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MENTAL RESILIENCE OF SCI SURVIVORS DURING IN-PATIENTS REHABILITATION IN COVID-19 PANDEMIC

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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for the acceptance of this dissertation entitled

**Mental Resilience of SCI Survivors During In-Patients Rehabilitation
In COVID-19 Pandemic**

Submitted by **Jannatul Ferdus** for the partial fulfillment of the requirement for the degree of Bachelor of Science in Physiotherapy (B.Sc. PT)



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Declaration

I declare that the work presented here is my own. All sources used have been cited appropriately. Any mistakes or inaccuracies are my own. I also declare that for any publication, presentation, or dissemination of information of the study, I would be bound to take the written consent from the Department of Physiotherapy, Bangladesh Health Professions Institute.

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Acronyms

ASIA:	American Spinal Injury Association
BHPI :	Bangladesh Health Professions Institute
BMRC :	Bangladesh Medical Research Council
BRS :	Brief Resilience Scale
COVID-19:	Corona Virus Disease-2019
CRP :	Centre for the Rehabilitation of the Paralysed
IRB :	Institutional Review Board
SARSCov-2:	Severe acute respiratory syndrome corona-virus 2
SCI :	Spinal Cord Injury
SPSS :	Statistical Package for the Social Sciences
USA :	United State of America
WHO :	World Health Organization

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ABSTRACT

Purpose: The purpose of this study was to determine the status of mental resilience on patients with spinal cord injury during the COVID-19 pandemic attending at CRP.

Objectives: The objectives of this study were to find out socio-demographic characteristics related to mental resilience, to examine the prevalence of the level of mental resilience, to know whether there has been any association between mental resilience and socio-demographic information among SCI participants.

Methodology: The cross-sectional study was chosen to carry out this study among 114 participants who were selected according to inclusion criteria from July 2021 to October 2021. All data were collected through a standard structured questionnaire having socio-demographic, & The "Brief Resilience Scale" (BRS), this used to assess the Mental Resilience among 114 participants. A statistical test has been conducted as per the distribution of data. The quantitative descriptive analysis was performed by mean, SD, frequency, and percentage. The inferential statistical has been calculated by independent t-test, one-way ANOVA, chi-square, and person correlation test. Linear regression has been performed by mental resilience as a predictor variable, here the p-value was set as $<.05$.

Results: Among 114 participants who survivors the SCI in the COVID-19 pandemic, their overall age Mean \pm SD was (33.91 ± 12.506) . Among them prevalence of the level of mental resilience were low = 66.7%, normal = 23.7% & high=9.6% (MD= 2.5919 ± 0.86610). Statistically significant association also found in between Mental Resilience & some of socio-demographic information such as duration of injury [(P $<.001$), 95% CI (1.992, 2.431), ($\beta =.403$)], Residential area [(P $<.01$), 95% CI (1.947, 2.517), ($\beta=.272$)], monthly income (P $<.01$, 95% CI = 2.246, 2.833), severity of injury [(P $<.05$), 95% CI (2.297, 2.660), ($\beta =.228$)].

Conclusion: Spinal cord injury is a condition that influences physical and psychological health. Spinal cord injury negatively can decrease mental resilience. Mental resilience has a significant relation to Socio-Demographic & Injury related characteristics for individuals with Spinal cord lesions in their rehabilitation phase.

Keywords: Mental Resilience, Spinal cord injury, COVID-19 pandemic.

Word count: 10800 word

1.1 Background

The COVID-19 pandemic, also known as the corona-virus pandemic, is a ceaseless pandemic of corona-virus disease 2019 (COVID-19) resulting from severe acute respiratory syndrome corona-virus-2 (SARS-CoV-2). It was first identified in December 2019 in Wuhan, China (Lai et al., 2020). The World Health Organization declared the outbreak a Public Health Emergency of International Concern in January 2020 and a Pandemic in March 2020.

Although it is still unknown exactly where the outbreak first started, many early cases of COVID-19 have been attributed to people who have visited the Huanan Seafood Wholesale Market, located in Wuhan, Hubei, China. On 11 February 2020, the World Health Organization (WHO) named this disease “COVID-19”, which is short for corona-virus disease 2019 (Sohrabi et al., 2020).

A pandemic such as a public health emergency itself increases people's propensity for various mental health problems, which can be further aggravated by the social distancing approach that disrupts daily routines, restricts interpersonal communication, and limits the availability of social support. It is in the modern world if it has had an influence on other epidemics and ante pandemics, one of the most recent drastic effects in most people and their daily life like the current COVID-19 pandemic (Kavcic et al., 2020). To make matters worse, the economic recession has led to a future increase in unemployment and financial insecurity around the world, which is a major risk factor for mental health disorders, depression, and suicide (Kawohl and Nordt, 2020).

Spinal cord injury (SCI) is a medically complex and life-disrupting condition (WHO & International spinal cord society, 2013). It is considered as one of the biggest problems and catastrophic events related to health of people; This injury is one of the major health problems of human societies leading to numerous physical and mental problems for disabled people and his family (Moghimian et al., 2015). Spinal cord injury (SCI) is a demolishing neurological disorder that has an influence on humans from different perspectives such as physical, psychological, and socioeconomic

perspectives; It is a major life event that may be either traumatic or non-traumatic that leads to a serious physical disability which is permanent and causes other secondary medical problems (Al-owesie et al., 2012).

The injury of the spinal cord is an event that changes life, often with consequent chronic physical decline and sustained support in the maintenance of a good quality of life and health. Difficulties associated with the injury of the spinal cord include an increase in the risk of secondary diseases and mortality, a minor professional and community integration, relationship romantic commitment, and quality of life inferior. People with him with SCI are at greater risk for mental health problems. In addition, depression affects about 19-26% of people living with SCI, about 3 times more than the general population. Also and rates of anxiety, disturbance of post-traumatic stress (PTSD), abuse of support and other problems of mental health in the SCI tend two to be higher than those found in the general population (Macdonald et al., 2020).

Globally the prevalence of SCI is between 15 - 40 people per million persons and the incidence rate ranges between 10.4 and 83 cases per million in one year (Moghimian et al., 2015); According to the National Spinal Cord Injury Association, as many as 450,000 people in the U.S. are living with a spinal cord injury (SCI); Every year, an estimated 11,000 SCI occur in the U.S (American Association of Neurological Surgeons, 2017) and Europe, the incidence is from 10.4 per million per year to 29.7 per million per year (Moghimian et al., 2015); Lim et al., (2017) stated that the highest prevalence of SCI is 906 per million in the US; On the other hand in Asia the incidence rates of SCI range from 12.06 - 61.6 per million (Ning et al., 2012) but after 3 years later Moghimian et al., (2015) stated again in his other literature that the incidence rate is 27.1 per million per year in Asia. Anyone can be a victim of accepting SCI in society but males are more represented especially active younger males (Middleton et al., 2014).

