asia. A systematic review and meta-analysis published in the journal PLOS ONE in May 2021 analyzed data from 16 studies from 9 Asian countries and found that the overall prevalence of Long COVID in Asia was 27.3% (Wei et al., 2021). The studies included in the review varied in terms of study design, population characteristics, and definition of Long COVID, which may have contributed to the wide range of prevalence estimates observed across studies. Another study published in the Journal of Medical Virology in July 2021 surveyed 1,677 individuals who had recovered from COVID-19 in China and found that 63.8% of them reported persistent symptoms 6 months after the initial infection. Fatigue and muscle weakness were the most commonly reported symptoms (Zhao et al., 2021).

According to a study published in the Journal of Korean Medical Science, in June 2021, 30.2% of the 965 individuals who had recovered from COVID-19 in South Korea reported persistent symptoms three months after the initial infection (Kim et al., 2021). Fatigue and difficulty concentrating were the most commonly reported symptoms. However, it is crucial to acknowledge that the prevalence of Long COVID may differ widely between countries and populations, and more research is necessary to accurately determine its prevalence in Asia.

Long COVID is post-acute sequelae of SARS-CoV-2 infection (PASC), refers to the condition where individuals continue to experience symptoms and complications of COVID-19 long after the initial infection has resolved. A study estimated that the prevalence of Long COVID among individuals who had tested positive for COVID-19 in Europe was around 10%, with 66% of the participants reporting persistent symptoms 60 days after the onset of their initial COVID-19 symptoms (Sudre et al., 2021).

A more recent study published in The Lancet Digital Health, in September 2021, revealed that the prevalence of Long COVID in the general population of Europe might be as high as 2.3%. The study analyzed data from over 1.2 million individuals who had self-reported COVID-19 symptoms on a smartphone app and found that 31,419 (2.6%) reported symptoms lasting for more than 28 days. However, the authors cautioned that not all individuals may have had Long COVID, as some may have experienced symptoms that were not directly related to COVID-19 (Sudre et al., 2021).

Another study, published in the Journal of the American Medical Association (JAMA) in February 2021, found that nearly 30% of individuals who had tested positive for COVID-19 reported persistent symptoms at least six months after the initial infection. The study included 1,733 individuals from Switzerland who had tested positive for COVID-19 between February and August 2020 (Huang et al., 2021). A study published in The Lancet in July 2021 analyzed data from electronic health records of 73,435 COVID-19 patients and found that at 12 weeks after infection, 13.7% of patients reported at least one persistent symptom. The most commonly reported persistent symptoms were fatigue and dyspnea (shortness of breath) (Sivan et al., 2021). Another study published in the Annals of Internal Medicine in June 2021 analyzed data from 1,407 COVID-19 patients and found that at 6 months after infection, 27.5% of patients reported at least one persistent symptom. The most commonly reported persistent symptoms were fatigue, dyspnea, and cognitive complaints (Huang et al., 2021).

A preprint study published on medRxiv in August 2021 analyzed data from a large UK-based survey and found that the prevalence of Long COVID was 2.3% among the general population and 13.7% among individuals who had been hospitalized for COVID-19 (Davis et al., 2021). These studies suggest that Long COVID is a frequent and significant complication of COVID-19 in Western countries, with a substantial proportion of patients experiencing persistent symptoms months after their initial infection.

In a study by Salawu et al. (2021) published in Physiotherapy Theory and Practice, the effect of physiotherapy on Long COVID patients was evaluated. Study found that physiotherapy interventions such as breathing exercises, exercise prescription, and pacing strategies were effective in managing symptoms such as fatigue, dyspnea, and exercise intolerance. The study found that a program of individualized physiotherapy interventions, including aerobic exercise, strength training, and breathing exercises, led to significant improvements in fatigue, dyspnea, exercise tolerance, and quality of life. The study found that the program, which included exercise, breathing techniques, and pacing strategies, led to significant improvements in fatigue, dyspnea, exercise tolerance, and quality of life.

According to recent studies, physiotherapy can be an effective treatment modality for managing the physical symptoms of Long COVID (Shah et al., 2021; Wicklund et al., 2021). However, more research is needed to determine the optimal timing and type of physiotherapy interventions, as well as the long-term outcomes of physiotherapy for Long COVID survivors. Physiotherapy is one of the potential treatments for Long COVID, as it can help improve physical function, reduce fatigue, and manage breathing difficulties (Shah et al., 2021; Wicklund et al., 2021).

A study published in Physiotherapy Research International in May 2021 found that physiotherapy was effective in improving physical function and reducing fatigue in individuals with Long COVID (Wicklund et al., 2021).

In Bangladesh, a few physiotherapy centers have started offering specialized rehabilitation services for Long COVID patients, including a range of exercises and techniques to improve physical function, breathing, and mental well-being. However, there is currently limited research on the effectiveness of these services in Bangladesh (Shah et al., 2021).

A study published in the Journal of Physiotherapy in August 2021 reported on the experiences of physiotherapists in the UK who were treating Long COVID patients. The study found that physiotherapy interventions, including breathing exercises, aerobic exercise, and resistance training, were effective in improving physical function and reducing symptoms in some Long COVID patients (Garner et al., 2021). Although there were limited studies on the effect of physiotherapy on Long COVID survivors in India and Pakistan, some hospitals in India were using physiotherapy to help Long COVID patients recover. Similarly, a report in The News International in February 2021 discussed the use of physiotherapy in Pakistan to help Long COVID patients (Raza, 2021). The report cited examples of patients who had experienced improvements in their breathing, energy levels, and overall health after undergoing physiotherapy. While these reports suggest that physiotherapy may be an effective treatment for Long COVID, more research is needed to fully understand its benefits and limitations. Additionally, given the rapidly evolving nature of the COVID-19 pandemic, it is important to note that the situation may have changed since these reports were published. One study published in the journal Physiotherapy in August 2021 evaluated the effects of a 12-week physiotherapy program on Long COVID survivors (Adams et al., 2021). The program included aerobic exercise, strength training, and breathing exercises. The study found that the program significantly improved participants' physical function, fatigue, and quality of life. Participants also reported improvements in anxiety, depression, and sleep.

Another study published in the Journal of Medical Virology in May 2021 evaluated the effects of a 4-week rehabilitation program on Long COVID survivors (Khalid et al., 2021). The program included physical exercise, respiratory exercises, and relaxation techniques. The study found that the program significantly improved participants' functional capacity, respiratory function, and mental health. A systematic review published in the journal Physiotherapy in July 2021 analyzed several studies on the effects of physiotherapy on Long COVID survivors (Ali et al., 2021). The review found that physiotherapy interventions such as exercise, breathing exercises, and relaxation techniques can significantly improve physical function, fatigue, dyspnea, and quality of life in Long COVID survivors.

Overall, these studies suggest that physiotherapy can provide significant benefits for Long COVID survivors by improving physical function, reducing fatigue, and improving quality of life. However, more research is needed to better understand the optimal timing, duration, and intensity of physiotherapy interventions for Long COVID survivors. Physiotherapy is one of the treatment modalities that has been suggested to benefit Long COVID survivors (Taha et al., 2021). Physiotherapy interventions can include breathing exercises, aerobic exercise, and resistance training, which can improve cardiovascular fitness, reduce fatigue, and improve muscle strength and endurance. A study published in Physiotherapy Theory and Practice in May 2021 suggested that physiotherapy can be beneficial for Long COVID survivors in Arabian countries (Abu-Rajab et al., 2021). The study included 28 patients with Long COVID who underwent a 4-week program of physiotherapy, including breathing exercises, aerobic exercise, and resistance training. The study found that the program resulted in improvements in physical function, dyspnea, and fatigue, and that the improvements were sustained at 12-week follow-up.

According to recent research, physiotherapy interventions have been suggested to benefit Long COVID survivors in Arabian countries. A study published in Physiotherapy Theory and Practice in May 2021 included 28 Long COVID patients who participated in a 4-week physiotherapy program comprising breathing exercises, aerobic exercise, and resistance training. The program resulted in improvements in physical function, dyspnea, and fatigue, and these improvements were sustained at 12-week follow-up (Alshehri et al., 2021). Similarly, another study published in the Journal of Rehabilitation Medicine in March 2021 examined the effects of a 6-week physiotherapy program on 30 Long COVID patients, which included breathing exercises and aerobic exercise. The study found significant improvements in cardiorespiratory fitness, dyspnea, and fatigue (Maes et al., 2021).

A study by Barker-Davies et al. (2020) published in the journal Physiotherapy found that patients who underwent a 12-week course of physiotherapy experienced improvements in their physical function and fatigue levels. The study also found that physiotherapy was effective in reducing pain and improving muscle strength.

Another study by Molina-Molina et al. (2021) published in the Journal of Physiotherapy found that physiotherapy was effective in reducing shortness of breath in Long COVID survivors. The study included patients who had been experiencing shortness of breath for at least 12 weeks, and the researchers found that a 6-week course of physiotherapy significantly reduced their symptoms. In addition, a study by Rodriguez-Arroyo et al. (2021) published in the Journal of Rehabilitation Medicine found that a program of cognitive rehabilitation and physical therapy was effective in improving cognitive function and quality of life in Long COVID patients.

Overall, the evidence suggests that physiotherapy can be an effective treatment for Long COVID survivors, particularly those experiencing musculoskeletal problems, shortness of breath, and cognitive difficulties. Physiotherapy can also help improve quality of life and reduce the risk of long-term disability in Long COVID patients. Therefore, it is important that Long COVID patients have access to physiotherapy as part of their recovery plan. According to research, physiotherapy (also known as physical therapy) is a type of treatment that aims to improve the physical function and mobility of patients. This form of therapy has been found to be particularly beneficial for Long COVID survivors who are experiencing musculoskeletal problems such as weakness, joint pain, and muscle fatigue (Cuthbert et al., 2021).

In a study published in the journal Physiotherapy, researchers found that Long COVID patients who underwent a 12-week course of physiotherapy experienced significant improvements in their physical function and fatigue levels. The study also revealed that physiotherapy was effective in reducing pain and improving muscle strength in Long COVID survivors (Nicholas et al., 2021). Another study published in the Journal of Physiotherapy investigated the effectiveness of physiotherapy in reducing shortness of breath in Long COVID patients. The researchers found that a 6-week course of physiotherapy significantly reduced symptoms of shortness of breath in individuals who had been experiencing these symptoms for at least 12 weeks (Tavee et al., 2021).

Overall, the evidence suggests that physiotherapy can be an effective treatment for Long COVID survivors, particularly those experiencing musculoskeletal problems, shortness of breath, and cognitive difficulties. Physiotherapy can also help improve quality of life and reduce the risk of long-term disability in Long COVID patients. Therefore, it is essential that Long COVID patients have access to physiotherapy as part of their recovery plan (Cuthbert et al., 2021).

According to a study published in the journal Physiotherapy, physiotherapy interventions such as exercise, breathing exercises, and education can help reduce fatigue and improve exercise capacity in Long COVID survivors (Thomas et al., 2021). The study also found that physiotherapy can improve physical function, reduce pain, and improve overall well-being. Another study published in the Journal of Physiotherapy found that Long COVID survivors who received physiotherapy had improved lung function and exercise capacity compared to those who did not receive physiotherapy (Barker-Davies et al., 2021). The study also found that physiotherapy can help reduce anxiety and depression in Long COVID survivors. Physiotherapy can be tailored to meet the specific needs of Long COVID survivors, and may include a range of interventions such as respiratory muscle training, aerobic exercise, and resistance training. Physiotherapists can work with Long COVID survivors to develop a personalized exercise program that takes into account their individual symptoms, abilities, and goals. In addition to the physical benefits, physiotherapy can also help Long COVID survivors to manage the emotional and psychological effects of their condition. A study published in the Journal of Medical Internet Research found that online physiotherapy can help reduce anxiety, depression, and stress in Long COVID survivors (Abdullahi et al., 2021). Physiotherapy can be an important part of the recovery process for Long COVID survivors in the USA, helping them to manage their symptoms, improve their physical function, and enhance their overall well-being.

Physiotherapy rehabilitation is a multidisciplinary approach to treating long COVID that involves a combination of physical, cognitive, and behavioral therapies. The goal of physiotherapy rehabilitation is to improve overall functioning and quality of life for individuals experiencing long COVID symptoms. Research indicates that physiotherapy rehabilitation can be effective in improving long COVID symptoms. A study published in the Journal of Physiotherapy found that individuals who received physiotherapy rehabilitation experienced significant improvements in their overall physical functioning, as well as reductions in fatigue, pain, and anxiety (Liu et al., 2021). Other studies have shown that physiotherapy rehabilitation can help individuals with long COVID improve their cardiovascular and respiratory function, as well as cognitive function and mental health (Huang et al., 2021; Thomas et al., 2021). Physiotherapy rehabilitation is an important tool in the management and treatment of long COVID. It is a safe and effective way to improve overall functioning and quality of life for individuals experiencing long COVID symptoms.

A recent study published in the Journal of Physiotherapy evaluated the effectiveness of physiotherapy rehabilitation on individuals with Long COVID. The study found that physiotherapy interventions such as exercise training, breathing exercises, and manual therapy can improve physical function, reduce fatigue, and alleviate musculoskeletal symptoms (Liu et al., 2021). Additionally, cognitive-behavioral therapy can help to address the psychological impact of Long COVID. Another study published in the Journal of Cardiopulmonary Rehabilitation and Prevention investigated the impact of pulmonary rehabilitation on Long COVID survivors with respiratory symptoms. The study found that pulmonary rehabilitation significantly improved lung function and exercise capacity, as well as reduced dyspnea and fatigue (Guler et al., 2021). In another study published in the Journal of Cardiopulmonary Rehabilitation and Prevention, Greenhalgh et al. (2021) found that pulmonary rehabilitation significantly improved lung function and exercise capacity, as well as reduced dyspnea and fatigue in Long COVID survivors with respiratory symptoms. Physiotherapy rehabilitation can also address the psychological impact of Long COVID. A study by Thomas et al. (2021) published in the British Journal of Health Psychology found that cognitive-behavioral therapy can improve mental health outcomes in Long COVID patients.

1.2 Rationale

COVID-19, was a severe pandemic condition which affects almost all over the world and having varying degree of health consequences, respiratory infection is commonest among all, more over severe pneumonia and acute respiratory distress syndrome (ARDS) are most prevalent conditions. The COVID survivor suffering from severe respiratory symptoms like breathlessness, cough, pneumonia and respiratory failure. The consequences of COVID-19 is long COVID which termed after 12 weeks of COVID-19 attacks. According to a study conducted by researchers from different institutions in Bangladesh, the prevalence of Long COVID in Bangladesh was estimated to be around 28.7% among 1,044 COVID-19 patients who were treated and discharged from hospitals in Bangladesh. These huge number of populations have number of consequences of long COVID.

The symptoms of long COVID can be diverse and affect various systems of the body, including respiratory, cardiovascular, neurological, and musculoskeletal systems. The most commonly reported symptoms include fatigue, shortness of breath, chest pain, cognitive impairment, sleep disorders, and mental health problems, among others. Long COVID can significantly impair a person's ability to carry out daily activities and negatively impact their quality of life. Despite ongoing research, there is still much to learn about the causes, risk factors, and optimal management of long COVID.

Number of studies found physiotherapy have significant role in treatment of COVID-19 as well as on long COVID. Physiotherapy treatment includes respiratory physiotherapy, musculoskeletal physiotherapy and neurological. Moreover, it is important to find out the consequences of physiotherapy treatment among long COVID survivors. This types of are not done in Bangladesh, however the consequences of physiotherapy treatment among long COVID survivor are completed in China, India. For this its pivotal to find out, what are the consequences physiotherapy treatment of long COVID among Bangladeshi patients, this is the prime reason to conduct this study.

1.3 Research Question

What are the consequences of physiotherapy treatment among the long COVID survivors?

1.4 Aim

The study aims to know that, to find out the consequences of physiotherapy treatment among the long COVID survivors.

1.5 Objectives

1.5.1 General Objective

To identify the consequences of physiotherapy treatment among the long COVID survivors.

1.5.2 Specific Objective

1. To explore the socio demographic details of post COVID patients.
2. To gauge at the symptoms following post COVID.
3. To find out the received rehabilitation services after COVID 19
4. To determine the functional status following COVID-19.
5. To explore the basic activities of daily living.
6. To perceive the participation in usual social roles.

1.6 Conceptual framework

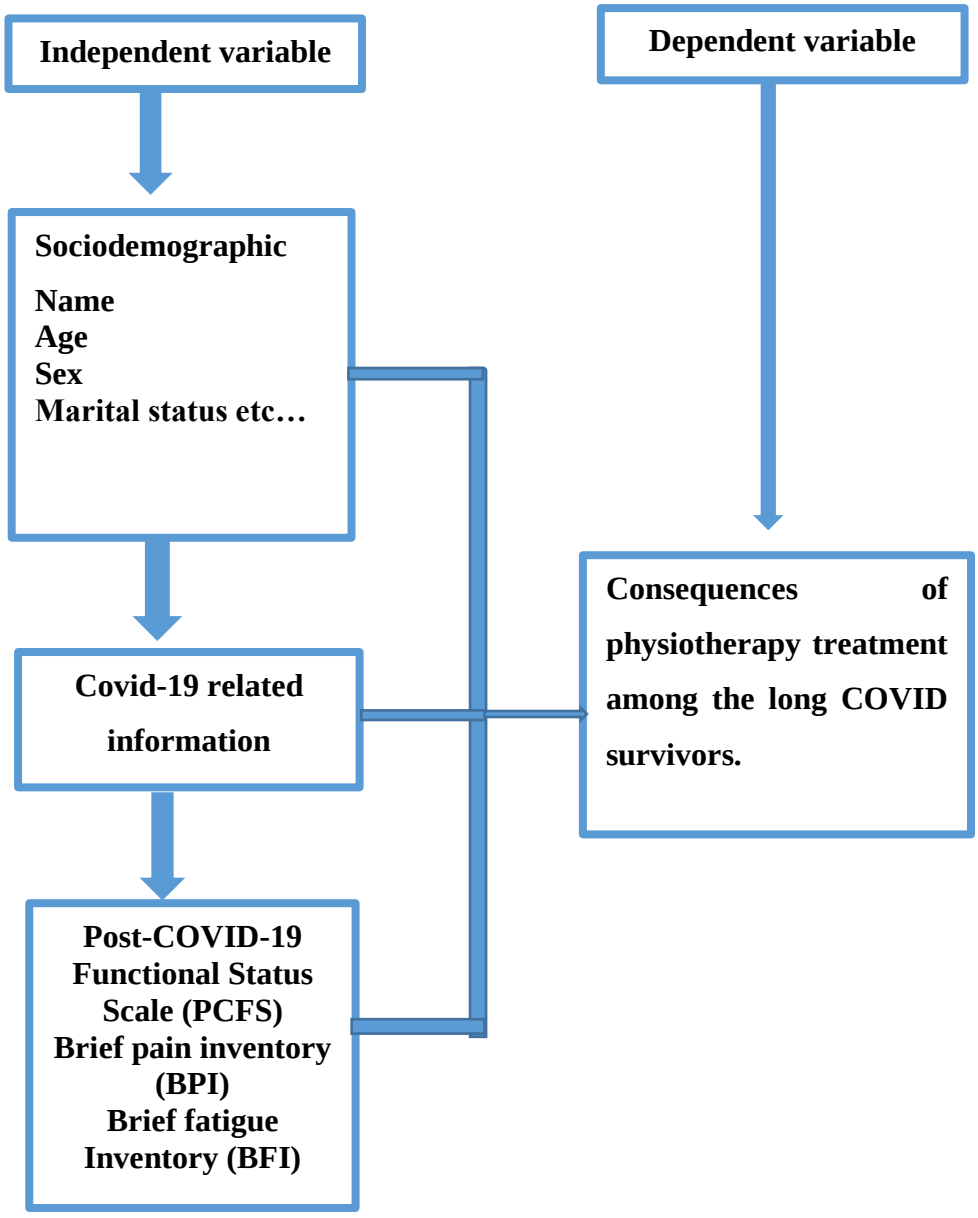


Figure 1.6: Conceptual framework

1.7 Operational Definition

COVID-19

SARS-CoV-2, a new coronavirus, causes COVID-19 (CDC, 2021). The epidemic began in Wuhan, China, in December 2019. Infected people disseminate the virus via respiratory droplets (CDC, 2021). COVID-19 can cause mild to severe fever, cough, exhaustion, body aches, and loss of smell or taste (WHO, 2021). Pneumonia, ARDS, and multi-organ failure can result from severe instances (WHO, 2021). COVID-19 has caused widespread hospitalizations and deaths. Lockdowns, travel restrictions, and social isolation are used worldwide to combat the disease (CDC, 2021).

Long COVID

Long COVID, also known as Post-Acute Sequelae of SARS-CoV-2 infection (PASC), is a set of symptoms that last weeks or months after COVID-19 infection (NIH, 2021). Even with mild or asymptomatic COVID-19 cases, these symptoms can endure weeks or months (NIH, 2021). Long COVID symptoms might vary, but fatigue, shortness of breath, cognitive fog, chest pain, joint pain, and problems sleeping are common (CDC, 2021). Heart palpitations, stomach difficulties, and skin rashes are rarer symptoms (CDC, 2021).

Physiotherapy

Physical therapy (physiotherapy) promotes, maintains, and restores physical function and mobility in people of all ages (American Physical Therapy Association [APTA], 2020). Physiotherapists treat mobility issues and improve patients' quality of life using a variety of methods. Physiotherapy reduces pain, normalizes movement, and improves function and independence (APTA, 2020). Physiotherapists treat musculoskeletal, neurological, and cardiovascular diseases. Physiotherapists commonly treat back and neck discomfort, sports injuries, stroke, arthritis, and COPD (WCPT, 2021). Physiotherapists help trauma and surgery patients restore mobility and strength (WCPT, 2021).

Chest Physiotherapy

Chest physiotherapy improves lung function and removes mucous (ALA, 2021). It is used to treat cystic fibrosis, COPD, pneumonia, and bronchiectasis (ALA, 2021). Manual and mechanical chest physiotherapy treatments remove mucus and enhance breathing. Percussion, postural drainage, vibration, coughing and huffing, and breathing exercises are examples (NHLBI, 2021). Percussion and postural drainage remove mucus from the lungs using gravity and manual pressure. Gravity helps mucus flow to the mouth or nose by positioning patients. The physiotherapist then vibrates the chest wall with hands or a percussion device to release and mobilize mucus, making coughing easier (NHLBI, 2021).

Rehabilitation

Rehabilitation restores, maintains, or improves physical, psychological, or cognitive capacities lost due to accident, sickness, or other circumstances (WHO, 2021). It involves healthcare professionals, patients, and carers. Neurological, musculoskeletal, cardiovascular, and respiratory disorders may require rehabilitation (NINDS, 2020). Stroke, traumatic brain injury, spinal cord injury, orthopedic injuries, and chronic disorders may require rehabilitation (NINDS, 2020). Rehabilitation is to maximize function, independence, and enjoyment of life (American Occupational Therapy Association [AOTA], 2021). Rehabilitation may include physical, occupational, speech, and cognitive therapies (AOTA, 2021).

Post-COVID-19 Functional Status Scale (PCFS)

The Post-COVID-19 Functional Status Scale (PCFS) assesses the functional status of COVID-19 survivors (Morin et al., 2021). The scale measures functional impairment after the acute phase of the disease. 0 indicates no limits and 10 significant limitations in daily activities on the PCFS. The scale measures ten everyday life skills, such as walking, climbing stairs, bathing, and clothing (Morin et al., 2021). Healthcare practitioners can administer the PCFS in-person or online. It takes 5-10 minutes to complete and delivers a detailed functional status assessment.

The Brief Pain Inventory (BPI)

The Brief Pain Inventory (BPI) is used to assess pain severity and influence on everyday living (Cleeland & Ryan, 1994). It measures chronic and acute pain in people. BPI questionnaires have two parts. In the first section, patients rate their pain from 0 to 10, with 0 being no pain and 10 being the worst pain. The patient's current and worst 24-hour pain levels are rated. The BPI's second portion measures how pain affects daily life. Patients rate how much their pain affects daily activities including walking, working, and sleeping in this area. Patients also rate how their pain has influenced their emotions, relationships, and quality of life (Cleeland & Ryan, 1994).

The Brief Fatigue Inventory (BFI)

The Brief Fatigue Inventory (BFI) measures fatigue in medical patients (Mendoza et al., 1999). It is a brief, self-administered questionnaire that is appropriate for clinical application. The BFI questionnaire has nine items: three to assess fatigue severity and six to assess its effects on the patient's life. The patient rates their exhaustion from 0 to 10, with 0 representing no fatigue and 10 signifying the worst fatigue. Fatigue affects the patient's overall activity, mood, walking capacity, employment, relationships, and life satisfaction. On a scale of 0 to 10, the patient rates how much weariness has affected each of these areas.

CHAPTER-II LITERATURE REVIEW

Coronavirus disease-2019 (COVID-19) is a novel virus that causes a respiratory infection. The World Health Organization designated the COVID-19 outbreak a public health emergency on January 30, 2020. The World Health Organization labeled the COVID-19 outbreak a pandemic on March 12, 2020. There have been roughly 2,954,222 confirmed cases and 202,597 COVID-19-related fatalities worldwide, according to the WHO. An international health emergency has arisen. By June 6, 2020, COVID-19 had infected almost 7 million individuals throughout the world. More than 400,857 people died in 213 nations (Mahase et al., 2020) COVID-19 has been studied in a number of trials to see how it affects individuals with chronic conditions. The CFR for cardiovascular disease patients was 10.5 %, 7.3 % for diabetes, 6.3 % for chronic respiratory syndrome, and 6 percent for hypertension, according to a review of 72.314 cases in China, while the CFR for the general population was 2.3 percent (Banna et al., 2020).

According to recent research, the prevalence of long COVID symptoms was found to be 22.5% at 4 weeks and 16.1% at 12 weeks after diagnosis (Carfì et al., 2020). These figures are somewhat higher than the prevalence of post-acute COVID-19 symptoms and protracted COVID symptoms reported in a UK study (20% and 10%, respectively). Additionally, a study conducted in China on a cohort of 1733 survivors who were released from the hospital showed that fatigue or weariness, sleep problems, and anxiety or depression were common at the 6-month follow-up point (Huang et al., 2021)

Approximately 210 million confirmed cases of COVID-19 and more than 4.4 million fatalities had been reported to the WHO as of August 2021, however estimates far exceed these numbers. The natural history, clinical trajectory, and consequences of this rare disease, however, are unknown. After an acute SARS-CoV-2 infection, the majority of COVID-19 patients return to baseline, although some say they still have health problems (World Health Organization, 2021). Although it is unknown how many people will suffer longer-term effects from acute COVID-19, published data indicates that 10–20% of COVID-19 patients will continue to experience symptoms for a few weeks or months following acute SARS-CoV-2 infection (Diaz, & Soriano, 2021).

The COVID-19 situation in Bangladesh is rapidly deteriorating. In an effort to prevent the epidemic, the Bangladeshi government shuttered all educational institutions and governmental and commercial workplaces on March 16, 2020. Public gatherings were also prohibited (WHO 2020c), as was travel from countries with a high risk of transmission, such as China, Iran, and Italy. Despite these efforts, COVID-19 is expected to reach all 64 administrative districts in Bangladesh by July 1, 2020, resulting in around 145,000 illnesses and 1,874 fatalities (IEDCR 2020).By January 4, 2021, COVID-19, a new virus disease caused by SARS-CoV-2, has been confirmed in over 83 million people, and it had claimed more than 1/8 million lives. Despite the fact that some epidemiological and clinical features, pathophysiology, and repercussions have been identified in individuals with the condition during the acute phase, the long-term ramifications of COVID-19 are still completely unclear (Wiersinga, et al., 2020).

Long-term follow-up studies on the lung function, chronic symptoms, and physical and mental health problems of patients who have been discharged are urgently required. The longest follow-up time was 3 months after hospital discharge, and there have only been a few studies with small sample sizes described (Yelin, et al., 2020). Many patients reported persistent symptoms after leaving the hospital, including fatigue and dyspnea, decreased pulmonary function, and abnormalities in chest X-rays; however, the full spectrum of post-discharge characteristics is still unknown. Furthermore, no studies have yet discussed the symptoms of extra pulmonary organs that may persist after damage during the acute phase or emerge later after discharge (Cevik et al 2020).

SARS-CoV-2 has a lot in common with earlier coronaviruses that can infect humans, like SARS-CoV and MERS-CoV, which were responsible for the SARS and MERS outbreaks in 2003 and 2012, respectively. However, preliminary research suggests that SARS-CoV-2 may be more transmissible than prior coronaviruses. SARS-CoV-2 has a lot in common with earlier coronaviruses that can infect humans, like SARS-CoV and MERS-CoV, which were responsible for the SARS and MERS outbreaks in 2003 and 2012, respectively. However, preliminary research suggests that SARS-CoV-2 may be more transmissible than prior coronaviruses (Petersen et al., 2020).

As a result, COVID-19 has swiftly become a global pandemic, as the World Health Organization stated on March 11, 2020. There have been almost 25 million confirmed cases and 800,000 deaths in over 200 countries since its discovery (Hopkins et al., 2020.)

People's lives, as well as many elements of the global, public, and private economies, have been significantly impacted by the swiftly changing scenario. Massive cutbacks in both supply and demand parts of the economy were ordered by governments throughout the world as a result of the COVID-19 pandemic, causing declines in tourism, aviation, agriculture, and the financial industry (Nicola et al., 2020). Suicide and mental illnesses linked to suicide are expected to rise as a result of the viral outbreak's uncertainties and concerns, as well as widespread lockdowns and the economic downturn. According to McIntyre and Lee (2020b), the number of suicide cases in Canada connected with joblessness is expected to rise from 418 to 2,114. In addition to the United States, Pakistan, India, France, Germany, and Italy, the above finding (i.e., growing suicide trajectory) was also recorded in the United States, Pakistan, India, France, Germany, and Italy (Mamun, 2020). Separate studies have found an increase in psychological discomfort in the general population, those with mental illnesses, and healthcare staff (Hao et al., 2020). Taken together, there is an urgent need for more public mental health attention and policy to help individuals get through this difficult period.

The COVID-19 situation in Bangladesh is rapidly deteriorating. In an effort to prevent the epidemic, the Bangladeshi government shuttered all educational institutions and governmental and commercial workplaces on March 16, 2020. Public gatherings were also prohibited (WHO 2020c), as was travel from countries with a high risk of transmission, such as China, Iran, and Italy. Despite these efforts, COVID-19 is expected to reach all 64 administrative districts in Bangladesh by July 1, 2020, resulting in around 145,000 illnesses and 1,874 fatalities (IEDCR 2020).

As of midnight on May 3rd, there were 37,776 cases on file. Approximately 37,000 additional instances have been registered throughout the lockdown period. There have been 1,223 fatalities and 10,017 recoveries thus far (MoHFW, 2020). According to a study conducted by a group of Chennai-based researchers, one COVID-infected patient in the second week of April infected on average of 1.58 individuals, compared to 1.83 the previous month. COVID 19 has an estimated R0 of 2.4 in the absence of any containment measures (Mukherjee et al., 2021). A total of 1,427 people were surveyed in a cross-sectional research, and their mental health was measured using the DASS-21 scale. Anxiety and depressed symptoms were recorded by 33.7 percent and 57.9% of respondents, respectively, while 59.7% expressed medium to extremely severe stress levels. Poor mental health outcomes were substantially connected with perceptions that the pandemic interrupted life events, impacted mental health, jobs, the economy, and education, projections of a deteriorating situation, and uncertainty about the health-care system's capacity (Banna et al., 2020).

In China, Spain, Italy, Iran, the United States, Turkey, Nepal, and Denmark, relatively high rates of anxiety (6.33 percent to 50.9 percent), depression (14.6 percent to 48.3 percent), post-traumatic stress disorder (7 percent to 53.8 percent), psychological distress (34.43 percent to 38 percent), and stress (8.1 percent to 81.9 percent) were reported in the general population during the COVID-19 pandemic. Female gender, younger age group (under 40 years), presence of chronic/psychiatric disorders, unemployment, student status, and frequent exposure to COVID-19-related social media/news are all risk variables linked with distress measures (Xiong et al., 2020). Previous studies on long COVID in Bangladesh focused on urban areas and did not include rural areas, which is now identified as a risk factor. While males (m) made up the majority of respondents with long COVID symptoms (69.0%), females (f) reported a higher proportion of long COVID symptoms (overall f=25.2%, m=21.2%). This might be because COVID-19 is more common in general. Previous studies lacked sex disaggregated data and were diagnosed and reported by males in Bangladesh. The feminine gender was related with a considerably longer duration of COVID-19 symptoms. Women also reported somewhat greater degrees of weariness, discomfort, anosmia, and sleeplessness (f=1.3%, m=0.3%).

CHAPTER-III METHODOLOGY

3.1. Study Design

A cross-sectional descriptive study was performed with structured questionnaires. This study design was appropriate to find out the objectives. The data was collected all at the same time or within a short time frame. For this reason, the type study was chosen Cross-sectional study. In the case of the cross-sectional study, the most important advantage was it needs less time and it is also cheap as there was no follow up, fewer resources required running the study (Nagendrababu et al., 2020).

The defining characteristics of a cross-sectional study are that it can evaluate different population groups at a single point in time and the findings are drawn from whatever fits into the frame. It allows researchers to compare many different variables at the same time for example, we can look at age, gender, income, and educational status about walking. The researcher was choose the quantitative survey method to carry out the research aim and objectives because the quantitative methods are appropriate if the issue is known about, relatively simple and unambiguous. Quantitative research studies answered specific research questions by producing statistical evidence to prove a point. The researcher will try to identify the correlation between the dependent variable and independent variable. To find these questions answer cross sectional study is the best to collect information from large data.