In South-Asia, Bangladesh is a poor and developing country that bear lots of socioeconomic problem appearance from spinal cord injury (SCI) and other health-related complications which are found from the annual rate of admission at the specialized center like the Centre for Rehabilitation of the Paralyzed (CRP) (Rahman et al., 2017). There are 16 million people in Bangladesh who live in handicap (Disability in Bangladesh, 2016). In Bangladesh, SCI is the main reason for disability

(Islam et al.,2011). In physical disabilities, SCI is severe in the health-related sector (Ramakrishnan et al., 2011). The untimely event of spine injuries can lead to the dramatic change in the persons, family, and activities of daily living of the individual with SCI (Kang et al., 2014).

SCI can result from a series of problems that affect physical, psychological, and social functioning, which is reflected in the high cost of health services. People who acquire SCI experience numerous associated and chronic conditions (for example, spasticity, heart disease) and secondary complications (e.g. pressure ulcers, chronic pain) (Veer et al., 2021). Spinal cord injury (SCI) is one of the most disastrous injuries that cause many physical as well as mental health problems. However, individuals follow various courses after SCI, similar to those experiencing other traumatic injuries (Ataoglu et al., 2013).

SCI causes complete or incomplete loss of sensory and motor function, compresses muscle paralysis, alters bladder and bowel control, and sexual function. Together with psycho-physical stress, if another psycho-social person who followed the SCI with anxiety, depression, social isolation, low self-esteem, altered pension, and post-traumatic stress disorder and suicide attempt. I will give the result, the conditions of which will successively influence the grade and the general greeting (Migliorin et al., 2015).

The traumatic injury of the spinal cord (SCI) is an inexperienced event that changes the life of a person in an instant, as a result of a motor vehicle accident, violence, or injury for fall (Devivo, 2012). People with traumatic SCI are exposed to a set of circumstances highly distressing and potentially debilitating related to limitations in motor and sensory functioning and psychological trauma (Schönenberg et al., 2014).

People who can 'bounce back' from highly stressful life events seem more able to flexibly co-experience both negative emotional states based on affect along with more positive affective eudaimonic states (I provide example and purpose beyond basic self-gratification). Due to the dramatic and sudden onset of traumatic SCI, researchers and clinicians have been interested during the early stages of adaptation to life after injury (Van Leeuwen et al., 2012).

Mental illness is a major health problem around the world, and most people with it will continue to struggle with relapses throughout their lives. However, in many cases,

people overcome the disease to lead a productive and socially committed life. The word resilience derives from the Latin "resilience", which means to jump back and has a meaning for many situations, whether they overturn individuals or groups. For the reasoning of this study, resilience is defined as the backward leap, rebounding, soon recovery, and buoyancy. The contemporaneous understanding of resilient behavior includes the notion of having federation, hope, humor, and being supported by functional social withdrawal (Edward, 2017). During the last decade, resilience has started increasingly becoming a focus of research in the behavioral and medical sciences (Smith et al., 2008). In general, in 2010, resilience begins if it affects the personal qualification and the consent of individual individuals to adapt positively to a significant improvement.

Resilience embodies the personal characteristics that make it possible to obtain to thrive in the face of adversity, such as a spinal cord injury (SCI). People with spinal cord injury run the risk of a poor adjustment to this disabling condition. The support to the mental recovery after the appearance of an SCI is, for so much, an important part of the multidisciplinary treatment during the initial rehabilitation. Focusing on strengths, such as resilience, rather than focusing on a negative mental state, contributes to the prevention of the pathology and helps to maintain and include improve physical and psychological well-being. Previous studies have shown the potential to improve resilience through the practice of positive psychology interventions in people with SCI. The identification of people with little resilience in the background is, for so much, important in the rehabilitation of people with SCI (Krikby, 2016).

Carver provided a clear distinction between "resilience" as returning to the previous level of functioning (eg recovering or recovering) and "thriving" as moving to a higher level of functioning after a stressful event. Also, "adaptation" (or "adaptation to stress") could be used to change and adapt to a new situation. Finally, it may be preferable to use a word like "resistance" (as in "resistance to stress" or "disease resistance") to refer to not getting sick or showing a decrease in functioning during stress (Smith et al., 2008).

Our study uses a resilience sign, based on a definition of resilience as maintenance or rapid recovery of mental health during recovery and in case of adversity. In this

perspective, resilience is a result that consists of good mental health despite exposure to stressors, and its operational rationalization and quantification necessarily imply an evaluation of the stressors faced by individuals (Bonannao et al., 2015). And also Craig et al, (2012) showed that SCI Investigating resilience is important because it allows professionals to understand for what and how up to 54% of people with SCI inform a life trajectory characterized for relatively stable and healthy psychological levels of social function.

1.2 Rationale of the study

Over the past month, the COVID-19 pandemic has disrupted the normal existence of much of the world's population, including the United States. Social isolation and economic uncertainty result have led to highly significant mental health problems, including loneliness, anxiety, depression, and suicidal delineation; however, people differ widely in how they respond to challenges and difficulties. The capacity to resist contraction, adapt positively, and recover from adversity is defined as “resilience” (Pasquale et al., 2020). We wanted to identify the key behaviors and factors that will contribute to psychological resilience during the period of the pandemic. Here, we focus on the Brief Resilience Scale (BRS).

During the past decade, resilience has increasingly become a research focus in the medical and behavioral sciences. However, "resilience" has been defined in several ways, including the ability to bounce back or recover from stress, Adapt to stressful circumstances, not get sick despite strong significant adversity, and function above the norm despite stress or adversity (Tusaie & Dyer, 2014). Furthermore, the measures that have been developed to assess “resilience” have not focused on these qualities but on the factors and resources that make them possible.

Spinal cord injury is damage to the spinal cord. The spinal cord is responsible for sending messages from the brain to all parts of the body consequently also sending the message from the body to the brain. It is an extremely serious type of physical trauma that’s likely to have a lasting and significant impact on most aspects of daily life. SCI persons have various physical problems and complications on body system (Hoque et al., 2018).

Spinal cord injury (SCI) is a devastating and life-threatening condition that affects every facet of life. Globally about 15 - 40 people per million persons are affected in one year. It is considered a catastrophic event that can be limited a person's better quality of life. Specifically assessing resilience as the ability to bounce back, resist illness, adapt to stress, or thrive in the face of adversity, previous measures have generally assessed protective factors or resources that involve personal characteristics and coping styles (Scali et al., 2012). For example, the Resilience Scale aimed to assess equanimity, perseverance, self-reliance, meaningfulness, and existential loneliness. Similarly, the Connor Davidson Resilience Scale (Connor & Davidson,

2003); aimed to assess characteristics such as self-efficacy, sense of humor, patience, optimism, and faith.

The authors developed a brief resilience scale to determine whether resilience can be reliably assessed as recovery from stress (Smith et al., 2008). We test the BRS samples to determine if it is reliable and demonstrate convergent and predictive discriminating validity. We hoped that the ability to recover or recover from stress would be valuable in dealing with spinal cord injuries and stressors.

1.3 Research Question

What is the Mental Resilience of SCI Survivors During in-patients Rehabilitation in COVID-19th Pandemic?

1.4 Study Objectives

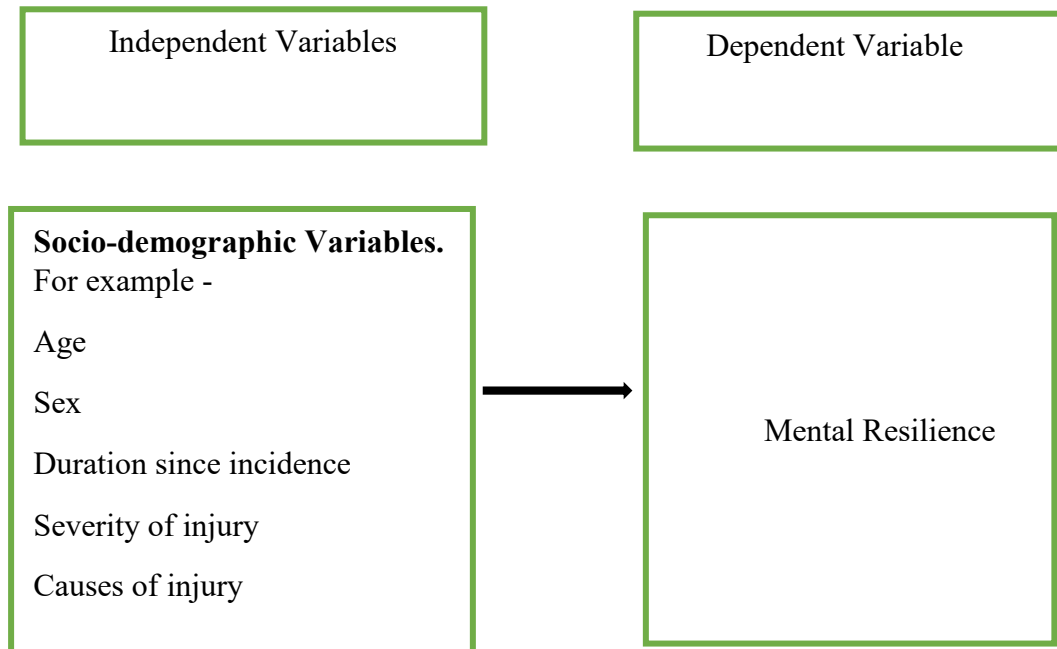
1.4.1 General Objectives

To Assess the Mental Resilience of SCI Survivors During in-patients Rehabilitation in COVID-19th Pandemic.

1.4.2 Specific Objectives

- i. To find out the socio-demographic and injury-related information;
- ii. To assess the prevalence of Mental Resilience in patients with spinal cord injury during the COVID-19 pandemic;
- iii. To know about any association between mental resilience and socio-demographic characteristics.

1.5 Conceptual Framework



1.6 Operational Definition

Spinal cord injury

Spinal cord injury (SCI) is defined as damage to the neural elements in the spinal canal (spinal cord and cauda-equina) which can be traumatic or non-traumatic and results in temporary or permanent loss of motor and/or sensory function.

COVID-19

A mild to severe respiratory illness caused by a corona-virus (severe acute respiratory syndrome corona-virus 2 of the genus Betacorena-virus), transmitted mainly by contact with infectious material (such as respiratory droplets) or with objects or surfaces contaminated by the causative virus, and is characterized in particular by fever, cough, and shortness of breath and can progress to pneumonia and respiratory failure. It was first identified in December 2019 in Wuhan, China.

Resilience

The English word “resilience” is the word “resile” which means “to bounce or spring back” (from re- “back” + salire- “to jump, leap”); However, “resilience” has been defined in a variety of ways, including the ability to bounce back or recover from stress, to adapt to stressful circumstances, to not become ill despite significant adversity, and to function above the norm despite stress or adversity.

Mental Resilience

Psychological resilience is the ability to cope with a crisis mentally or emotionally or to quickly return to a pre-existing state. Resilience exists when the person uses "mental processes and behaviors to promote personal resources and protect themselves from the possible negative effects of stressors". In simpler terms, psychological resilience exists in people who develop psychological and behavioral skills that allow them to remain calm during crises and go through the accident without long-term negative consequences.

Paralysis

Injury or disease to the nervous system can affect the ability to move a particular part of the body. This reduced motor ability is called paralysis.

Neurological level

Up to the level where both sensory and motor function remains intact.

Paraplegia

Impairment or loss of motor or sensory function / partial or complete paralysis of the lower half of the body with involvement of both legs that is usually due to damage to the spinal cord in the thoracic or lumbar or sacral regions.

Tetraplegia

Tetraplegia is also known as Quadriplegia. It means paralysis of all four limbs, motor and/or sensory function in the cervical spinal segment is impaired or lost due to damage to that part of the spinal cord resulting in impaired or loss of function in the upper limbs, lower limbs, trunk, and pelvic organs.

Spinal cord injury (SCI) can result in considerable disability; The highest risk of SCI occurs during adolescence and early adulthood for both males and females with the ratio of males to females roughly 4:1; Spinal cord injuries can have a significant adverse effect on mental health; There is an inevitable risk of experiencing an emotional disorder such as resilience after SCI (Guest et al., 2014). Motor and sensory damage occur when the spinal cord is injured and as a result of these, people with SCI suffer from lifelong disability (Tomasone et al., 2013).

Spinal cord injury (SCI) is an event that can be traumatic or non-traumatic that results in disturbances to normal sensory, motor, or autonomic function and ultimately impacts a patient's physical, psychological and social well-being (Singh et al., 2014). This is a major public health problem in Bangladesh (Hoque et al., 2012).