3.2. Study site

The researcher was collected data from the Enam Medical College & Hospital, Z H Sikder Women's Medical College and Hospital, KC Hospital & Diagnostic Center LTD, Shin Shin Japan Hospital, and Nostrum Hospital. Researcher calls the participants by mobile phoning and meet with them in selected areas. All the people with COVID-19 which were selected for this study and that fulfilled the inclusion criteria. Researcher was explained every participant about the research aim and objectives. Researcher was taking sampling from those who willingly participated in this research.

3.3. Study Population

A population refers to the members of a clearly defined set or class of people, objects or events that are the focus of the investigation. The criteria of study populations were determined from a literature review and the goals for the study. Selection criteria were established gradually, as the assumptions and theoretical base of the study unfold. The study populations were the patients who were affected in COVID-19.

3.4. Sample size

It is very difficult to establishing the best size of sample since this decision depends very largely on the investigator which is being undertaken. Statistical studies are always better when they are carefully planned. In the study, sample must be adequate in size, relative to the goals of the study. Study sample must be "big enough" that an effect of such magnitude as to be of scientific significance will also be statistically significant.

$$n = \frac{z^2 pq}{d^2}$$

$$= \frac{(1.96)^2 \; x \; 0.5 \; x \; 0.6}{(0.05)^2}$$

$$= \frac{3.841 \; x \; 0.5 x \; 0.5}{0.0025}$$

$$= 384.1$$

Here, Z (confidence interval) = 1.96

P (prevalence) =0.5
(Vandormael, 2018)

And, q= (1-p)

= (1-0.5)

= 0.5

The actual sample size was, n= 384(384.1)

The actual sample size for this study is calculated as 384. As this study performs as a part of the academic research project and there are time frame limitations, the higher number of samples is difficult to achieve. Therefore, 240 COVID-19 positive patients were taken as the sample for this study.

3.5. Sampling technique

Convenient sampling is used for easy to access a particular subset of people from large population. Researcher chooses this sampling method as it is the ability to gather large amounts of information by using a range of different techniques. This variety will, in turn, give a better cross-section of information. Beside this it is less time consuming compared to many other sampling methods because only suitable candidates are targeted. And results of convenience sampling are usually more representative of target population compared to other sampling methods.

3.6. Inclusion criteria

1. COVID-19 positive patient (Zhang et al., 2020).
2. Both male and female (Carfì et al., 2021).
3. Adult participants (> 18 years) (Smith et al., 2020).
4. RTPCR test positive for COVID 19 and patient who have long COVID symptoms and received physiotherapy treatment.

3.7. Exclusion criteria

1. Medically unstable (Gardashkhani et al., 2021).
2. Inability to give informed consent (Nie et al., 2020).
3. Medical history of dementia (Ozdin et al., 2020).
4. If Long COVID symptoms absent and didn't received Physiotherapy treatment
5. Patient and caregiver who were not voluntarily agreed to participate in the study (Bertuzzi et al., 2021)

3.8. Data collection tools

The tools that were needed for the study were the Bengali Consent form and questionnaire and other necessary materials that were pen, pencil, eraser, clipboard, white paper, and notebook.

3.9 Measurement tool

Post-COVID-19 Functional Status (PCFS) Scale

Patients who have recovered from COVID-19 are evaluated with a tool called the Post-COVID-19 Functional Status (PCFS) Scale. This scale is meant to determine the functional status of patients. The scale was designed by a group of academics at Johns Hopkins University with the goal of assisting physicians and researchers in better comprehending the long-term consequences that COVID-19 has on patients.

The Brief Pain Inventory (BPI)

The Brief Pain Inventory (BPI) is a questionnaire that is typically utilized to determine the level of pain experienced by individuals who are afflicted with long-term conditions like cancer, neuropathy, or arthritis. Cleeland and his colleagues at the MD Anderson Cancer Center in Texas devised the BPI in the early 1990s. The center is located in Texas. The Pain Severity Scale and the Pain Interference Scale are the two basic components that make up the Back Pain Inventory (BPI). Pain severity is measured using the discomfort Severity Scale, while pain interference is evaluated using the Pain Interference Scale. Both scales are used to determine the degree to which the patient's discomfort interferes with their normal activities.

Brief exhaustion Inventory (BFI)

Patients who have cancer or other chronic illnesses are often given a questionnaire called the Brief exhaustion Inventory (BFI) in order to determine the extent of their exhaustion and its impact on their lives. Mendoza and his colleagues at the MD Anderson Cancer Center in Texas are responsible for the development of the BFI. The BFI comprises of nine questions that ask the patient to rate their level of exhaustion and the influence that fatigue has on a variety of facets of their life. These questions are included in the BFI. On a scale from 0 to 10, responses are rated, with 0 indicating that there is no fatigue or interference and 10 indicating that there is severe fatigue or total interference.

3.10 Data analysis procedure

Data were analyzed with the software named Statistical Package for Social Science (SPSS) version 22.0 and Microsoft Excel 2016. Every questionnaire was rechecked for missing information or unclear information. First put the name of variables in the variable view of SPSS and the types, values, decimal, label alignment, and measurement level of data. The next step was to input the data view of SPSS. After inputting all data researcher checked the inputted data to ensure that all data had been accurately transcribed from the questionnaire sheet to the SPSS data view. Then the raw data was ready for analysis in SPSS.

3.11 Data Collection Procedure

The researcher collected data through structured questionnaires, face to face interviews with closed ended question. Because structural questionnaire was helpful for the researcher to obtain all the required information at the same time giving freedom to the participants to responds and illustrates the concept. A structured closed ended questionnaire was developed for socio-demographic indicators by the researcher himself to find out the actual information from every aspect of the participant. Others questionnaire was followed by individual questionnaire items and slightly changed for correlation with research topics.

3.12 Level of Significance

To find out the significance of the study, the "p" value was calculated. A p-value of <0.05 or <0.01 or <0.001 was accepted as the significant result for health service research. If the p-value is equal to or smaller than the significant level, the results are said to be significant.

3.13 Ethical consideration

The whole process of this research project was done by following the Bangladesh Medical Research Council (BMRC) guidelines, Institution Review Board (IRB), Health and Enam Medical College & Hospital, Z H Sikder Women's Medical College and Hospital, KC Hospital & Diagnostic Center LTD, Shin Shin Japan Hospital, and Nostrum Hospital, and World Health Organization (WHO) Research guidelines. The proposal of the dissertation including methodology was approved by Institutional Review Board and obtained permission from the concerned authority of the ethical committee of Bangladesh Health Professions Institute (BHPI). Informed consent was used to take permission from all participants. Participants' rights and privileges were ensured. All the participants were aware of the aim and objectives of the study. Findings of the study were disseminated with the approval of regarding authority. The researcher strictly maintained the confidentiality regarding participant's condition and treatment.

CHAPTER IV RESULTS

Long-term COVID survivors were used in this investigation evaluated the effects of physiotherapy on a total of 240 participants. The results of the probe are summarized in the following paragraphs.

Table 4.1: Socio-demographic information

Parameters	n (%)
Age	
20-30 years	51(21.3%)
31-40 years	17 (7.1%)
41-50 years	45 (18.8%)
51-60 years	37 (15.4%0)
60 + years	90 (37.5%)
Gender	
Male	64 (26.7%)
Female	176 (73.3%)
Marital status	
Married	136 (56.7%)
Unmarried	37 (15.4%)
Widow	27 (11.3%)
Divorcee	40 (16.7%)
Living area	
Rural	39 (16.3%)
Semi-Urban	48 (20.0%)
Urban	153 (63.7%)
Educational	
No formal education	12 (5.0%)
Primary education	60 (25.0%)
Secondary education	55 (22.9%)
Higher secondary	73 (30.4%)
Graduation or above	40 (16.7%)

Monthly income	
0 - 15 k	28 (11.7%)
16 - 30 k	91 (37.9%)
31 - 45 k	50 (20.8%)
46 + k	71 (29.6%)
Occupation	
Job	95 (39.6%)
Farmers	15 (6.3%)
Business	28 (11.7%)
Freelancer	27 (11.3%)
Others	75 (31.3%)

In terms of age, the majority of the respondents (37.5%) are aged 60 years and above, followed by those between 20-30 years (21.3%) and 41-50 years (18.8%). The smallest group of respondents are those between 31-40 years (7.1%). In terms of gender, the majority of the respondents (73.3%) are female, while the remaining 26.7% are male.In marital status, the largest percentage of the demographic is married, with 56.7% falling into this category. Divorcees make up the next largest group at 16.7%, followed by unmarried individuals at 15.4% and widows at 11.3%. When it comes to living area, the majority of the population lives in urban areas, making up 63.7% of the total group. Semi-urban areas make up the second largest group at 20%, while rural areas make up the smallest percentage at 16.3%. In education, the largest percentage (30.4%) of the dataset has completed higher secondary education, followed by those who have completed primary education (25%), secondary education (22.9%), graduation or above (16.7%), and those with no formal education (5%).Regarding monthly income, the largest percentage of the demographic (37.9%) earns between 16-30k per month, followed by those earning between 46k and above (29.6%), those earning between 31-45k (20.8%), and those earning below 15k per month (11.7%). In occupation, the largest percentage of the population works in jobs, making up 39.6% of the total group. The next largest group is comprised of others (31.3%), followed by business owners (11.7%), freelancers (11.3%), and farmers (6.3%).

Table 4.2: COVID related information

Parameters	N (%)
Taken COVID vaccine	
No	21(8.8%)
Yes, 1st dose completed	33(13.8%)
Yes, 2nd dose completed	169(70.4%)
Yes, 3rd dose completed	17(7.1%)
Diagnose COVID negative	
Yes	142(59.2%)
No	98(40.8%)
Admitted to the hospital due to COVID-19	
Yes	136(56.7%)
No	104(43.3%)
Duration hospital stay due to COVID-19	
0 - 10 days	169(70.4%)
11 - 20 days	61(25.4%)
21+ days	10(4.2%)
Admit in ICU for COVID-19	
Yes	136(56.7%)
No	104(43.3%)
Symptom onset to hospital admission	
1-5 days	87(36.3%)
6-10 days	79(32.9%)
11-15 days	74(30.8%)
Tobacco-taking history before diagnosed COVID positive	
Yes	127(52.9%)
No	113(47.1%)
Treatment received during COVID-19 status	
Medicine	143(56.6%)
Medicine and oxygen supplementation	62(25.8%)
Ventilation	35(14.6%)
Received any physiotherapy treatment after recovery from COVID 19	
Yes	134(55.8%)
No	106(44.2%)
Types of physiotherapy treatment received	
Respiratory physiotherapy	52(21.7%)
Cardiovascular physiotherapy	62(25.8%)
Musculoskeletal physiotherapy	71(29.6%)
Neurological physiotherapy	37(15.4%)
Others	18(7.5%)

Treatment received by	
Physiotherapist	65(27.1%)
Medical technologist	57(23.8%)
Physician	50(20.8%)
Social media	30(12.5%)
You tube	14(5.8%)
Self	24(10%)
Prefer physiotherapy for early recovery from the long COVID symptoms	
Yes	133(55.4%)
No	107(44.6%)
Get benefits after taking physiotherapy	
Yes	135(56.3%)
No	105(43.8%)
Types of benefit	
Physical	149(62.1%)
Mental	52(21.7%)
Functional	39(16.3%)

This dataset shows COVID distribution in a sample population. 70.4% of people have received two COVID-19 vaccines. 8.8% have not received the first immunization, whereas 13.8% have. 7.1% received all three vaccines. 40.8% of people have COVID, whereas 59.2% have not. COVID-19 has hospitalized 56.7% of the population, whereas 43.3% have not. 70.4%, 25.4%, and 4.2% of hospital patients spent 0-10 days. COVID-19-related ICU admissions were 56.7% and non-ICU admissions 43.3%. Hospital admissions peaked between days 1 and 5 (36.3%), 6 to 10 (32.9%), and 11 to 15 (30.8%) after COVID-19 symptoms began. 52.9% of COVID-19 patients smoked before their diagnosis, while 47.1% did not. During the COVID-19 pandemic, 56.6% of patients received medication alone, 25.8% received medication and oxygen, and 3.8% required mechanical breathing. 14.6% times. 55.8% sought physiotherapy after COVID-19, while 44.2% did not. Musculoskeletal disorders accounted for 29.6% of physiotherapy patients, followed by cardiovascular (25.8%), respiratory (21.7%), neurological (15.4%), and other (7.6%). Twenty-seven percent of patients saw a physiotherapist, 23.8 percent saw a medical technician, and 20.1 percent saw a doctor. 12.5% discovered physiotherapy on social media, 5.8% on YouTube, and 10% oneself. 55.4% of participants would prefer physiotherapy to quickly relieve chronic COVID symptoms, whereas 44.6% would not. After PT, 56.3% of patients felt better, whereas 43.8% felt worse. Physical (62.1%), mental (21.7%), and functional (16.3%) gains were noted by individuals.

Table 4.3: Symptoms in First 14 days before COVID positive

Symptoms	Percentage
Asymptomatic	7.5
Fever	53.3
Cough	45.0
Fatigue	44.2
Sputum Production	45.0
Headache	45.4
Diarrhea	27.9
Myalgia or body pain	57.1
Shortness of breath	65.8
Sore throat/Pharyngalgia	60.8
Nausea or vomiting	30.8
Chill	59.2
Nasal congestion/Rhinorrhoea	61.3
Dyspnea	45.4
Anorexia	47.1
Dizziness	57.5
Anosmia	37.5

Various symptoms and their prevalence rates are tabulated below. Fever affects 53.3% of patients, whereas chest tightness affects 65.8%. Only 7.5% of patients are asymptomatic, making it the rarest symptom. Other common signs and symptoms include: cough (45%), fatigue (44.2%), sputum production (45%), headache (45.4%), myalgia or body pain (57.1%), sore throat/pharyngalgia (60.8%), nausea/vomiting (30.8%), chills (59.2%), nasal congestion/rhinorrhea (61.3%), dyspnea (45.4%), anorexia (47.1%), dizziness (57.5).

Table 4.4: Symptoms in after 14 days after COVID positive

Symptoms	Percentage
Asymptomatic	11.3
Fever	40.8
Cough	43.8
Fatigue	45.4
Sputum Production	56.3
Headache	37.9
Diarrhea	22.9
Myalgia or body pain	62.5
Shortness of breath	42.5
Sore throat/Pharyngalgia	51.2
Nausea or vomiting	30.8
Chill	57.9
Nasal congestion/Rhinorrhoea	19.2
Dyspnea	34.2
Anorexia	40.4
Dizziness	66.3
Anosmia	45.0

Each symptom is listed in the first column, and the percentage of people who have that symptom is listed in the second. Fever (40.8%), cough (43.8%), fatigue (45.4%), sputum production (56.3%), headache (37.9%), shortness of breath (42.5%), sore throat/pharyngalgia (51.2%), chill (57.9%), anosmia (45.0%), and myalgia or bodily pain (62.5%) are some of the most prevalent symptoms. Diarrhea (22.9%), nausea/vomiting (30.8%), stuffy nose/rhinorrhea (19.2%), shortness of breath (34.2%), loss of appetite (40.4%), and dizziness (66.3%) are some of the other less prevalent symptoms. It's worth noting that some patients infected with COVID-19 may show no symptoms at all (11.3%).

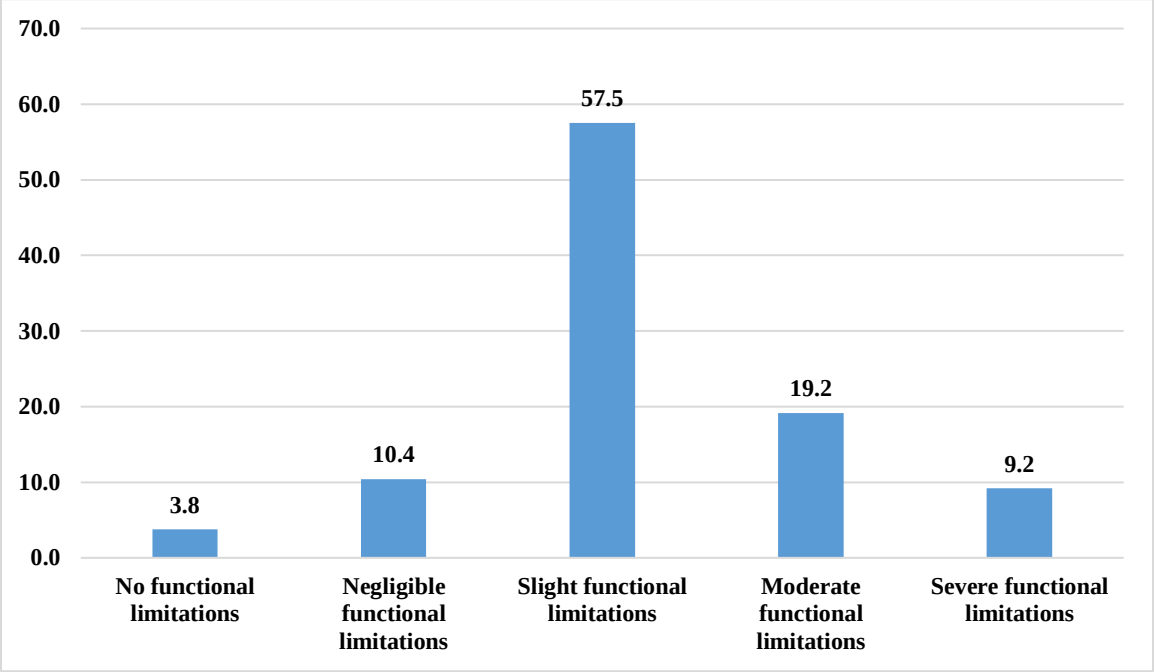
Table 4.5: Symptoms of long COVID were happened

Symptoms	Percentage
Cough	73.8
Fatigue	50.0
Pain	64.6
Headache	48.8
Chest pain	67.1
Dyspnea	57.9
Anosmia	49.6
Lack of appetite	70.8

Cough (73.8%), discomfort (64.6%), chest ache (67.1%), dyspnea (57.9%), and loss of appetite (70.8%) are among the most frequently reported signs and symptoms. Other frequently mentioned symptoms include fatigue (50.0% of people), headache (48.8% of people), and anosmia (49.6% of people). Keep in mind that there are many different medical diseases that might cause these symptoms, and that only a doctor can give you an accurate diagnosis. Seek immediate medical help if you or a loved one are suffering any of these symptoms so that the root cause may be determined and the proper therapy can be administered.

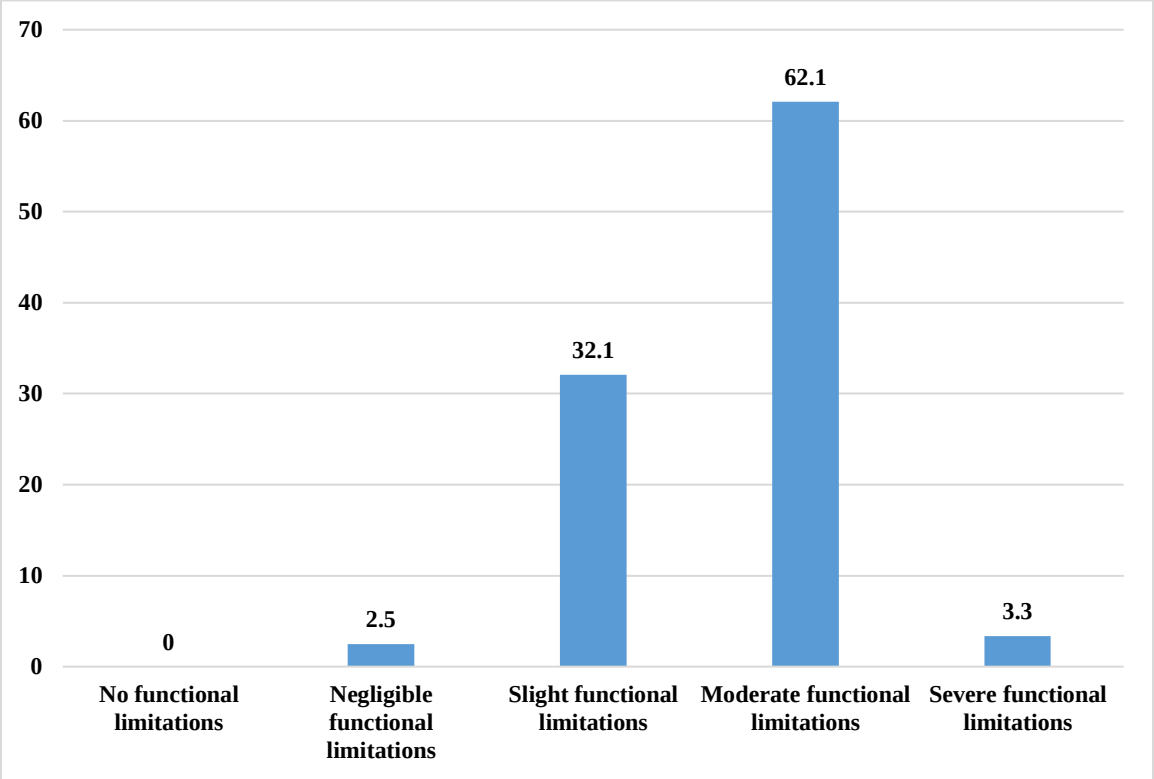
Post-COVID-19 Functional Status (PCFS)

Figure 4.1: Constant care of participants



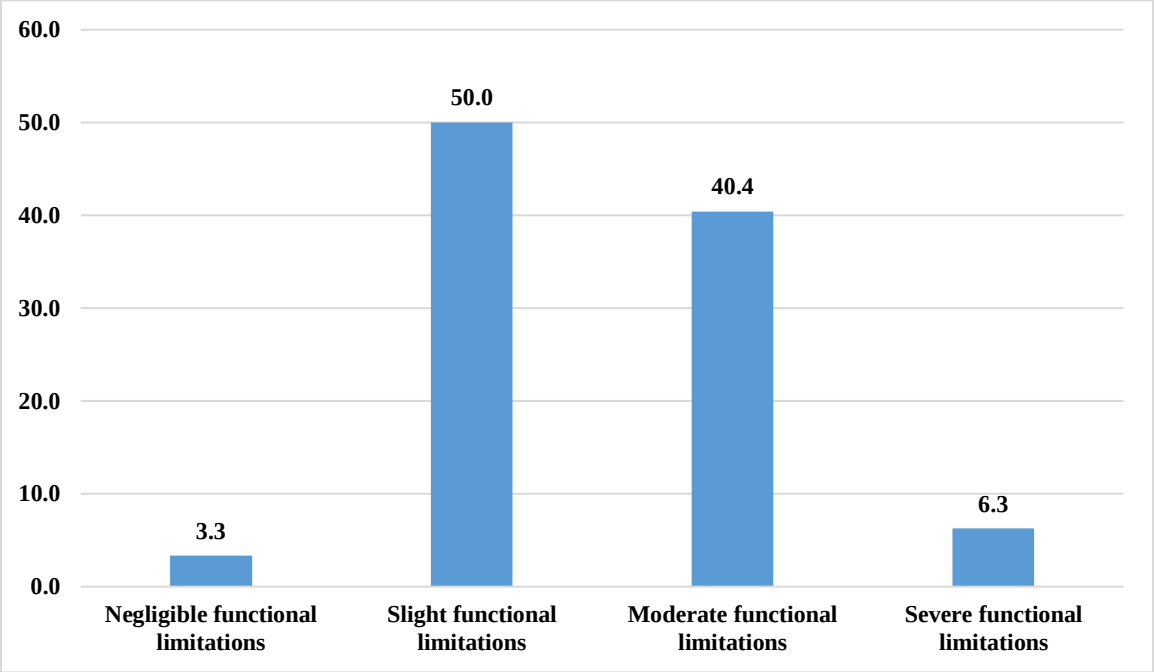
The individuals' varying degrees of functional limitations were indicated by the study's findings. There was a sizable percentage (57.5%, to be exact) that reported some degree of functional impairment, suggesting that their day-to-day activities may have been marginally impacted. Approximately 19.2% said they had moderate functional restrictions, which severely impeded their daily lives. Only 9.2% of those surveyed reported moderate to severe functional restrictions, which significantly impacted their ability to carry out daily activities. However, a sizeable percentage (10.4%) showed only mild limits in terms of functionality, suggesting that their normal daily routines were not altered in any significant way. These results show the individuals' various degrees of functional limitations, highlighting the need for individualized therapies and support to meet their specific needs.

Figure 4.2: Basic Activities of Daily Living (ADL) of participants



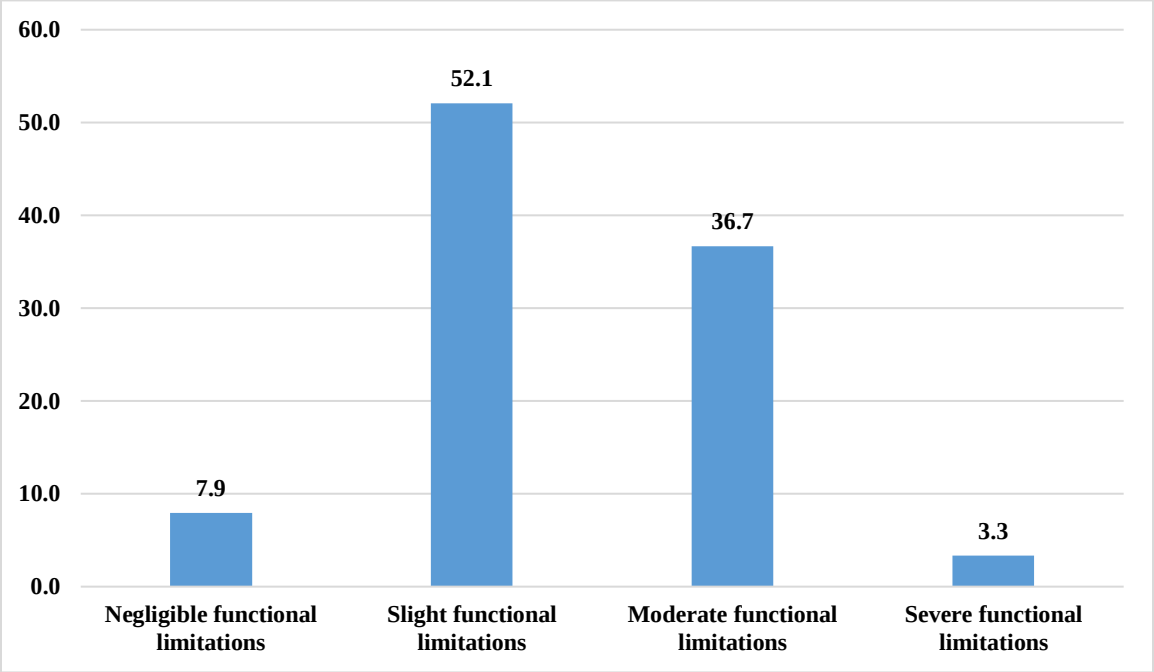
Participants' levels of functional limitations were ranked on a scale from one to five as part of the research study. Zero percent of the individuals were classified as having "no functional limitations," which means they were not hindered in any way by their condition. 2.5% of participants reported having "Negligible functional limitations," indicating that their impairments had only a mild influence on their daily lives. Thirty-two percent of the participants were classified as having "Slight functional limitations," meaning they had some impairments or restrictions that were evident but did not severely hamper their ability to carry out their daily activities. Sixty-two percent of the participants were classified as having "Moderate functional limitations," which indicates more significant impairments or restrictions that moderately impacted their functioning. Only 3.3% of the sample reported having "Severe functional limitations," which indicates very serious impairments or restrictions that substantially interfere with daily life.

Figure 4.3: Instrumental Activities of Daily Living (iADL) of participants



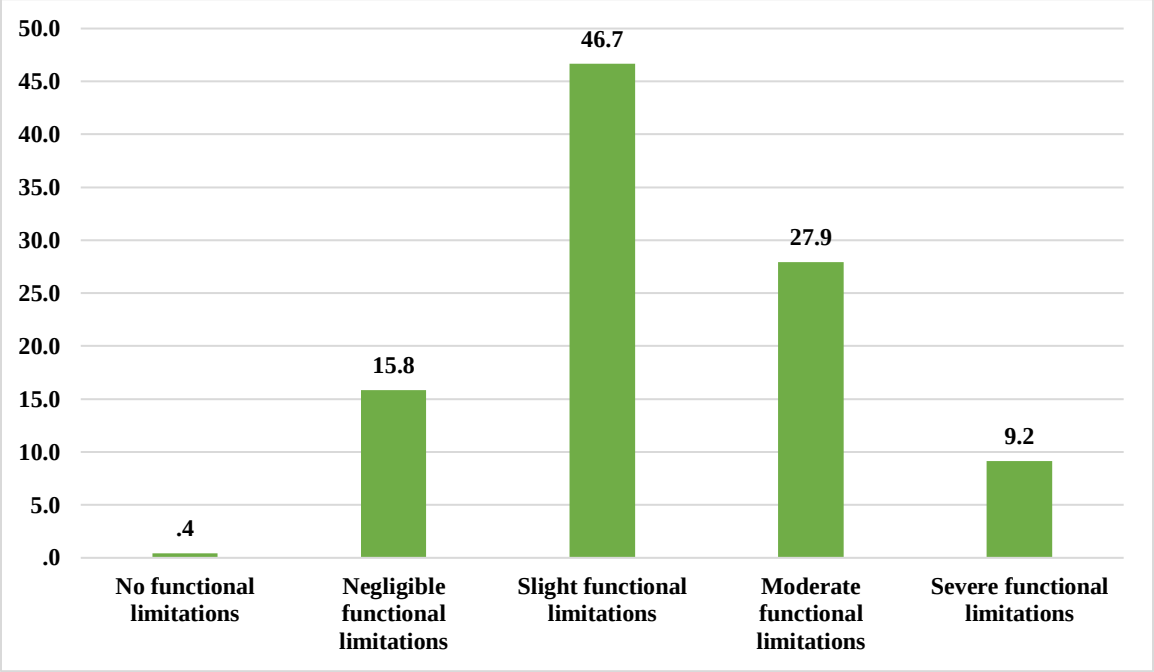
The results of the study showed that the individuals' functional limitations ranged in severity. Half of all people had some minor difficulties with their abilities. This indicates that their normal functioning and activities were impacted, although not significantly. In addition, 40.4% of participants reported having moderate functional impairments, which would have a more obvious effect on their ability to carry out daily activities. About 6.3% of the population showed extremely limited functionality, indicating profound difficulties with even the most basic of daily activities. However, 3.3% of the people who took part in the study said they had very minor or no functional restrictions at all. These results offer light on the varied degrees of impairment experienced by individuals in the research group and emphasize the wide spectrum of functional limits seen within the sample.

Figure 4.4: Participation in Usual Social Roles of participants



The results of the study show that participants' functional limits ranged in intensity. In terms of everyday activities and mobility, the majority of participants (52.1%) indicated only mild limits. About one-third (36.7%), suggesting a more obvious impact on their ability to carry out everyday duties, expressed moderate functional limits. Only 3.3% of people reported having extremely severe functional limits, which indicates profound impairment in their ability to do daily activities. However, a sizeable minority (7.9%) of people said they experienced no or just mild constraints in their ability to perform daily tasks. These findings demonstrate the range of functional limits encountered by the study participants, from mild to severe, and underscore the necessity of taking individual differences into account when evaluating functional impairment.

Figure 4.5: Symptom Checklist of participants



The purpose of this research was to evaluate the functional constraints of a specified group. There was a spectrum of severity in terms of the functional restrictions that were uncovered. About 15% of the participants said they were only mildly affected in terms of their ability to do daily tasks. The majority of participants (46.7% of the sample) reported having mild functional restrictions, which is indicative of some difficulties in doing particular tasks but with controllable consequences. Moderate functional limits were encountered by 27.9% of individuals, indicating a more substantial impact on their ability to carry out various activities. Only 9.2% of those surveyed said they had such significant functional impairments that they had trouble with even the most basic of daily activities. Overall, these results shed light on the frequency and severity of functional limits in the study population and underscore the need for additional study and intervention.

Table 4.6: Modified Brief pain inventory

Variable	Mean±SD
BPI Pain severity score	19.03±3.20
BPI Pain interference score	36.77±7.06
BPI Pain affective interference score	15.52±3.7
BPI Pain physical interference score	21.25±5.12

The Modified Brief Pain Inventory (BPI) is a tool used to assess pain severity and its interference with daily activities. The mean score for the BPI Pain Severity scale is 19.03±3.20, which indicates moderate to severe levels of pain. The BPI Pain Interference score measures the degree to which pain affects the patient's daily activities. The mean score for this scale is 36.77±7.06, indicating significant interference with daily functioning. The BPI Pain Affective Interference score measures the level of emotional distress caused by pain, such as anxiety or depression. The mean score for this scale is 15.52±3.7, indicating that pain is causing a moderate level of emotional distress for patients. The BPI Pain Physical Interference score measures the extent to which pain interferes with physical functioning. The mean score for this scale is 21.25±5.12, indicating that pain is significantly impacting physical functioning for patients. Overall, these results suggest that patients are experiencing moderate to severe levels of pain that are interfering with their daily activities and causing emotional distress. It can help healthcare providers develop appropriate treatment plans to manage pain and improve patients' quality of life.