According to the International Standards for Neurological Classification of SCI with the American Spinal Injury Association (ASIA) Impairment Scale (AIS), SCI is considered complete if there is no sensory and motor function at S4–S5; While some sensory and or motor function is preserved below the level of injury in incomplete SCI including the lowest sacral segments S4-S5, it is no less serious and can still result in severe impairments (International perspective on spinal cord injury; WHO, 2013; Craig et al., 2009; Lim et al., 2017; De Almeida et al., 2018).

According to Veer et al., (2020) “The current Corona pandemic is not just a threat to physical health. Early data from China and Europe indicate that anxiety and depression symptoms and perceptions of stress increase significantly as a result of the pandemic”. There are also anecdotal reports of rising rates of domestic violence, divorce, and suicide. Therefore, the Corona crisis is also a mental health crisis. There is an urgent need for knowledge about the factors that can protect mental health (resilience factors) in this global crisis, which is different from other crises that have been studied so far in resilience research. lead to mental health problems, such as pathological anxiety, post-traumatic stress disorder, or depression (Pfefferbaum et al., 2020).

Resilience research aims to identify the social, psychological, and biological factors that protect people from developing mental health problems in the face of adversity (Kalisch et al., 2017). Most knowledge about resilience factors comes from individual

trauma or challenges or commonly experienced disasters, such as natural disasters or terrorist attacks (Bannon et al., 2015); but little is known specifically about effective resilience factors in pandemics (Brooks et al., 2020). However, this knowledge is urgently needed in the current crisis as a basis for the development of effective mental health protection measures (Fritz et al., 2018).

Veer et al, (2021) show that- “The SARS-CoV-2 pandemic is not only a threat to physical health but also has serious repercussions on mental health. Although increases in stress-related symptoms and other adverse psychosocial outcomes, as well as their most important risk factors, have been described, almost nothing is known about possible protective factors. Resilience refers to maintaining mental health despite adversity”. To obtain mechanical knowledge about the relationship between the described psycho-social resilience factors and specific resilience in the current crisis. Pandemics can induce high levels of stress and cause mental health problems that include symptoms of depression, anxiety, and post-traumatic stress (Brooks et al., 2020).

Our study uses a resilience framework, founded on a definition of resilience as maintenance or quick recovery of mental health during and after times of adversity. In this perspective, resilience is an outcome consisting of good mental health despite stressors exposure, and its operationalization and quantification necessarily involve an assessment of the stressors individuals are confronted with (Bonannao et al., 2015). People differ widely in how they struggle, respond, and bounce back from challenges and difficult life events, like those experienced from the pandemic. In individuals, resilience is described as the ability to adapt to adversity, trauma, or other stressful events and remain whole or even grow stronger because of them (Pasquale et al., 2020). On this basis, one can then try to identify the social, psychological, and biological factors associated with that outcome. Provided individual differences in stressors exposure are appropriately accounted for, and observed positive association of any factor with mental health can then be interpreted as expressing a protective function of that factor against the mental health effects of the assessed stressors (Veer et al., 2021).

SCI is probably the most disorderly and deadly incident that can happen to someone else life and the person with spinal cord injury has presented huge challenges in the form of coping processes as well as rehabilitation, Although through the

rehabilitation process some people recover partial ability to perform daily life activities but some activities are permanently altered (Kumar & Gupta, 2016). So the main goal of the SCI rehabilitation program is not only the inhibition of death and disability but also to improve the standard of living of people with SCI (Ramakrishnan et al., 2011). SCI patients faced so many complications which are life threatening for them (Islam et al., 2011).

Traumatic injuries often occur when individuals are young and in their prime, significantly disrupting the normal, developmental trajectory of their lives. As a result of injury and subsequent disability, many activities and employment opportunities that had been a source of pleasure and life satisfaction become restricted or no longer possible (Van Leeuwen et al., 2012). While new types of recreational, leisure and vocational activities must be learned. After the injury, there is an increased incidence of depressive disorders anxiety disorders, post-traumatic stress disorder, and other forms of psychological distress and adjustment problems (Saunders et al., 2012).

Moreover, many individuals with SCI often rate their life satisfaction and quality of life significantly lower compared to those without disabilities. Despite this, some individuals with SCI are also able to successfully adapt to these stressors and maintain a sense of psychological well-being and stability in the face of such adversity (Victorson et al., 2015). Traumatic spinal cord injuries (SCI) present serious public health and quality of life concerns. Costs associated with SCI are estimated at US\$9.7 billion annually, with average yearly expenses per individual ranging from \$508 904 to \$1 044 197 in the first year following injury, and \$67 415 to \$181 328 each subsequent year (Monden et al., 2014).

Resilience & Depression is significant secondary complication for 30% of individuals with SCI, which often impacts physical health. Given the interaction between psychological and physical health, an understanding of psychosocial functioning in the SCI population is essential. Despite an emphasis in the literature on less adaptive psychological outcomes following SCI recent research shows that 60% of individuals who acquire SCI are not depressed (Hoffman et al., 2011).

Recent research also demonstrates that many individuals with SCI report moderate to very high resilience and a strong sense of self-efficacy (Kilic et al., 2013). Recently, investigators have begun to explore the association between resilience and adaptation to traumatic injuries (and specifically to SCI). Resilience refers to effective coping and adaptation when faced with adversity and is defined as an individual's ability to

flourish or bounce back in the face of adversity or a disruptive event (Bananno et al., 2012). Research has begun to shed light on factors that contribute to resilience after SCI, including self-efficacy, proactive self-appraisals, cultivating positive emotions, and strong social relationships (Catalano et al., 2011).

Resilience is likewise associated with various indicators of adjustment, including satisfaction with life, functional independence, spirituality, and less depressive symptoms. Among individuals with SCI in acute rehabilitation and those living in the community, resilience is found to be negatively associated with Depression and positively associated with life satisfaction (Quale et al., 2010). Evidence likewise suggests that individuals who demonstrate high resilience at the start of rehabilitation will continue down a resilient path and achieve overall better recovery with fewer long-term Psycho-social issues (Veer et al., 2021).

Accordingly to Bonanno et al, (2012) state that, “Resilience is increasingly identified as a relatively stable phenomenon that is associated with positive physical and psychological health outcomes”. The demonstrated association between resilience and outcomes in the SCI population appears to represent a potentially important area for screening and intervention. As a result, further investigation of the resilience construct is warranted (Monden et.al.,2014).

Mikolajczyk et al, (2021) told that, In the global population the COVID-19 pandemic has negatively impacted the psychological and physical well-being of a large proportion. Compounding the obvious fear of contracting SARS-CoV-2, measures intended to mitigate the spread of the virus, including physical distancing recommendations and shelter-in-place orders, have had unfortunate mental health consequences such as increased rates of anxiety, depression, stress, and feelings of social isolation.