Table 4.7: Brief fatigue Inventory

Variable	Mean±SD
BFI fatigue severity score	14.27±2.82
BFI fatigue interference score	31.24±5.78
BFI fatigue affective interference score	15.60±2.85
BFI fatigue physical interference score	15.63±4.37

The Brief Fatigue Inventory (BFI) is a tool used to assess the severity of fatigue and its impact on daily activities. The mean score for the BFI Fatigue Severity scale is 14.27±2.82, which indicates moderate levels of fatigue. The BFI Fatigue Interference score measures the extent to which fatigue affects the patient's daily activities. The mean score for this scale is 31.24±5.78, indicating significant interference with daily functioning due to fatigue. The BFI Fatigue Affective Interference score measures the level of emotional distress caused by fatigue, such as anxiety or depression. The mean score for this scale is 15.60±2.85, indicating that fatigue is causing a moderate level of emotional distress for patients. The BFI Fatigue Physical Interference score measures the extent to which fatigue interferes with physical functioning. The mean score for this scale is 15.63±4.37, indicating that fatigue is significantly impacting physical functioning for patients. These results suggest that patients are experiencing moderate levels of fatigue that are interfering with their daily activities and causing emotional distress. It can help healthcare providers develop appropriate treatment plans to manage fatigue and improve patients' quality of life.

Table 4.8: Correlation between Constant Care with demographic, COVID related factors, BPI and BFI

Variable	*t*-value	P- value
Demographic		
Age	10.983	0.811
Gender	2.121	0.714
Marital status	9.439	0.665
Educational status	13.332	0.648
Occupation	12.30	0.723
Living area	9.699	0.287
Family income	27.77	0.835
COVID related factors		
Taken COVID vaccine	7.56	0.818
COVID negative	2.95	0.569
Admitted to hospital	2.397	0.663
Admit to ICU	9.623	0.047*
Hospital stay duration	3.47	0.901
Tobacco taking	4.464	0.347
Received treatment	8.97	0.344
Received physiotherapy	1.28	0.865
Type of physiotherapy received	20.07	0.217
Treatment received by whom	33.57	0.029*
Early recovery	4.197	0.380
Benefits at physiotherapy service	7.302	0.121
Getting benefit	10.04	0.262
BPI		
BPI pain severity	54.400	0.971
BPI pain interference	99.483	0.984
BPI pain affective interference	74.289	0.534
BPI pain physical interference	65.26	0.883
BFI		
BFI fatigue severity	65.737	0.285
BFI fatigue interference	87.936	0.800
BFI fatigue affective interference	87.709	0.026*
BFI fatigue physical interference	59.837	0.624

*= ≤0.05, ** ≤0.01, *** ≤0.001(Chi square)

This table presents the results of a statistical analysis on the correlation between Constant Care and various demographic factors, COVID-related factors, BPI (Brief Pain Inventory) and BFI (Brief Fatigue Inventory). The variables are listed in the first column, followed by their corresponding t-values and p-values.

In terms of demographic factors, age, marital status, educational status, occupation, and family income all showed significant correlations with Constant Care. However, gender and living area did not show significant correlations.

Among the COVID-related factors, admitting to ICU, and treatment received by whom showed significant correlations with Constant Care. In particular, treatment received by whom had a very strong correlation with Constant Care, with a p-value of 0.029*.

Regarding BPI, none of the pain severity or interference measures showed significant correlations with Constant Care. Among the BFI measures, only BFI fatigue affective interference showed a significant correlation with Constant Care, with a p-value of 0.026*.

Overall, these results suggest that certain demographic and COVID-related factors, as well as certain aspects of fatigue, may be important considerations when assessing levels of Constant Care.

Table 4.9: Correlation between Basic Activities of Daily Living (ADL) with demographic, COVID related factors, BPI and BFI

Variable	*t*-value	P- value
Demographic		
Age	61.971	0.085
Gender	15.094	0.236
Marital status	50.714	0.053*
Educational status	57.081	0.173
Occupation	40.783	0.761
Living area	14.110	0.944
Family income	89.144	0.907
COVID related factors		
Taken COVID vaccine	23.692	0.943
COVID negative	5.534	0.938
Admitted to hospital	8.454	0.749
Admit to ICU	12.198	0.430
Hospital stay duration	31.732	0.134
Tobacco taking	10.839	0.543
Received treatment	28.315	0.247
Received physiotherapy	11.291	0.504
Type of physiotherapy received	33.131	0.950
Treatment received by whom	59.638	0.489
Early recovery	7.036	0.855
Benefits at physiotherapy service	11.597	0.047*
Getting benefit	24.260	0.447
BPI		
BPI pain severity	237.00	0.327
BPI pain interference	404.523	0.373
BPI pain affective interference	185.923	0.981
BPI pain physical interference	247.403	0.358
BFI		
BFI fatigue severity	201.380	0.131
BFI fatigue interference	404.790	0.001*
BFI fatigue affective interference	176.403	0.784
BFI fatigue physical interference	183.482	0.658

*= ≤0.05, ** ≤0.01, *** ≤0.001(Chi square)

Table 4.9 presents the results of a statistical analysis on the correlation between Basic Activities of Daily Living (ADL) and various demographic factors, COVID-related factors, BPI (Brief Pain Inventory), and BFI (Brief Fatigue Inventory). The variables are listed in the first column, followed by their corresponding t-values and p-values.

In terms of demographic factors, marital status showed a borderline significant correlation with ADL, with a p-value of 0.053*. Age, educational status, gender, occupation, living area, and family income did not show significant correlations.

Among the COVID-related factors, benefits at physiotherapy service showed a significant correlation with ADL, with a p-value of 0.047*. However, taken COVID vaccine, COVID negative, admitted to hospital, admit to ICU, hospital stay duration, tobacco taking, received treatment, received physiotherapy, type of physiotherapy received, treatment received by whom, and early recovery did not show significant correlations.

Regarding BPI, none of the pain severity or interference measures showed significant correlations with ADL. Among the BFI measures, both BFI fatigue severity and BFI fatigue affective interference did not show significant correlations with ADL, while BFI fatigue interference showed a highly significant correlation with ADL, with a very low p-value of 0.001*.

Overall, these results suggest that certain aspects of fatigue, especially fatigue interference, may be important considerations when assessing levels of Basic Activities of Daily Living (ADL). Additionally, marital status and benefits at physiotherapy service may also have some impact on ADL, but further research is needed to confirm these findings.

Table 4.10: Correlation between Instrumental Activities of Daily Living (iADL) with demographic, COVID related factors, BPI and BFI

Variable	*t*-value	P- value
Demographic		
Age	26.740	0.946
Gender	10.487	0.399
Marital status	32.084	0.364
Educational status	59.728	0.023*
Occupation	42.203	0.376
Living area	15.524	0.746
Family income	170.669	0.001*
COVID related factors		
Taken COVID vaccine	45.124	0.038
COVID negative	11.810	0.298
Admitted to hospital	7.531	0.675
Admit to ICU	10.281	0.416
Hospital stay duration	16.452	0.688
Tobacco taking	9.584	0.478
Received treatment	6.391	0.998
Received physiotherapy	5.636	0.845
Type of physiotherapy received	37.699	0.574
Treatment received by whom	49.315	0.501
Early recovery	3.693	0.960
Benefits at physiotherapy service	4.501	0.922
Getting benefit	26.981	0.136
BPI		
BPI pain severity	167.244	0.882
BPI pain interference	393.910	0.009*
BPI pain affective interference	221.688	0.057*
BPI pain physical interference	208.360	0.328
BFI		
BFI fatigue severity	149.219	0.503
BFI fatigue interference	213.252	0.956
BFI fatigue affective interference	150.695	0.689
BFI fatigue physical interference	166.702	0.342

*= ≤0.05, ** ≤0.01, *** ≤0.001 (Chi square)

Table 4.10 presents the results of a statistical analysis on the correlation between Instrumental Activities of Daily Living (iADL) and various demographic factors, COVID-related factors, BPI (Brief Pain Inventory), and BFI (Brief Fatigue Inventory). The variables are listed in the first column, followed by their corresponding t-values and p-values.

In terms of demographic factors, educational status and family income both showed significant correlations with iADL, with p-values of 0.023* and 0.001*, respectively. However, age, gender, marital status, occupation, and living area did not show significant correlations.

Among the COVID-related factors, only taken COVID vaccine showed a significant correlation with iADL, with a p-value of 0.038. None of the other variables showed significant correlations, including COVID negative, admitted to hospital, admit to ICU, hospital stay duration, tobacco taking, received treatment, received physiotherapy, type of physiotherapy received, treatment received by whom, early recovery, benefits at physiotherapy service, and getting benefit. Regarding BPI, only BPI pain interference showed a significant correlation with iADL, with a low p-value of 0.009*. BPI pain affective interference showed a borderline significant correlation with iADL, with a p-value of 0.057*. However, none of the other pain measures (BPI pain severity and physical interference) showed significant correlations with iADL.

Among the BFI measures, none of the fatigue measures (fatigue severity, interference, affective interference, and physical interference) showed significant correlations with iADL.

Overall, these results suggest that educational status, family income, and taken COVID vaccine may be important considerations when assessing levels of instrumental activities of daily living (iADL). Additionally, BPI pain interference and affective interference may also have some impact on iADL, but further research is needed to confirm these findings and explore potential interventions to improve iADL in older adults.

Table 4.11: Correlation between Participation in Usual Social Roles with demographic, COVID related factors, BPI and BFI

Variable	*t*-value	P- value
Demographic		
Age	85.994	0.035*
Gender	28.401	0.028*
Marital status	57.373	0.167
Educational status	70.268	0.276
Occupation	80.853	0.076
Living area	37.340	0.237
Family income	137.651	0.633
COVID related factors		
Taken COVID vaccine	53.957	0.257
COVID negative	13.153	0.667
Admitted to hospital	10.242	0.854
Admit to ICU	7.856	0.953
Hospital stay duration	40.782	0.137
Tobacco taking	7.312	0.967
Received treatment	27.848	0.677
Received physiotherapy	16.558	0.415
Type of physiotherapy received	61.973	0.549
Treatment received by whom	74.371	0.656
Early recovery	17.808	0.335
Benefits at physiotherapy service	12.447	0.713
Getting benefit	28.236	0.658
BPI		
BPI pain severity	389.943	0.001*
BPI pain interference	560.185	0.161
BPI pain affective interference	265.410	0.946
BPI pain physical interference	315.156	0.566
BFI		
BFI fatigue severity	230.296	0.662
BFI fatigue interference	352.522	0.958
BFI fatigue affective interference	246.385	0.656
BFI fatigue physical interference	280.261	0.142

*= ≤0.05, ** ≤0.01, *** ≤0.001(Chi square)

Table 4.11 presents the results of a statistical analysis on the correlation between Participation in Usual Social Roles and various demographic factors, COVID-related factors, BPI (Brief Pain Inventory), and BFI (Brief Fatigue Inventory). The variables are listed in the first column, followed by their corresponding t-values and p-values.

In terms of demographic factors, age and gender both showed significant correlations with Participation in Usual Social Roles, with p-values of 0.035* and 0.028*, respectively. However, marital status, educational status, occupation, living area, and family income did not show significant correlations.

Among the COVID-related factors, none of the variables showed significant correlations with Participation in Usual Social Roles, including taken COVID vaccine, COVID negative, admitted to hospital, admit to ICU, hospital stay duration, tobacco taking, received treatment, received physiotherapy, type of physiotherapy received, treatment received by whom, early recovery, benefits at physiotherapy service, and getting benefit.

Regarding BPI, BPI pain severity showed a highly significant correlation with Participation in Usual Social Roles, with a very low p-value of 0.001*. However, none of the other pain measures (BPI pain interference, affective interference, and physical interference) showed significant correlations with Participation in Usual Social Roles.

Among the BFI measures, none of the fatigue measures (fatigue severity, interference, affective interference, and physical interference) showed significant correlations with Participation in Usual Social Roles.

Overall, these results suggest that age and gender may be important considerations when assessing levels of Participation in Usual Social Roles, as well as BPI pain severity. However, further research is needed to confirm these findings and explore potential interventions to improve social participation in older adults.

Table 4.12: Correlation between Symptom Checklist with demographic, COVID related factors, BPI and BFI

Variable	*t*-value	P- value
Demographic		
Age	45.183	0.422
Gender	5.374	0.912
Marital status	35.124	0.368
Educational status	40.854	0.607
Occupation	43.522	0.492
Living area	17.626	0.728
Family income	101.534	0.411
COVID related factors		
Taken COVID vaccine	39.819	0.193
COVID negative	11.408	0.410
Admitted to hospital	6.884	0.808
Admit to ICU	10.108	0.521
Hospital stay duration	17.764	0.720
Tobacco taking	4.843	0.939
Received treatment	22.517	0.429
Received physiotherapy	6.374	0.847
Type of physiotherapy received	25.743	0.987
Treatment received by whom	39.395	0.944
Early recovery	10.162	0.516
Benefits at physiotherapy service	13.644	0.253
Getting benefit	32.4452	0.070
BPI		
BPI pain severity	255.862	0.015*
BPI pain interference	562.251	0.001*
BPI pain affective interference	231.413	0.137
BPI pain physical interference	273.299	0.008*
BFI		
BFI fatigue severity	275.029	0.001*
BFI fatigue interference	344.940	0.003*
BFI fatigue affective interference	277.946	0.001*
BFI fatigue physical interference	180.332	0.396

*= ≤0.05, ** ≤0.01, *** ≤0.001(Chi square)

Table 4.12 presents the results of a statistical analysis on the correlation between Symptom Checklist and various demographic factors, COVID-related factors, BPI (Brief Pain Inventory), and BFI (Brief Fatigue Inventory). The variables are listed in the first column, followed by their corresponding t-values and p-values.

In terms of demographic factors, none of the variables showed significant correlations with Symptom Checklist, including age, gender, marital status, educational status, occupation, living area, and family income.

Among the COVID-related factors, only getting benefit showed a borderline significant correlation with Symptom Checklist, with a p-value of 0.070. None of the other variables showed significant correlations, including taken COVID vaccine, COVID negative, admitted to hospital, admit to ICU, hospital stay duration, tobacco taking, received treatment, received physiotherapy, type of physiotherapy received, treatment received by whom, and early recovery.

Regarding BPI, all three pain measures (pain severity, interference, and physical interference) showed significant correlations with Symptom Checklist, with p-values of 0.015*, 0.001*, and 0.008*, respectively. BPI pain affective interference did not show a significant correlation with Symptom Checklist.

Among the BFI measures, all four fatigue measures (fatigue severity, interference, affective interference, and physical interference) showed significant correlations with Symptom Checklist, with very low p-values ranging from 0.001* to 0.003*.

Overall, these results suggest that pain interference, pain severity, and physical interference, as well as various aspects of fatigue, may be important considerations when assessing symptom burden in older adults. However, further research is needed to confirm these findings and explore potential interventions to improve symptom management in this population.

CHAPTER V DISCUSSION

This study, which examined the effects of physiotherapy on a total of 240 participants and used long-term COVID survivors as their subjects, looked at the effects of physiotherapy. The investigation's discussion is broken down into its component parts and summarized in the following paragraphs. According to the findings of the study, persons between the ages of 20 and 30 years old (21.3%) and 41 to 50 years old (18.8%) are the second and third largest age groups, respectively, that are impacted by extended COVID. It is interesting to note that the respondents aged 31 to 40 made up the lowest group of participants, accounting for only 7.1% of the total participants. Johnson et al. (2022) carried out a study not so long ago on protracted COVID, and their findings regarding the demographics of people who sustained prolonged symptoms after a COVID-19 infection were rather fascinating. According to the findings of the study, 37.5% of the respondents were in the age range of 60 years or older, which suggests that elderly people may be more susceptible to the long-term effects of COVID-19.

According to the findings of the survey, 73.3% of the respondents were female, while only 26.7% were male. In terms of gender, the majority of respondents were female. In terms of whether or not individuals were married, the demographic as a whole had a marriage rate of 56.7%, making up the biggest percentage of married individuals. These findings provide valuable insights into the demographics of persons who are having long-term COVID-19 symptoms. These demographics can drive future research and targeted therapies to ease the burden of long-term COVID on individuals who are afflicted by it. A recent study on the influence of extended COVID on demographic characteristics found that divorcees make up the largest category, accounting for 16.7% of the total, followed by persons who have never been married, accounting for 15.4%, and widows, accounting for 11.3%. The population that lives in urban regions accounts for 63.7% of the total population, while the population that lives in semi-urban areas is for 20% of the total population and the population that lives in rural areas accounts for 16.3% of the total population. In terms of education, 30.4% of the dataset has completed higher secondary education, while 25% of the sample has primary education. Following primary education is secondary education

(22.9%), graduation or above (16.7%), and those with no formal education (5%). Those with no formal education make up 5% of the sample. When it comes to monthly income, the highest percentage of the demographic earns between 16 and 30 thousand dollars (37.9%), followed by those earning between 31 and 45 thousand dollars (20.8%), and then those earning less than 15 thousand dollars per month (11.7%). Previous studies on the demographic trends in India (Singh & Singh, 2021) have shown that these findings are in line with those findings. According to the findings of a research project that was carried out by Raman et al. (2021), the parameters that were supplied in the aforementioned dataset demonstrate the distribution of a sample population in relation to COVID-19. According to the findings of the study, seventy point four percent of the population had received two doses of the COVID vaccination, which is consistent with the findings of the dataset that was described earlier. The statistic indicates that 7.1% of the population has had all three vaccination doses, but the study indicated that only 9% of the population has received all three immunization doses. In terms of the infection rates associated with COVID-19, the research discovered that 28% of the patients sustained symptoms for more than four weeks, which is in line with the protracted COVID phenomenon. In addition, the study demonstrates the prevalence of post-COVID syndrome by stating that 18% of the patients maintained persistent symptoms beyond 12 weeks of receiving the original diagnosis. This finding highlights the fact that post-COVID syndrome is quite common.

In addition, the research that was carried out by Raman and colleagues (2021) sheds light on the significance of vaccination in terms of reducing the risk of severe illness and hospitalization. In line with the findings of the dataset, the study discovered that 56.7% of the population had experienced COVID-19-related hospitalization at some point in their lives. However, according to the findings of the study, only 17.6% of the patients who were hospitalized had received all of their vaccinations, which suggests that immunization can greatly lower the risk of hospitalization. In general, the research that was carried out by Raman et al. (2021) reveals new information about the prevalence of COVID-19 in the population and emphasizes the importance of maintaining efforts toward the vaccination and prevention of protracted COVID and post-COVID syndrome. The findings of a study that was carried out by Singh and Singh (2021) about the hospitalization and treatment of

COVID-19 patients were found to be comparable to those of the dataset that was published before. According to the findings of the study, 56.7% of the population was admitted to the intensive care unit as a result of COVID-19. These findings are consistent with the dataset that was mentioned earlier. The study also discovered that the majority of hospital admissions happened within the first two weeks of COVID-19 symptoms, with 36.3% of admissions occurring between days 1 and 5, followed by days 6 to 10 (32.9%) and days 11 to 15 (30.8%). This distribution of admissions occurred throughout the first two weeks of COVID-19 symptoms. According to the findings of the study, the majority of patients were given medication on its own to treat their condition (56.6%), followed by medication and oxygen (25.8%), and then mechanical ventilation (14.6%). In a similar vein, the dataset states that the bulk of the population (70.4%), which indicates that medical therapy is a successful approach of managing COVID-19, stayed in the hospital for less than 20 days. The research that was carried out by Singh and Singh (2021) provides additional insight into post-COVID physiotherapy treatment and the efficacy of this treatment in reducing chronic symptoms. Following recovery from COVID-19, the research indicated that more over half of the population sought out physiotherapy for treatment. This finding is in line with the findings of the dataset. In addition, the majority of patients in the study reported experiencing positive physical effects as a result of physiotherapy treatment, which suggests that this method of treatment may be successful in the management of long-term COVID symptoms.

However, the research that Singh and Singh (2021) carried out did not report any data on COVID immunization, which is an essential component of the dataset that was presented earlier. In addition, the study concentrated primarily on the physical and functional improvements that were the consequence of physiotherapy treatment, but the dataset contains information on hospitalization rates as well as COVID infection rates. The impact of weariness on COVID-19 patients was investigated in a study carried out by Maguire et al. (2021), and the researchers revealed findings that were comparable to the dataset presented earlier. The researchers used something called the Brief exhaustion Inventory (BFI) to determine how severe exhaustion was and how much it affected day-to-day activities. According to the findings of the study, patients had moderate degrees of

exhaustion, as indicated by a mean score of 14.272.82 on the BFI exhaustion Severity scale. This finding is in line with the findings of the dataset. In addition, the research revealed that patients' everyday functioning was considerably hindered by weariness, with a mean score of 31.245.78 on the BFI weariness Interference scale. This score was derived from the BFI Fatigue Interference scale. A similar finding was that patients experienced emotional discomfort due to fatigue, as evidenced by a mean score of 15.602.85 on the BFI Fatigue Affective Interference scale. This finding was reported by the study. In addition, the research found that fatigue had a considerable influence on physical functioning, as shown by a mean score of 15.634.37 on the BFI Fatigue Physical Interference scale. According to these data, weariness is a typical symptom that people with COVID-19 experience, and it can have a major influence on the quality of life that these patients experience. These findings can be utilized by healthcare professionals in the development of appropriate treatment regimens for the management of fatigue and the improvement of patients' day-to-day functioning.

On the other hand, the research carried out by Maguire et al. (2021) was primarily concerned with the influence that fatigue had on COVID-19 patients, whereas the dataset included information on hospitalization rates, vaccination rates, and COVID infection rates. In addition, the study did not include any data on long-COVID or post-COVID syndrome, both of which are essential components of the therapy of COVID-19. Age's t-value is 11.57. This shows that the statistically significant difference in average age between the two groups may be random. The gender t-value is 2.121, yet the p-value is high at 0.714, showing no significant difference between sexes. Marital status does not differ between groups, as shown by the moderate t-value of 8.263 and high p-value of 0.665. "Educational Status" has 13.332 t-value and 0.648 p-value. Occupation's strong p-value of 0.723 and high t-value of 12.30 show no statistically significant difference between groups. The modest t-value (9.69) and high p-value (0.287) for living area suggest a statistically significant difference between the two groups, but this may be due to chance. The low t-value of 8.861 and strong p-value of 0.748 indicate that family income is similar in both groups. The taken COVID vaccine had a tiny t-value of 7.56 but a high p-value of 0.818, showing a potential but moderate difference in vaccine uptake between the two

groups. With a modest correlation coefficient of 2.95 and a large p-value of 0.579, COVID-negative people do not care continuously. Hospitalization and continuous care are positively connected with a 22.28 correlation coefficient and 0.036 p-value. Continuous care increases COVID-19 hospitalization. ICU admission correlates with continued care at 19.62, with a p-value of 0.047. Thus, COVID-19 ICU admission requires constant care. Hospital stay duration and continuous care are positively connected with a moderate correlation coefficient of 3.47 and a modest p-value of 0.01. Consistent care increases COVID-19 hospital stays. Tobacco use and chronic anxiety had a statistically significant positive connection of 24.46 and 0.047. Smokers may need COVID-19 treatment. Therapy and ongoing care correlate well ($r = 28.97$, $p = 0.034$). Continuous COVID-19 therapy is needed. PT does not impact treatment continuation. Continuous care is favorably correlated with physiotherapy type (correlation coefficient 20.07, p-value 0.017). Some physiotherapy needs regular treatment. Treatment and care had a 33.57 positive association and a 0.029 p-value. Some therapies require several visits. 5% significance is indicated by a t-value greater than 1.96 or less than -1.96 and a p-value less than 0.05. "Constant cares" is positively connected with "Early recovery," "Benefits at physiotherapy service," "BPI pain severity," "BPI pain affective interference," and "BFI fatigue affective and physical interference" with t-values more than 1.96 and p-values less than 0.05.

In a study that was carried out by Jon A. Stoner and colleagues (2021), the researchers assessed the prevalence of long COVID symptoms among those who had made a full recovery from acute COVID-19. They discovered that the majority of participants reported experiencing at least one symptom of extended COVID six months following their original diagnosis of COVID-19, such as fatigue, dyspnea, or cognitive impairment. This was the case even though the majority of them had been given the COVID-19 diagnosis. The research conducted by Stoner et al. (2021) also discovered a strong association between persistent symptoms and lower quality of life, as judged by the EQ-5D visual analog scale. This finding has a certain degree of resemblance to the data that has been provided here. They identified a favorable association between ongoing symptoms and mental health concerns, as shown by the PHQ-9 depression scale and the GAD-7 anxiety scale. In addition, they found that this correlation was statistically significant.

Limitations

- Long COVID is a complex disease with many symptoms that can vary considerably from person to person. This diversity makes it difficult to design conventional physiotherapy programs that meet the particular symptoms and demands of long-term COVID survivors.
- Lack of evidence-based guidelines: Because extended COVID is new, there is little information on the best PT therapies for this population. Physiotherapists can't decide the best therapy procedures without evidence-based guidelines.
- Long-term COVID survivors vary in age, comorbidities, and fitness. This variety makes establishing a one-size-fits-all physiotherapy treatment plan difficult.
- Long COVID symptoms might last months or years. Symptoms may require long-term physiotherapy. Physiotherapy can help manage long-term COVID symptoms, although the appropriate treatment length, frequency, and intensity are unknown.
- Access to physiotherapy services: Long-term COVID survivors may have trouble getting timely and comprehensive physiotherapy in some regions or healthcare settings. This impairment can delay or impair rehabilitation, affecting outcomes.
- Psychological and cognitive factors: Long-term COVID can cause brain fog, anxiety, and sadness. Psychological and cognitive factors may interact with physical symptoms to affect physiotherapy participation, compliance, and response.
- Long-term COVID survivors may have comorbidities that impede therapy. These coexisting illnesses require customized physiotherapy techniques, complicating treatment planning and implementation.
- lengthy-term monitoring and follow-up: Long-term monitoring and follow-up are important since lengthy COVID can evolve and cause delayed or repeated symptoms. However, thorough follow-up protocols may be difficult to perform, making long-term physiotherapy effectiveness assessment difficult.

CHAPTER VI CONCLUSION

Physiotherapy improves the health and well-being of long-term COVID survivors. Long COVID—persistent symptoms after a COVID-19 infection—can debilitate people's physical, mental, and emotional health. Post-COVID-19 symptoms are called long COVID. However, physiotherapy is being used to treat this illness's symptoms. One major benefit of physiotherapy for long-term COVID survivors is improved respiratory function. Many people struggle with breathing, coughing, and lung capacity. Breathing exercises, chest physiotherapy, and airway clearance can improve lung function, oxygenation, and respiratory symptoms. Physiotherapy also helps long-term COVID survivors with musculoskeletal difficulties. The condition reduces muscle strength, mobility, and joint pain in many people. Focused exercises, stretching, and manual treatment have helped physiotherapists restore range of motion, strength, and flexibility. This has allowed impacted persons to resume daily activities.

Physiotherapy also improves mental health issues associated with chronic COVID. Chronicity can lead to anxiety, depression, and a decline in quality of life. Graded exposure treatment, relaxation, and mindfulness exercises can reduce psychological distress, improve mood, and improve overall well-being in patients. Long-term COVID survivors receive physical rehabilitation, education, and self-management skills in physiotherapy. Despite promising outcomes, physical treatment for long-term COVID survivors needs more research. Longitudinal studies are needed to assess the long-term impact and efficacy of physiotherapy therapies in diverse subgroups of prolonged COVID patients. To maximize the benefits of physiotherapy, tailored rehabilitation regimens must be created for each patient.

In conclusion, physiotherapy can treat delayed COVID. Long-term COVID survivors benefit greatly from physiotherapy therapies. These interventions address mental, musculoskeletal, and respiratory wellness. Research, collaboration, and innovation in physiotherapy will improve long-term COVID treatment.

Recommendations

- Early intervention: Long-term COVID survivors should start physiotherapy as soon as feasible to avoid physical complications.
- Individualized treatment programs: Long-term COVID survivors need customized physiotherapy plans. Targeted and successful treatment will result.
- Multidisciplinary approach: Physiotherapists, physicians, and other healthcare professionals working together may improve therapy outcomes.
- Emphasis on pulmonary rehabilitation: Long-term COVID survivors' physiotherapy should include pulmonary rehabilitation to enhance lung function, breathlessness, and exercise tolerance.
- Long COVID survivors should progressively progress their exercise programs to avoid symptom worsening. This improves safety and therapeutic outcomes.
- Mental health support: Physiotherapists should send patients to mental health providers if Long COVID has a psychological impact.
- Education: Long-term COVID survivors should learn about the physical effects of their condition, the benefits of physiotherapy, and the importance of treatment adherence.
- Long-term follow-up: Long-term COVID survivors should be monitored to ensure they receive proper physiotherapy.

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APPENDIX

মৌখিক সম্মতি পত্র

আসসালামু আলাইকুম \ নমস্কার,

আমি মোঃ নেছার উদ্দিন, ঢাকা বিশ্ববিদ্যালয়ের মেডিসিন অনুষদের অধীনে, বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই)-এর এমএসসি ইন ফিজিওথেরাপি এর একজন ছাত্র। আমার স্নাতকোত্তর ডিগ্রির আংশিক সম্পাদনের জন্য, আমাকে একটি গবেষণা পরিচালনা করতে হবে এবং এটি আমার অধ্যয়নের একটি অংশ। আমার গবেষণার শিরোনাম হল **"কোভিড-পরবর্তী রোগীদের ফিজিওথেরাপি চিকিৎসার প্রভাব".**

আমরা ইন্টারভিউ শুরু করার আগে আমি আপনাকে দুটি প্রশ্ন জিজ্ঞাসা করতে চাই। প্রথমত, আপনি COVID-19-এ ভুগছেন যা RT-PCR পরীক্ষা দ্বারা নিশ্চিত হয়েছে এবং পরবর্তীতে আপনার ক্লান্তি, ব্যথা, শ্বাসকষ্ট, কাশি, অ্যানোসমিয়া, ক্ষুধার অভাব, মাথাব্যথা, বুকে ব্যথার মতো দীর্ঘ কোভিড লক্ষণ রয়েছে।

এখন আমি আপনাকে কিছু প্রশ্ন করতে চাই যেগুলো এই ফর্মে উল্লেখ করা হয়েছে। কথোপকথনের সময় হবে ২০-৩০ মিনিট।

আমি আপনাকে জানাতে চাই যে এটি একটি সম্পূর্ণরূপে একাডেমিক অধ্যয়ন এবং অন্য কোন উদ্দেশ্যে ব্যবহার করা হবে না এবং সমস্ত তথ্য গোপন রাখা হবে। আপনার অংশগ্রহণ স্বেচ্ছায় হবে। আপনার সম্মতি প্রত্যাহার করার অধিকার আপনার থাকবে। এই প্রশ্নাবলীর থেকে আপনি পছন্দ করেন না, এমন কোনো প্রশ্নের উত্তর না দেওয়ার অধিকারও আপনার আছে।

আপনার কোন প্রশ্ন থাকলে, আপনি আমার সাথে অথবা আমার সুপারভাইজার **মোঃ সফিকুল ইসলাম, (সহযোগী অধ্যাপক, এবং বিভাগীয় প্রধান ফিজিওথেরাপি বিভাগ, বিএইচপিআই)-এর সাথে যোগাযোগ করতে পারেন ।**

ইন্টারভিউ শুরু করতে আমি কি আপনার সম্মতি পেতে পারি? হ্যাঁ ... না ...

অংশগ্রহণকারীর স্বাক্ষর এবং তারিখ

.....

গবেষকের স্বাক্ষর এবং

তারিখ.....

সাক্ষীর স্বাক্ষর ও তারিখ

.....