Additionally, many in the disabled community require regular appointments with rehabilitation specialists and personal care attendants (PCAs) and thus may require close contact with healthcare providers. While these regular healthcare appointments may increase the risk of viral transmission, they are often essential for the patient and the disruption of care due to physical distancing policies can have detrimental consequences (Min et al., 2014).

Victorson et al, (20015) stated that “Further study is needed, but preliminary research suggests that those with physical disabilities, such as spinal cord injury (SCI), have decreased access to healthcare, decreased levels of resilience, and increased incidence

of mental health disorders such as mental resilience during the COVID-19 pandemic and medical supplies, financial stability, and social isolation, these relationships have not before been rigorously and quantitatively studied in the literature. Additionally, while resilience has been well documented to boost overall and mental health outcomes in the SCI community”.

Although researchers have made important contributions towards identifying negative outcomes for individuals with SCI using the deficient-based paradigm (Catalano et al., 20011); it has not assisted researchers in finding ways to prevent psychological problems from developing (White et al., 2010). In comparison, the strength-based model of mental health, which evolved from the positive psychology movement, focuses on the variables that buffer against mental illness. The strength-based model has also introduced concepts such as ‘resilience’ in the rehabilitation literature (Craig et al., 2012). Moreover, the literature emphasis's that the personal thoughts and behaviors that contribute to resilience are modifiable and can be improved with psychological treatment (Middleton et. al.,2014).

Despite its relative importance in the psychological adjustment process, the process of resilience post-SCI has been relatively understudied. Furthermore, there are conflicting findings relating to the cognitive, behavioral, and injury-specific variables that may offer and enhance the adjustment process (White et al., 2010). For example, it is argued that the permanent and physical constraints associated with SCI contribute to poor self-efficiency concerning pain management. Individuals with low pain self-efficacy are more likely to view the ability to cope with their neuropathic pain as unmanageable (Nicholson et al., 2009). In turn, they may catastrophize their pain and/or report higher levels of pain-related disability, which can exacerbate depression and impede functional independence. Other studies have found that self-efficacy on its own contributes to a relatively small proportion of the variance in perceived quality of life scores post-SCI (Middleton et al., 2014).

Similarly, there is evidence that internal locus of control is associated with reduced levels of depression and anxiety, yet it is also argued that individuals with an unrealistic level of self-blame display high levels of psychological distress. Concerning SCI variables, there is a suggestion that motor complete injury is significantly associated with higher rates of depression and lower levels of resilience (Kilic et al., 2013). However, these latter results were based on a small sample (n ¼ 36) and have not been replicated. These mixed findings may partly be explained by

differences in the SCI samples examined, with much of the resilience research involving inpatient populations (White et al., 2010).

Consequently, these data may not apply to individuals in the chronic stages of their SCI. Indeed there is some evidence that injured individuals may be at a higher risk of developing poor coping skills, including male-adaptive cognitive appraisal, over time, as they experience the ongoing physical and emotional losses associated with their roles within their family, community and society (Craig et al., 2012).

The concept of resilience is particularly important in this population given the wide-ranging impact of an injury on physical, psychological, and social functioning. In the psychological literature, resilience has been defined and characterized as many things as a fixed trait, as a develop the able state, as an ability, as a defense mechanism, as a dynamic process, and as an outcome, all of which are similarly characterized by adaptive and flexible responses in the face of highly stressful life events (Davydov et al., 2010).

In their review of resilience measurement scales, “acknowledged the difficulty of defining this complex construct and proposed a multilevel definition of resilience as the process of successfully adapting to significant sources of stress or trauma, facilitated by an individual’s psychological resources, life experiences, and environment. Notwithstanding, the concept of resilience lacks a common theoretical framework, which has resulted in inconsistencies of measurement and the identification of risk and protective factors across different studies.” (Windle et al., 2011).

Davydov et al, (2010) suggested that, “In the context of SCI resilience is negatively associated with depression and anxiety, and positively associated with subjective well-being”. In work to understand the process of adjustment after injury, four trajectories are described by (Victorson et al., 2015): (1)resilient, in which individuals maintain or quickly return to a healthy psychological state soon after the event; (2)recovery, in which symptoms of distress may reach the threshold or sub-threshold levels of psychopathology (e.g. depression, anxiety) but gradually subside over months or years; (3)delayed distress, in which symptoms of distress gradually worsen over time; and (4)chronic dysfunction, in which individuals struggle for many years.

Bonanno et al, (2015) stated that “specifically found that a majority of individuals reported a continuous, stable, low symptomatic response characteristic of a resilient. Around 25% exhibited then recovery trajectory and only 12.5 and 12.8% displayed

the chronic high depression and delayed depression.”Resilience or the ability of an individual to thrive in the face of adversity plays a vital role among people with SCI to overcome the catastrophic changes and negative impacts from the consequences of SCI. Resilience can be defined as the ability of a person with SCI to bounce back from a stressful experience and adapt to the changes resulting from an SCI (Kornhaber et al., 2018).

Research showed that 66% of individuals who sustained an SCI were resilient. As a result, they achieved positive adjustment, greater acceptance, and a better quality of life. However, about 34% had significant problems with resilience such as depressed mood or low self-efficacy. It was recognized that resilience is influenced by numerous factors. Factors contributing to resilience can vary and have different impacts on individuals in different cultures, societies, and geographical regions or contexts (Bhattarai et al., 2018).

3.1. Study design

A cross-sectional descriptive study was performed with structured questionnaires and interviews were conducted with persons having spinal cord injury (SCI). 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.

This study aimed to find out the relationship between socio-demographic status and mental resilience of SCI survivors during in-patients rehabilitation in the COVID-19 pandemic. 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 (Viotorson et al., 2015).

3.2. Study Site

Data was collected from SCI patients attending at Centre for the Rehabilitation of the Paralysed, Savar, Dhaka. CRP is the biggest hospital and renowned rehabilitation center for Spinal Cord Injury (SCI) in South Asia.

3.3. Study population & sample population

A population refers to the entire group of people or items that meet the criteria set by the researcher. It conforms to some designated set of specifications that provide clear guidance as to which elements are to be included in the population and which are to be excluded (Kenneth, 2015).

To prepare a suitable description of a population it is essential to distinguish between the population for which the results are ideally required, the desired target population,

and the population which is studied, the defined target population. An ideal situation, in which the researcher had complete control over the research environment, would lead to both of these populations containing the same elements. About 114 samples were selected for this study.