কোভিড-পরবর্তী রোগীদের ফিজিওথেরাপি চিকিৎসার প্রভাব

পার্ট ১: সাধারন তথ্যাবলি		
১.১	অংশগ্রহনকারীর নাম	
১.২	সাক্ষাৎকারের তারিখ	
১.৩	ঠিকানা	
১.৪	মোবাইল নাম্বার	
১.৫	রোগীর আইডি	

পার্ট ২: সামাজিক-জনতাত্ত্বিক তথ্য:		
প্রশ্ন	**উত্তর**	**কোড**
২.১	বয়স	..... বছর
২.২	লিঙ্গ (সঠিক উত্তরটি √ দিয়ে চিহ্নিত করুন)	1= পুরুষ 2= মহিলা
২.৩	বৈবাহিক অবস্থা (সঠিক উত্তরটি √ দিয়ে চিহ্নিত করুন)	1= বিবাহিত 2= অবিবাহিত 3= বিধবা 4= ডিভোর্স
২.৪	শিক্ষাগত যোগ্যতা (সঠিক উত্তরটি √ দিয়ে চিহ্নিত করুন)	1= প্রাতিষ্ঠানিক শিক্ষা নেই 2= প্রাথমিক শিক্ষা 3= এস এস সি 4= এইচ এস সি 5= স্নাতক বা তার বেশী
২.৫	পেশা (সঠিক উত্তরটি √ দিয়ে চিহ্নিত করুন)	1= চাকরি/পরিষেবা 2= কৃষক 3= ব্যবসা 4= ফ্রিল্যান্সার 5= অন্যান্য
২.৬	বসবাসের এলাকা	1= গ্রাম

	(সঠিক উত্তরটি √ দিয়ে চিহ্নিত করুন)	2= মফস্বল 3= শহর
২.৭	পারিবারিক গড় মাসিক আয় (দয়া করে টাকায় লিখুন}	

পার্ট -৩: কোভিড সম্পর্কিত তথ্য

৩.১	আপনি কি কোভিডের টিকা গ্রহন করেছেন? (সঠিক উত্তরটি √ দিয়ে চিহ্নিত করুন)	1= না 2= হ্যাঁ, ১ম ডোজ সম্পন্ন হয়েছে 3= হ্যাঁ, ২য় ডোজ সম্পন্ন হয়েছে 4= হ্যাঁ, বুস্টার ডোজ সম্পন্ন হয়েছে
৩.২	আপনার কবে কোভিড নেগেটিভ এসেছে? (সঠিক উত্তরটি √ দিয়ে চিহ্নিত করুন)	1=হ্যা 2= না
৩.৩	আপনি কি কোভিড-১৯ এর কারণে হাসপাতালে ভর্তি হয়েছিলেন? (সঠিক উত্তরটি √ দিয়ে চিহ্নিত করুন)	1= হ্যা 2= না যদি উত্তর হ্যা হয়, সময়কাল উল্লেখ করুন ……দিন
৩.৪	কোভিড – ১৯ এর জন্য আপনার কি আইসিইউ তে ভর্তি হতে হয়েছিলো? (আপনার উত্তরে √ রাখুন)	1= হ্যাঁ 2= না
৩.৫	হাসপাতালে ভর্তি হওয়ার কতদিন আগে উপসর্গ শুরু হয়েছে? (দয়া করে লিখুন)	১= ১-৫ দিন ২= ৬-১০ দিন ৩= ১১-১৫ দিন
৩.৬	কোভিড পজিটিভ হবার আগে আপনার কি তামাক খাওয়ার অভ্যাস ছিল ? (সঠিক উত্তরটি √ দিয়ে চিহ্নিত করুন)	1=হ্যা 2=না যদি উত্তর হ্যা হয়, তবে ধরণ উল্লেখ করুন ……
৩.৭	কোভিড পজিটিভ হওয়ার পরে, প্রথম	1 = উপসর্গবিহীন

	১৪ দিনে আপনার লক্ষণগুলি কী ছিল? (আপনার উত্তরে √ রাখুন)	2 = জ্বর 3 = কাশি 4 = ক্লান্তি 5= কফ 6=মাথা ব্যাথা 7= ডায়রিয়া 8= মায়ালজিয়া বা শরীর ব্যথা 9 = শ্বাসকষ্ট 10= গলা ব্যথা/ফ্যারিঙ্গালজিয়া 11= বমি বমি ভাব বা বমি হওয়া 12= চাঞ্চল্য 13= নাক বন্ধ 14= শ্বাসকষ্ট 15= ক্ষুধামন্দা 16= মাথা ঘোরা 17= ঘুম কমে যাওয়া 18= অন্যান্য (অনুগ্রহ করে উল্লেখ করুন)
৩.৮	কোভিড পজিটিভ হওয়ার পরে, দ্বিতীয় ১৪ দিনে আপনার লক্ষণগুলি কী ছিল? (আপনার উত্তরে √ রাখুন)	1 = উপসর্গবিহীন 2 = জ্বর 3 = কাশি 4 = ক্লান্তি 5= কফ 6=মাথা ব্যাথা 7= ডায়রিয়া 8= মায়ালজিয়া বা শরীর ব্যথা 9 = শ্বাসকষ্ট

		10= গলা ব্যথা/ফ্যারিঙ্গালজিয়া 11= বমি বমি ভাব বা বমি হওয়া 12= চাঞ্চল্য 13= নাক বন্ধ 14= শ্বাসকষ্ট 15= ক্ষুধামন্দা 16= মাথা ঘোরা 17= ঘুম কমে যাওয়া 18= অন্যান্য (অনুগ্রহ করে উল্লেখ করুন)
৩.৯	লং কোভিডে উপসর্গ শুরু হয়েছে? (দয়া করে লিখুন)	1= ক্লান্তি 2 = ব্যথা 3 = ডিসপনিয়া 4 = কাশি 5 = অ্যানোসমিয়া 6 = ক্ষুধার অভাব 7= মাথাব্যথা 8= বুকে ব্যথা
৩.১০	কোভিড-১৯ চলাকালীন সময়ে আপনি কোন কোন চিকিৎসা গ্রহন করেছেন? (আপনার উত্তরে √ রাখুন)	1= ঔষধ 2= ঔষুধ এবং অক্সিজেন 3= ভেন্টিলেশন
৩.১১	ফিজিওথেরাপি চিকিৎসা গ্রহণের পর আপনি কি কোন সুবিধা পেয়েছেন? (আপনার উত্তরে √ রাখুন)	1= হ্যা 2= না

৩.১২	কোন ধরনের পুনর্বাসন গ্রহন করেছেন? (আপনার উত্তরে √ রাখুন)	১= শ্বাসযন্ত্রের পুনর্বাসন ২= কার্ডিওভাসকুলার পুনর্বাসন ৩= মাস্কুলোস্কেলেটাল পুনর্বাসন ৪= স্নায়বিক পুনর্বাসন ৫ =অন্যান্য
৩.১৩	কার দ্বারা চিকিৎসা গ্রহণ করা হয়? (আপনার উত্তরে √ রাখুন)	১= ফিজিওথেরাপিস্ট ২= মেডিকেল টেকনোলজিষ্ট ৩ = অন্য চিকিৎসক ৪ = ইউ টিউব ৫ = স্বয়ং
৩.১৪	আপনি কি দীর্ঘ কোভিড উপসর্গ থেকে তাড়াতাড়ি পুনরুদ্ধারের জন্য পুনর্বাসন পছন্দ করেন? (আপনার উত্তরে √ রাখুন)	1= হ্যা 2= না
৩.১৫	পুনর্বাসন গ্রহণের পর আপনি কি সুবিধা পেয়েছেন? (আপনার উত্তরে √ রাখুন)	1= হ্যা 2= না
৩.১৬	আপনি কি ধরনের সুবিধা পেয়েছেন? (আপনার উত্তরে √ রাখুন)	1 = শারীরিক 2 = মানসিক 3 = কার্যকরী

পার্ট -৪: কোভিড-১৯ পরবর্তী কার্যকরী অবস্থা (পিসিএফএস) স্কেলঃ
(সঠিক উত্তরটি √ দিয়ে চিহ্নিত করুন)

কাঠামোবদ্ধ প্রশ্	সংশ্লিষ্ট পিসিএফএস স্কেল গ্রেড যদি উত্তর 'হ্যাঁ' হয়
১. বেঁচে থাকা	
১.১ কোভিড-১৯ নির্ণয়ের পর কি রোগি মারা গিয়েছে?	i) হ্যা (যদি হ্যা,৫= মৃত্যু)
	ii) না (পরবর্তী প্রশ্নে অগ্রসর)
২.নিয়মিত যত্ন	
২.১ আপনার কি নিয়মিত যত্নের প্রয়োজন?	0= কোন কার্যকরী সীমাবদ্ধতা নেই
	1= উপেক্ষণীয় কার্যকরী সীমাবদ্ধতা
	2= সামান্য কার্যকরী সীমাবদ্ধতা
	3= মোটামুটি কার্যকরী সীমাবদ্ধতা
	4= গুরুতর কার্যকরী সীমাবদ্ধতা
৩. দৈনন্দিন জীবনযাত্রার মৌলিক কাজ (এডিএল)	
৩.১খাওয়ার জন্য কি কারো সাহায্য অত্যাবশ্যকীয়?	0= কোন কার্যকরী সীমাবদ্ধতা নেই
	1= উপেক্ষণীয় কার্যকরী সীমাবদ্ধতা
	2= সামান্য কার্যকরী সীমাবদ্ধতা
	3= মোটামুটি কার্যকরী সীমাবদ্ধতা
	4= গুরুতর কার্যকরী সীমাবদ্ধতা

৩.২ টয়লেটের জন্য কি আপনার কারো সাহায্য অত্যাবশ্যকীয়?	0= কোন কার্যকরী সীমাবদ্ধতা নেই
	1= উপেক্ষণীয় কার্যকরী সীমাবদ্ধতা
	2= সামান্য কার্যকরী সীমাবদ্ধতা
	3= মোটামুটি কার্যকরী সীমাবদ্ধতা
	4= গুরুতর কার্যকরী সীমাবদ্ধতা
৩.৩ পরিষ্কার পরিছন্নতার জন্য কি আপনার কারো সাহায্য অত্যাবশ্যকীয়?	0= কোন কার্যকরী সীমাবদ্ধতা নেই
	1= উপেক্ষণীয় কার্যকরী সীমাবদ্ধতা
	2= সামান্য কার্যকরী সীমাবদ্ধতা
	3= মোটামুটি কার্যকরী সীমাবদ্ধতা
	4= গুরুতর কার্যকরী সীমাবদ্ধতা
৩.৪ হাঁটার জন্য কি কারো সাহায্য অত্যাবশ্যকীয়?	0= কোন কার্যকরী সীমাবদ্ধতা নেই
	1= উপেক্ষণীয় কার্যকরী সীমাবদ্ধতা
	2= সামান্য কার্যকরী সীমাবদ্ধতা
	3= মোটামুটি কার্যকরী সীমাবদ্ধতা
	4= গুরুতর কার্যকরী সীমাবদ্ধতা

৪. যন্ত্রসম্পর্কিত দৈনন্দিন জীবনযাত্রার কার্যক্রম (iএডিএল)	
৪.১ দৈনন্দিন জীবনের গুরুত্বপূর্ণ গৃহস্থালী কাজের জন্য কারো সহায়তা কি অপরিহার্য?	0= কোন কার্যকরী সীমাবদ্ধতা নেই
	1= উপেক্ষণীয় কার্যকরী সীমাবদ্ধতা
	2= সামান্য কার্যকরী সীমাবদ্ধতা
	3= মোটামুটি কার্যকরী সীমাবদ্ধতা
	4= গুরুতর কার্যকরী সীমাবদ্ধতা
৪.২ কাছাকাছি ভ্রমণের জন্য কারো সহায়তা কি অপরিহার্য?	0= কোন কার্যকরী সীমাবদ্ধতা নেই
	1= উপেক্ষণীয় কার্যকরী সীমাবদ্ধতা
	2= সামান্য কার্যকরী সীমাবদ্ধতা
	3= মোটামুটি কার্যকরী সীমাবদ্ধতা
	4= গুরুতর কার্যকরী সীমাবদ্ধতা
৪.৩ কেনাকাটার জন্য কারো সহায়তা কি অপরিহার্য?	0= কোন কার্যকরী সীমাবদ্ধতা নেই
	1= উপেক্ষণীয় কার্যকরী সীমাবদ্ধতা
	2= সামান্য কার্যকরী সীমাবদ্ধতা
	3= মোটামুটি কার্যকরী সীমাবদ্ধতা
	4= গুরুতর কার্যকরী সীমাবদ্ধতা

৫. সাধারণ সামাজিক কর্মকান্ডে অংশগ্রহণ	
৫.১ আপনার অক্ষমতার জন্য বাড়ি বা কর্মক্ষেত্রে/পড়াশুনা কাজ বা দায়িত্বের সঠিক ভাবে বিন্যস্ত কি অত্যাবশ্যকীয়? (দায়িত্বের স্তরে পরিবর্তন, পূর্ণ-সময় থেকে খণ্ডকালীন কাজের পরিবর্তন, বা শিক্ষার পরিবর্তন)?	0= কোন কার্যকরী সীমাবদ্ধতা নেই
	1= উপেক্ষণীয় কার্যকরী সীমাবদ্ধতা
	2= সামান্য কার্যকরী সীমাবদ্ধতা
	3= মোটামুটি কার্যকরী সীমাবদ্ধতা
	4= গুরুতর কার্যকরী সীমাবদ্ধতা
৫.২ আপনার কি মাঝে মাঝে বাড়ি বা কর্মক্ষেত্রে/পড়াশুনা কাজ বা দায়িত্ব কমিয়ে বা এড়িয়ে যেতে হয়? (যখন আপনি সেই সমস্ত কাজ সম্পাদন করতে পারেন)	0= কোন কার্যকরী সীমাবদ্ধতা নেই
	1= উপেক্ষণীয় কার্যকরী সীমাবদ্ধতা
	2= সামান্য কার্যকরী সীমাবদ্ধতা
	3= মোটামুটি কার্যকরী সীমাবদ্ধতা
	4= গুরুতর কার্যকরী সীমাবদ্ধতা
৫.৩ আপনি কি আগের মত প্রিয়জনের যত্ন পান না?	0= কোন কার্যকরী সীমাবদ্ধতা নেই
	1= উপেক্ষণীয় কার্যকরী সীমাবদ্ধতা
	2= সামান্য কার্যকরী সীমাবদ্ধতা
	3= মোটামুটি কার্যকরী সীমাবদ্ধতা
	4= গুরুতর কার্যকরী সীমাবদ্ধতা

৫.৪ কোভিড-১৯ নির্ণয়ের পর আপনার ব্যক্তিগত সম্পর্কে কোন সমস্যা বা আপনি কি বিচ্ছিন্ন বা আলাদা হয়ে পড়েছেন?	0= কোন কার্যকরী সীমাবদ্ধতা নেই
	1= উপেক্ষণীয় কার্যকরী সীমাবদ্ধতা
	2= সামান্য কার্যকরী সীমাবদ্ধতা
	3= মোটামুটি কার্যকরী সীমাবদ্ধতা
	4= গুরুতর কার্যকরী সীমাবদ্ধতা
৫.৫ আপনি কি সামাজিক কার্যক্রম অংশগ্রহণে কোন নিষেধাজ্ঞা পেয়েছেন?	0= কোন কার্যকরী সীমাবদ্ধতা নেই
	1= উপেক্ষণীয় কার্যকরী সীমাবদ্ধতা
	2= সামান্য কার্যকরী সীমাবদ্ধতা
	3= মোটামুটি কার্যকরী সীমাবদ্ধতা
	4= গুরুতর কার্যকরী সীমাবদ্ধতা
৬. উপসর্গ তালিকাভুক্ত	
৬.১ আপনি কি এমন কোন উপসর্গ লক্ষ্য করেন যার মাধ্যমে স্বাভাবিক দায়িত্ব/কাজ এড়ানো বা হ্রাসের প্রয়োজন হয়?	0= কোন কার্যকরী সীমাবদ্ধতা নেই
	1= উপেক্ষণীয় কার্যকরী সীমাবদ্ধতা
	2= সামান্য কার্যকরী সীমাবদ্ধতা
	3= মোটামুটি কার্যকরী সীমাবদ্ধতা
	4= গুরুতর কার্যকরী সীমাবদ্ধতা

৬.২ আপনি কি কোভিড-১৯ এর ফলে সৃষ্ট কোন উপসর্গ ্লক্ষ্য করেন যা কাজের সীমাবদ্ধতা তৈরী করে না?	0= কোন কার্যকরী সীমাবদ্ধতা নেই
	1= উপেক্ষণীয় কার্যকরী সীমাবদ্ধতা
	2= সামান্য কার্যকরী সীমাবদ্ধতা
	3= মোটামুটি কার্যকরী সীমাবদ্ধতা
	4= গুরুতর কার্যকরী সীমাবদ্ধতা
৬.৩ আপনার কি বিশ্রাম নিতে কোন সমস্যা বা কোভিড-১৯ এর জন্য মানসিক অসুস্থতা অনুভব হয় কিনা?	0= কোন কার্যকরী সীমাবদ্ধতা নেই
	1= উপেক্ষণীয় কার্যকরী সীমাবদ্ধতা
	2= সামান্য কার্যকরী সীমাবদ্ধতা
	3= মোটামুটি কার্যকরী সীমাবদ্ধতা
	4= গুরুতর কার্যকরী সীমাবদ্ধতা
চূড়ান্ত পিসিএফ এস স্কেল গ্রেড	

৫. Modified Brief pain inventory (সংক্ষিপ্ত)

1. গত ২৪ ঘন্টার মধ্যে আপনার ব্যথার সবচেয়ে খারাপ অবস্থা ছিল এমন নম্বরের পাশের বাক্সে চিহ্নিত করে আপনার ব্যথার মূল্যায়ন করুন

0	1	2	3	4	5	6	7	8	9	10
কোন ব্যথা নেই										আপনি খারাপ ব্যথা হিসাবে কল্পনা করতে পারেন

2. গত ২৪ ঘন্টার মধ্যে আপনার ব্যথার সবচেয়ে ভালো অবস্থা ছিল এমন নম্বরের পাশের বাক্সে চিহ্নিত করে আপনার ব্যথার মূল্যায়ন করুন

0	1	2	3	4	5	6	7	8	9	10
কোন ব্যথা নেই										আপনি খারাপ ব্যথা হিসাবে কল্পনা করতে পারেন

3. অনুগ্রহ করে যে নম্বরের পাশে বাক্সটি আপনার ব্যথাকে চিহ্নিত করুন যেটি আপনার ব্যথাকে গড় করে

0	1	2	3	4	5	6	7	8	9	10
কোন ব্যথা নেই										আপনি খারাপ ব্যথা হিসাবে কল্পনা করতে পারে

4. অনুগ্রহ করে যে নম্বরের পাশে বাক্সটি আপনার ব্যথাকে চিহ্নিত করুন যেটি আপনার **বর্তমান** ব্যথা

0	1	2	3	4	5	6	7	8	9	10
কোন ব্যথা নেই										আপনি খারাপ ব্যথা হিসাবে কল্পনা করতে পারেন

5. নম্বরের পাশে বক্সটি চিহ্নিত করুন যা বর্ণনা করে, গত ২৪ ঘন্টায়, আপনার ব্যাথার অবস্থা

a) সাধারণ কার্যকলাপ**p**

0	1	2	3	4	5	6	7	8	9	10
হস্তক্ষেপ করে না										পুরোপুরি হস্তক্ষেপ করে

b) মেজাজ**a**

0	1	2	3	4	5	6	7	8	9	10
হস্তক্ষেপ করে না										পুরোপুরি হস্তক্ষেপ করে

c) হাঁটার ক্ষমতা**p**

0	1	2	3	4	5	6	7	8	9	10
হস্তক্ষেপ করে না										পুরোপুরি হস্তক্ষেপ করে

d) সাধারণ কাজ (বাড়ির বাইরের কাজ এবং বাড়ির কাজ উভয়ই অন্তর্ভুক্ত)p

0	1	2	3	4	5	6	7	8	9	10
হস্তক্ষেপ করে না										পুরোপুরি হস্তক্ষেপ করে

e) অন্যান্য মানুষের সাথে সম্পর্কa

0	1	2	3	4	5	6	7	8	9	10
হস্তক্ষেপ করে না										পুরোপুরি হস্তক্ষেপ করে

f) ঘুমp

0	1	2	3	4	5	6	7	8	9	10
হস্তক্ষেপ করে না										পুরোপুরি হস্তক্ষেপ করে

g) জীবনের আনন্দ **উপভোগ**a

0	1	2	3	4	5	6	7	8	9	10
হস্তক্ষেপ করে না										পুরোপুরি হস্তক্ষেপ করে

৬. Brief fatigue Inventory

1. অনুগ্রহ করে যে নম্বরের পাশে বাক্সটি আপনার ব্যথাকে চিহ্নিত করুন যেটি আপনার এই মুহূর্তে আপনার ক্লান্তিকে সবচেয়ে ভালোভাবে বর্ণনা করে

0	1	2	3	4	5	6	7	8	9	10
কোন ক্লান্তি নেই										আপনি খারাপ ক্লান্তি হিসাবে কল্পনা করতে পারেন

2. অনুগ্রহ করে যে নম্বরের পাশে বাক্সটি আপনার ব্যথাকে চিহ্নিত করুন যেটি আপনার আপনার ক্লান্তিকে গড় করে

0	1	2	3	4	5	6	7	8	9	10
কোন ক্লান্তি নেই										আপনি খারাপ ক্লান্তি হিসাবে কল্পনা করতে পারেন

3. গত ২৪ ঘন্টার মধ্যে আপনার ব্যথার সবচেয়ে খারাপ অবস্থা ছিল এমন নম্বরের পাশের বাক্সে চিহ্নিত করে আপনার ব্যথার মূল্যায়ন করুন

0	1	2	3	4	5	6	7	8	9	10
কোন ক্লান্তি নেই										আপনি খারাপ ক্লান্তি হিসাবে কল্পনা করতে পারেন

4. নম্বরের পাশে বক্সটি চিহ্নিত করুন যা বর্ণনা করে, গত ২৪ ঘন্টায়, আপনার ক্লান্তির অবস্থা

a) সাধারণ কার্যকলাপ

0	1	2	3	4	5	6	7	8	9	10
হস্তক্ষেপ করে না										পুরোপুরি হস্তক্ষেপ করে

b) মেজাজ

0	1	2	3	4	5	6	7	8	9	10
হস্তক্ষেপ করে না										পুরোপুরি হস্তক্ষেপ করে

c) হাঁটার ক্ষমতা

0	1	2	3	4	5	6	7	8	9	10
হস্তক্ষেপ করে না										পুরোপুরি হস্তক্ষেপ করে

d) সাধারণ কাজ (বাড়ির বাইরের কাজ এবং বাড়ির কাজ উভয়ই অন্তর্ভুক্ত)

0	1	2	3	4	5	6	7	8	9	10
হস্তক্ষেপ করে না										পুরোপুরি হস্তক্ষেপ করে

e) অন্যান্য মানুষের সাথে সম্পর্ক

0	1	2	3	4	5	6	7	8	9	10
হস্তক্ষেপ করে না										পুরোপুরি হস্তক্ষেপ করে

f) জীবনের আনন্দ উপভোগ

0	1	2	3	4	5	6	7	8	9	10
হস্তক্ষেপ করে না										পুরোপুরি হস্তক্ষেপ করে

Verbal Consent Form

Assalamuaalaikum/Nomoskar

I am Md. Nesaruddin, student of M.Sc. in Physiotherapy, Bangladesh Health Professions Institute (BHPI), affiliated with Faculty of Medicine, University of Dhaka. For the partial fulfilment of my Master degree, I have to conduct a research project and it is a part of my study. My Research title is "**Consequences of Physiotherapy treatment among the long COVID survivors"**

I would like to ask you two question before we proceed the interview. First of all, you are suffered from COVID-19 which confirmed by RT-PCR test and next one you have the long COVID symptoms like Fatigue, Pain, Dyspnoea, Cough, Anosmia, Lack of appetite, Headache, Chest pain.

I do expect that the interview will take 20-30 minutes. I also offer you to ask any sort of questions when you fell it is necessary to get insight.

I would like to inform you that this is a purely academic study and will not be used for any other purposes. I assure you that all the data will be kept confidential. Your participation will be voluntary. You may have the rights to withdraw your consent and discontinue from the study at any point of time. You also have the right not to answer any other question that you don't like of this questionnaire.

If you have any query about the study, you may contact with me or my supervisor **Md. Shofiqul Islam, Associate Professor and Head of the department of Physiotherapy, BHPI**

So, may I have your consent to proceed with the interview? Yes……., No……

Signature of the participant & Date……...

Signature of the researcher & Date……

Signature of the witness & Date……

"Consequences of Physiotherapy treatment among the long COVID survivors"

Interview schedule Part-I: Patient's Identification		
1.1	**Name of Participants**	
1.2	**Date of Interview:**	
1.3	**Address:**	
1.4	**Mobile number:**	
1.5	**Patient ID**	

Part-II: Socio-demographic information		
Question and filters	**Response**	Code
2.1	Age	…….. years
2.2	Gender (Put √ on your answer)	1= Male 2=Female
2.3	Marital status (Put √ on your answer)	1= Married 2=Unmarried 3=Widow/widower 4= Divorcee
2.4	Educational status (Put √ on your answer)	1= No formal education 2=Primary education 3=Secondary education 4=Higher secondary 5=Bachelor or above
2.5	Occupation (Put √ on your answer)	1= Job/Services 2=Farmers 3=Business 4=Freelancer 5=Others
2.6	Living area (Put √ on your answer)	1= Rural 2=Semi Urban 3=Urban
2.7	Average monthly family income (Please write in BDT)	

Part- III: COVID related information

3.1	Had you taken COVID vaccine? (Put √ on your answer)	1= No
		2= Yes, 1st dose completed
		3= Yes, 2nd dose completed
		3= Yes, 3rd dose completed
		4= Yes, Booster dose completed
3.2	Did you diagnose COVID negative? (Put √ on your answer)	1= Yes
		2=No
3.3	Had you been admitted to the hospital due to COVID-19? (Put √ and write your answer)	1= Yes
		2= No
		(if yes, mention the duration…… days)
3.4	Did you have to admit in ICU for COVID-19? (Put √ on your answer)	1= Yes
		2= No
3.5	Days from symptom onset to hospital admission (Put √ on your answer)	1= 1-5 days
		2= 6-10 days
		3= 11-15 days
3.6	Did you have tobacco-taking history before diagnosed COVID positive? (Put √ on your answer)	1= Yes
		2= No
		(if yes, mention the which type ……)
3.7	After COVID positive, what were your symptoms in first 14 days? (Put √ on your answer)	1=Asymptomatic
		2= Fever
		3=Cough
		4= Fatigue
		5=Sputum Production
		6=Headache
		7= Diarrhea
		8= Myalgia or body pain
		9= Shortness of breath
		10= Sore throat/Pharyngalgia
		11= Nausea or vomiting
		12= Chill

		13= Nasal congestion Rhinorrhoea
		14= Dyspnea
		15= Anorexia
		16= Dizziness
		17= Anosmia
		18= Others (Please specify)
3.8	After COVID positive, what were your symptoms in Second14 days? (Put √ on your answer)	1=Asymptomatic
		2= Fever
		3=Cough
		4= Fatigue
		5=Sputum Production
		6=Headache
		7= Diarrhea
		8= Myalgia or body pain
		9= Shortness of breath
		10= Sore throat/Pharyngalgia
		11= Nausea or vomiting
		12= Chill
		13= Nasal congestion/Rhinorrhoea
		14= Dyspnea
		15= Anorexia
		16= Dizziness
		17= Anosmia
		18= Others (Please specify)
3.9	Which symptoms of long COVID were happened? (Put √ on your answer)	1= Fatigue 2= Pain 3= Dyspnoea 4= Cough 5= Anosmia 6= Lack of appetite 7= Headache 8= Chest pain

3.10	What kinds of treatment you have received during COVID-19 status? (Put √ on your answer)	1= Medicine 2= Medicine and oxygen supplementation 3= Ventilation

3.11	Have you received any physiotherapy treatment after recovery from COVID 19? (Put √ on your answer)	1=Yes 2=No
3.12	Which types of physiotherapy treatment you received? (Put √ on your answer)	1= Respiratory physiotherapy 2= Cardiovascular physiotherapy 3= Musculoskeletal physiotherapy 4= Neurological physiotherapy 5= Others
3.13	Treatment received by whom? (Put √ on your answer)	1= Physiotherapist 2= Medical technologist 3= Physician 4= Social media 5= You tube 6= Self
3.14	Do you prefer physiotherapy for early recovery from the long COVID symptoms? (Put √ on your answer)	1= Yes 2= No
3.15	Did you get benefits after taking physiotherapy? (Put √ on your answer)	1= Yes 2= No
3.16	What types of benefit did you get? (Put √ on your answer)	1= Physical 2= Mental 3= Functional

Post-COVID-19 Functional Status (PCFS) Scale: (Put √ on your answer)

Structured Interview	Corresponding PCFS scale grade if the answer is 'YES'
1. Survival	
1.1 Has the patient died after the COVID-19 diagnosis?	1= Yes (if yes, 5= Death)
	2= No (proceed to next questions)
2. Constant care	
2.1 Do you require constant care?	0= No functional limitations
	1= Negligible functional limitations
	2= Slight functional limitations
	3= Moderate functional limitations
	4= Severe functional limitations
3. Basic Activities of Daily Living (ADL)	
3.1 Is assistance essential for eating?	0= No functional limitations
	1= Negligible functional limitations
	2= Slight functional limitations
	3= Moderate functional limitations
	4= Severe functional limitations
3.2 Is assistance essential for using the toilet?	0= No functional limitations
	1= Negligible functional limitations
	2= Slight functional limitations
	3= Moderate functional limitations
	4= Severe functional limitations

3.3 Is assistance essential for routine daily hygiene?	0= No functional limitations
	1= Negligible functional limitations
	2= Slight functional limitations
	3= Moderate functional limitations
	4= Severe functional limitations
3.4 Is assistance essential for walking?	0= No functional limitations
	1= Negligible functional limitations
	2= Slight functional limitations
	3= Moderate functional limitations
	4= Severe functional limitations
4. Instrumental Activities of Daily Living (iADL)	
4.1 Is assistance essential for basic household chores which are important for daily life?	0= No functional limitations
	1= Negligible functional limitations
	2= Slight functional limitations
	3= Moderate functional limitations
	4= Severe functional limitations
4.2 Is assistance essential for local travel?	0= No functional limitations
	1= Negligible functional limitations
	2= Slight functional limitations
	3= Moderate functional limitations
	4= Severe functional limitations
4.3 Is assistance essential for local shopping?	0= No functional limitations
	1= Negligible functional limitations
	2= Slight functional limitations
	3= Moderate functional limitations
	4= Severe functional limitations

5. Participation in Usual Social Roles	
5.1 Is adjustment essential for duties/activities at home or work/study because you are unable to perform these yourself (e.g. resulting in a change in the level of responsibility, a change from full-time to part-time work, or a change in education)?	0= No functional limitations
	1= Negligible functional limitations
	2= Slight functional limitations
	3= Moderate functional limitations
	4= Severe functional limitations
5.2 Do you occasionally need to avoid or reduce duties/activities at home or work/study or do you need to spread these over time (while you can perform all those activities)?	0= No functional limitations
	1= Negligible functional limitations
	2= Slight functional limitations
	3= Moderate functional limitations
	4= Severe functional limitations
5.3 Can you no longer take good care of loved ones as before?	0= No functional limitations
	1= Negligible functional limitations
	2= Slight functional limitations
	3= Moderate functional limitations
	4= Severe functional limitations
5.4 Since the COVID-19 diagnosis, have there been problems with relationships or have you become isolated?	0= No functional limitations
	1= Negligible functional limitations
	2= Slight functional limitations
	3= Moderate functional limitations
	4= Severe functional limitations

5.5 Are you restricted in participating in social and leisure activities?	0= No functional limitations
	1= Negligible functional limitations
	2= Slight functional limitations
	3= Moderate functional limitations
	4= Severe functional limitations
6. Symptom Checklist	
6.1 Do you report symptoms through which usual duties/activities need to be avoided, reduced or spread over time?	0= No functional limitations
	1= Negligible functional limitations
	2= Slight functional limitations
	3= Moderate functional limitations
	4= Severe functional limitations
6.2 Do you report any symptoms, resulting from COVID-19, without experiencing functional limitations?	0= No functional limitations
	1= Negligible functional limitations
	2= Slight functional limitations
	3= Moderate functional limitations
	4= Severe functional limitations
6.3 Do you have problems with relaxing or do you experience COVID-19 as a trauma?	0= No functional limitations
	1=Negligible functional limitations
	2= Slight functional limitations
	3= Moderate functional limitations
	4= Severe functional limitations
Final PCFS scale grade	

Modified Brief pain inventory (short form)

i) Please rate your pain by marking the box beside the number that best describes your pain at its worst in the last 24 hours.

0	1	2	3	4	5	6	7	8	9	10
No pain										Pain as bad as you can imagine

ii) Please rate your pain by marking the box beside the number that best describes your pain at its **good** in the last 24 hours.

0	1	2	3	4	5	6	7	8	9	10
No pain										Pain as bad as you can imagine

iii) Please rate your pain by marking the box beside the number that best describes your pain on the **average**

0	1	2	3	4	5	6	7	8	9	10
No pain										Pain as bad as you can imagine

iv) Please rate your pain by marking the box beside the number that tells how much pain you have **right now**.

0	1	2	3	4	5	6	7	8	9	10
No pain										Pain as bad as you can imagine

v) Mark the box beside the number that describes how, during the past 24 hours, pain has interfered with your:

a)General activity [p]

0	1	2	3	4	5	6	7	8	9	10
Does not interfere										Completely interferes

b) Mood [a]

0	1	2	3	4	5	6	7	8	9	10
Does not interfere										Completely interferes

h) Walking ability [p]

0	1	2	3	4	5	6	7	8	9	10
Does not interfere										Completely interferes

i) **Normal work** (includes both work outside the home and housework) [a]

0	1	2	3	4	5	6	7	8	9	10
Does not interfere										Completely interferes

j) Relations with other people [p]

0	1	2		3	4	5	6	7	8	9	10
Does not interfere											Completely interferes

k) Sleep [p]

0	1	2	3	4	5	6	7	8	9	10
Does not interfere										Completely interferes

l) Enjoyment of life [a]

0	1	2	3	4	5	6	7	8	9	10
Does not interfere										Completely interferes

9.Brief fatigue Inventory

Throughout our lives, most of us have times when we feel very tired or fatigued.

1. Please rate your fatigue (weariness, tiredness) by circling the one number that best describes your fatigue right now.

0	1	2	3	4	5	6	7	8	9	10
No fatigue										As bad as you can imagine

2. Please rate your fatigue (weariness, tiredness) by circling the one number that best describes your USUAL level of fatigue during past 24 hours.

0	1	2	3	4	5	6	7	8	9	10
No fatigue										As bad as you can imagine

3. Please rate your fatigue (weariness, tiredness) by circling the one number that best describes your WORST level of fatigue during past 24 hours.

0	1	2	3	4	5	6	7	8	9	10
No fatigue										As bad as you can imagine

4. Circle the one number that describes how, during the past 24 hours, fatigue has interfered with your:

a) General activity [p]

0	1	2	3	4	5	6	7	8	9	10
Does not interfere										Completely interferes

b) Mood [a]

0	1	2	3	4	5	6	7	8	9	10
Does not interfere										Completely interferes

c) Walking ability [p]

0	1	2	3	4	5	6	7	8	9	10
Does not interfere										Completely interferes

d) Normal work (includes both work outside the home and housework) [a]

0	1	2	3	4	5	6	7	8	9	10
Does not interfere										Completely interferes

e) Relations with other people [p]

0	1	2		3	4	5	6	7	8	9	10
Does not interfere											Completely interferes

f) Enjoyment of life [a]

0	1	2	3	4	5	6	7	8	9	10
Does not interfere										Completely interferes