3.4. Inclusion Criteria

- I. Co-operative individual.
- II. Persons with Spinal Cord Injury attending at CRP.
According to Victorson et al, (2015)-
- III. 18 years of age and older.
- IV. Both Paraplegia and Tetraplegia are included.
- V. Both males and females are included.
- VI. Time since injury (<1 year, 1–3 years, and >3 years).

3.5. Exclusion Criteria

- I. Any concomitant impairment that might influence everyday function(such as cognitive or mental impairment)
- II. The SCI patients who are already discharged from CRP.
- III. Undiagnosed injury.
- IV. Head injury.
- V. Any other major disease except SCI.

3.6. Sampling Procedure

The study was conducted by using the convenience sampling methods because it was the easiest, cheapest and quicker method of sample selection (Bodnar et al., 2013). Through the convenience sampling procedure, it will be easy to get those subjects according to the criteria concerned with the study purpose.

3.7. Sample Size

A sample is a group of subjects that will be selected from the population, who are used in a piece of research (Hicks, 2013). A sample is a smaller group taken from the population. Sometimes the sample size may be big and sometimes it may be small,

depending on the population and the characteristics of the study (Bettany & Saltikov, 2012).

Prevalence formula was adopted for the sample size estimation,

$$N = \frac{Z^2 P(1 - P)}{T^2}$$

Here,

Z is the level of significance that corresponds to a 95% confidence level. that is,

Z (confidence interval) = 1.96

P (prevalence) =50% (Brooks et al., 2010)

And, T (tolerance error) = 0.05

$$N = \frac{1.96^2(0.5)(1-0.5)}{(0.05)^2} = 384$$

The actual sample size was n= 384.

As the study was performed as a part of a fourth professional academic research project, self-funding and data were collected from a single specialized hospital by considering the feasibility and time limitation 114 samples were selected conveniently.

3.8. Data collection tools

In this study, data were collected by using a structured questionnaire. Mental resilience tools-Brief Resilience scale (BRS), BRS is reliable and measured as a unitary construct. It is predictably related to personal characteristics, social relations, coping, and health in all samples. It is negatively related to anxiety, depression, negative affect, and physical symptoms. The BRS is a reliable means of assessing resilience as the ability to bounce back or recover from stress and may provide unique and important information about people coping with health-related stressors. During the interview, the researcher used pen, paper, a written questionnaire, calculator, file, and consent paper.

3.9. Data collection

The questions will be asked in a face to face interviews. It is useful because this technique ensures that the researcher will obtain all the information required, while at the same time it gives the participants freedom to respond and illustrate concepts.

3.10. Data analysis

Data were analyzed with the Statistical Package for Social Sciences (SPSS) Version 20 software. Data resolve numerically coded and captured in Microsoft Excel, using an SPSS 20 version software program. Microsoft Office Excel 2016 was used to decorate the table, bar graph, and pie charts. In the result section, all the value was formulated by descriptive statistics. SPSS is a comprehensive and flexible statistical analysis and data management solution.

3.11. Statistical Test

3.11.1 Determination of the nature of data

The variables were determined as nominal, ordinal, interval, and ratio data and considered their parametric or non-parametric properties based on data type, normality test, and standard procedure (Hicks, 2009).

Table-1: Data category and normality test of data

Variable	Description	Data type	Normality test	Data distribution
Age overall	18-73 year	Ratio	P=(.006), (.000)	Parametric
Age category:	18-35 36-50 >50	Ordinal	-	Non-parametric
Gender:	Male Female	Nominal	-	Non-parametric
Marital status:	Married, Unmarried	Nominal	-	Non-parametric
Education:	<High school >High school	Ordinal	-	Non-parametric
Occupation:	Unemployed, Student, Housewife, Day-laborer, Agriculture Jobholder, Business	Nominal	-	Non-parametric
Monthly Income (Thousand)	0- 50,000	Ratio	P=(.001) (.001)	Parametric

Monthly Income category:	0-15,000 16,000-30,000 >31,000	Ordinal	-	Non-parametric
Residential area:	Rural, Urban	Nominal	-	Non-parametric
Duration Since incidence	1-36 month	Ratio	P=(.001) (.001)	Parametric
Duration Category:	1-12 month 13-24 month 25-36 month	Ordinal	-	Non-parametric
Cause of injury-	RTA Fall-from height Fall for overloading Non-traumatic	Nominal	-	Non-parametric
Neurological level number	C2-L4(1-23)	Ratio	P=(.001) (.001)	Parametric
Neurological level category	C2-C6 T1-T12 L1-L4	Nominal	-	Non-parametric
ASIA Scale no.	A-D=1-4	Ratio	P=(.001) (.001)	Parametric
ASIA scale category	Complete Incomplete	Nominal	-	Non-parametric
Types of paralysis	Paraplegic Tetraplegic	Nominal	-	Non-parametric
The score of Brief Resilience scale-	1.00-5.00	Ratio	P=(.007),(.000)	parametric
The score of Brief Resilience Scale with interpretation-	1.00-2.99=low resilience 3.00-4.30=normal resilience 4.31-5.00=high resilience	Ordinal	-	Non-parametric

3.11.2 Determination of statistical test

The statistical has been performed as descriptive and inferential statistics based on parametric or non-parametric properties.

The **Descriptive Statics** was performed as frequency and percentage in nominal or ordinal data. Mean and standard deviation has been calculated for interval or ratio data.

Table.2 The Inferential Statistics has been performed as follows:-

Purpose	Variables	Statistical test
Relationship	Two Categorical data (non-parametric)	Chi square test
	One categorical (non-parametric) and one parametric data	Independent T-test (independent bi-variant data)
		One way ANOVA (independent tri-variate data)
		Chi-square test (independent multivariate data)
Two parametric data	Pearson correlation test	
Regression of relationship	Dependent variable as parametric (numerical) data	linear logistic regression

3.12 Level of Significance

To find out the significance of the study, the “p” value was calculated. The p values refer to the probability of the results for the experimental study. A p-value is called the level of significance for an experiment and a p-value of <.05 was accepted as a significant result for health service research.

3.13 Ethical consideration

The researcher maintained some ethical considerations: The research proposal including methodology was submitted to the Institutional Review Board (IRB) of Bangladesh Health Professions Institute (BHPI) for oral presentation and defense was done in front of IRB. Then IRB approved the proposal. A researcher had followed the Helsinki guideline of the world medical association. This protocol presentation was

first submitted to the Institutional Review Board (IRB) of BHPI and initial permission was taken. Permission was taken from the Head of the Department of Physiotherapy, BHPI, CRP before data collection. Permission was taken from the In-Charge of SCI Unit, CRP for data collection from the patients. The researcher maintained the confidentiality of the collected data from the individuals. The researcher ensured the confidentiality of participants and shared the information only with the research supervisor. All rights of the participants were reserved and the researcher was accountable to the participant to answer any type of study-related question. The participants would be informed before inviting participation in the study. The ethical consideration was obtained through an informed consent letter to the participant. Consent was obtained by providing each participant a clear description of the study purpose, the procedure involved in the study and also informing them that if they wish they could withdraw themselves any time from the study. The necessary information had been kept secure place to ensure confidentiality. All kinds of confidentiality are highly maintained. They were also assured that it would not cause any harm. The researcher also ensured that the organization (CRP) was not hampered by the study. Then they signed the consent form.

3.14. Inform consent

Written consent (appendix) was given to all participants before the completion of the questionnaire. The researcher explained to the participants about his or her role in this study and the aim and objective of this study. The researcher received written consent from every participant including signature. So the participant assured that they could understand the consent form and their participation was voluntary. The participants were informed clearly that their information would be kept confidential. The researcher assured the participants that the study would not be harmful to them. It was explained that there might not be a direct benefit from the study for the participants but in the future cases like them might get benefit from it. The participants had the right to withdraw consent and discontinue participation at any time without prejudice to present or future care at the spinal cord injury (SCI) unit of CRP. Information from this study was anonymously coded to ensure confidentiality and was not personally identified in any publication containing the result of this study.

3.15. The rigor of the study

A rigorous manner was maintained to conduct the study. The study was conducted cleanly and systemically. During the data collection, it was ensured participants were not influenced by experience. The answer was accepted whether they were in a negative or positive impression. No leading questions were asked or no important questions were avoided. The participant information was coded accurately and checked by the supervisor to eliminate any possible errors. The entire information was handled with confidentiality. In the result section, the outcome was not influenced by showing any personal interpretation. Every section of the study was checked and rechecked by the research supervisor.

4.1 Socio- demographic characteristic

4.1.1. Age

Among 114 participants, the mean age of the respondents was 34 years and media was 33 years with a standard deviation of ± 12.584 years. Among them, 44.7% (n=51) were in the age group between the range of 18-35 years. Also, 38.6% (n=44) of the respondents were found in the age group between 36-50 years and 16.7% (n=19) of them were in the age group above 51 years where the highest age range is 73 and the lowest is 52. (Table-3)

4.1.2 Gender

Male was predominantly higher than female. Out of 114 participants 86% (n=98) were male and 14% (n=16) were female. (Table-3)

4.1.3 Marital status

Around 114 participants researcher found unmarried person 73.7 % (n=84), married person 26.3% (n=30). (Table-3)

4.1.4 Educational status

Among 114 participants the frequency of literacy shows, least percentage of the participants, only 18.4% (n=21) are illiterate. The approximate percentage of literacy is 35.1%(n=40) of the participants completed primary education, 19.3% (n=22) of the participants completed secondary education and 16.7%(n=19) of the participants completed higher secondary education which is the basic education level according to Bangladesh. Other percentages show a higher level of literacy rather than a basic level where 10.5% (n=12) of the participants completed Honors or Masters. (Table-3)

4.1.5 Occupation

The chart shows that the number of 13.2% (n=15) are Businessman, Service Holder are more than other profession 24.6% (n=28), 11.4% (n=13) are Day Laborer, Agriculture are 14.9% (n=17), Housewife are 8.8% (n=10), second most common are student 20.2% (n=23) & unemployed are 7%(n=8). (Table-3)

4.1.6 Average monthly income

Most of the participant's family income was less than 15000taka and the percentage was 48.2% (n=55). And others participants lead approximately in a standard lifestyle, 32 participants' family income was between 16000-30000taka, The percentage was 28.1%. 27 participants family income was above 310000 (23.7%). (Table-3)

4.1.7 Living area

Most of the respondents who are suffering from spinal cord injury were from rural Areas 69.3% (n=79). Only 30.7% (n=35) were from urban area. (Table-3)

4.1.8 COVID-19th Test Result

In this study, all the participants were diagnosis of the COVID-19 test, and their test result was Negative.

4.1.9 Duration of injury

Among 114 participants duration of injury From Date of injury to October 2021 (months) were mean incidence of the respondents was 7.12 months and mean was 5 months with a standard deviation of ± 6.530 months. And category of the date of incidence 1-12 months 90.4% (n=103), 13-24months 5.3% (n=6), and 25-36 months 4.4% (n=5). (Table-3)

4.1.10 Causes of injury

Among 114 participants, 93% (n=106) participants most of them had experienced spinal cord injury due to Traumatic causes such as Fall from height 40.4%(n=46), RTA 39.5% (n=45), Falling heavy object over head 13.2%(n=15), etc and 7% (n=8) participants got SCI due to Non-traumatic cause such as TB Spine. Table1 shows the detailed information of the causes of injury of the respondents. (Table-3)

4.1.11 Types of injury of the participants

Out of 114 participants, there were approximately half of the difference between the number of paraplegia and tetraplegia; paraplegia was 64% (n=73) and tetraplegia was 36% (n=41). (Table-3)

4.1.12 Severity of injury of the participants

114 patients participate in this study. Most of them were complete A according to the ASIA impairment scale. The percentage of complete A was 70.2% (n=80). Incomplete diagnosis were 29.8% (n=34). Here, Incomplete B were 14.9% (n=17), incomplete C were 9.6% (n=11) , incomplete D were 5.3% (n=6). (Table-3)

4.1.13 Mental Resilience score & interpretation of the participants, according to BRS Scale :

The Brief Resilience Scale (BRS) Score has been used to find out the level of mental resilience. According to Smith et al,(2008)- BRS has Three Interpretation to identify the level of mental resilience-

1. Low resilience(1.00 - 2.99)
2. Normal resilience (3.00 - 4.30)
3. High resilience (4.31 - 5.00)

In my study shows that among the 114 patients who participate in this study, the mean resilience score of the respondents was 2.5919 with a standard deviation \pm 0.86610 scores. Each participant had resilience with different levels, Most of them had Low resilience 66.7% (n=76) of SCI survivors during the COVID-19 pandemic, 27 participants had normal resilience that was 23.7%, and 9.6% participants had high resilience (n=11). (Table-3).

Table.3 Distribution of the participants according to Socio- Demographic & Injury related characteristics:

Variable	Category	Description of data
		Mean (median) \pm Std.Deviation / Frequency (percent)
Age-Overall (18-73) years	Ratio	34(33) \pm 12.584
Age in category(years) -	Ordinal	
18-35		51(44.7%)
36-50		44(38.6%)
>50		19(16.7%)

Gender- Female Male	Nominal	16(14%) 98(86%)
Marital status- Married Unmarried	Nominal	84(73.7%) 30(26.3%)
Educational level- No formal education Primary education Secondary education Higher secondary education Graduation or above	Ordinal	21(18.4%) 40(35.1%) 22(19.3%) 19(16.7%) 12(10.5%)
Occupation- Businessman Service holder Day laborer Agriculture Housewife Student Unemployed	Nominal	15(13.2%) 28(24.6%) 13(11.4%) 17(14.9%) 10(8.8%) 23(20.2%) 8(7%)
Residential area- Rural Urban	Nominal	79(69.3%) 35(30.7%)
Average monthly income-	Ratio	19605.26 (16000) ±12834.287
Family income in the category- 0-15000 16000-30000 (>300000)	Ordinal	55(48.2%) 33(28.9%) 26(22.8%)
COVID-19th Test Result Positive Negative	Nominal	0 114(100%)
Duration since incidence in a month-	Ratio	7.12 (5) ± 6.530
Duration since incidence in the category- (1-12months) (13-24 months)	Ordinal	103(90.4%) 6(5.3%)

(25-36 months)		5(4.4%)
Cause of injury: Traumatic RTA Fall from height Falling heavy object Non-traumatic	Nominal	45(39.5%) 46(40.4%) 15(13.2%) 8(7%) }106(93%)
Neurological level-	Ratio	11.15(12.5) ±7.031
Neurological level in the category- C2-C7 T1-T6 T7-T12 L1-L4	Ordinal	43(37.7%) 15(13.2%) 45(39.5) 11(9.6%)
ASIA Impairment scale Diagnosis- Complete-A Incomplete-B Incomplete-C Incomplete-D	Nominal	80(70.2%) 17(14.9%) 11(9.6%) 6(5.3%) }34(29.8%)
Types of paralysis- Tetraplegia paraplegia	Nominal	41(36%) 73(64%)
The score of Brief Resilience scale-	Ratio	2.5919 ± 0.86610
The score of Brief Resilience Scale with interpretation- 1.00-2.99 low resilience 3.00-4.30 normal resilience 4.31-5.00 high resilience	Ordinal	76(66.7%) 27(23.7%) 11(9.6%)

4.2. Prevalence of the participants according to mental resilience (BRS Scale) :

In my study total population was 114. All over the participants, most of them 66.7% (n=76) mental resilience level was low resilience. 23.7% (n=27) participants mental resilience level was normal resilience. And 9.6% (n=11) participants was high resilience. (Table.4)

In the study total female were 17 participants, the majority (75%) of the women mental resilience was low resilience (n=12), 12.5% & only 2 participants were female were normal, and also 12.5% (n=2) participants were high resilience. Among the 114 participants, most of them are male parson, total male were 97 participants, 65.3% of the male mental resilience were low resilience (n=64), 25 participants male were normal resilience that was 25.5% and only 9.2% (n=9) participants were high resilience. (Table.4)

In the study marital status of the participants, the major person who was married (n=84), there was 57 married person whose mental resilience was low (67.9%), 18 participants were normal resilience (21.4%).and others were married person 10.7%(n=9) were high resilience. Unmarried participants were 30 people, 19 participants mental resilience was low resilience (63.3%), 9 (30%) participants had normal resilience, and only 2 people had high resilience that was 6.7%. (Table.4)

Educational level Among the 114 participants, 60 people were below high school level, their 43 participants were low resilience that was 71.3%, 23.1% had normal resilience (n=14), 5% had high resilience (n=3). 54 people were above high school level their 33 participants were low resilience that was 61.1%, 24.1% had normal resilience (n=13), 14.8% had high resilience (n=8).(Table.4)

Occupation among 114 participants, minority persons were unemployed (n=8), 5 participants had low resilience (62.5%). 2 people had normal resilience, only one participant had high resilience that was 12.5%. The majority of the participants (n=106) were employed, their mental resilience had different levels.(Table.4)

The average monthly income of participant household, in 0-15,000 income 34(61.8%) participants were low mental resilience, 17 participants were normal resilience that was (30.9%), 4 participants were high resilience. In 16,000-30,000 income 27 (84.4%) participants were low mental resilience, (n=1) participant was normal resilience that

was (3.1%), 4 participants were high resilience. In above 30,000taka income 14 (53.8%) participants were low mental resilience, 9 participants were normal resilience that was (34.6%), 3 participants were high resilience that was 11.5% (table.4).

Residential area, In the study total urban, were 34 participants, the majority (82.9%) of the people mental resilience was low resilience (n=29), only 3 participants mental resilience were normal (8.6%), and also only 3(8.6%) participants were high resilience. Among the 114 participants most of them were living in rural (n=80), 59.5% of the people's mental resilience were low resilience (n=24), 30.4% (n=24) participants people were normal resilience and only 10.1% (n=8) participants were high resilience (Table.4).

Table.4 Prevalence of the participants according to mental resilience (BRS Scale) :

Characteristics	Mental resilience (BRS) score interpretation					
	Low resilience		Normal resilience		High resilience	
	n	%	n	%	n	%
Overall population(114)	76	66.7	27	23.7	11	9.6
Age of the participants(years)						
18-35yrs	34	66.7	13	25.5	4	7.8
36-50 yrs	50	63.6	11	25	5	11.4
Above 50 yrs	14	73.7	3	15.8	2	10.5
Gender						
Female	12	75	2	12.5	2	12.5
male	64	65.3	25	25.5	9	9.2
Marital status						
Married	57	67.9	18	21.4	9	10.7
Unmarried	19	63.3	9	30	2	6.7
Educational level						
< High School	43	71.3	14	23.1	3	5
High School -above	33	61.1	13	24.1	8	14.8
Occupation						
Businessman	11	73.3	3	20	1	6.7
Service holder	21	75	4	14.3	3	10.7
Day laborer	9	69.2	3	23.1	1	7.7
Agriculture	10	58.8	6	35.3	1	5.9
Housewife	7	70	1	10	2	20
Student	13	56.5	8	34.8	2	8.7
Unemployment	5	62.50	2	25	1	12.5
Monthly average income(taka)						
0-15000tk	34	61.8	17	30.9	4	7.3

16,000-30000tk	28	84.8	1	3	4	12.1
Above 30,000tk	14	53.8	9	34.6	3	11.5
Residential Area						
Urban	29	82.9	3	8.6	3	8.6
Rural	47	59.5	24	30.4	8	10.1

4.3.1 Association between mental resilience with Socio- demographic information:

The study had an association occurred between socio-demographic profile and mental resilience which was mentioned in the 3rd objective of the study. In this study, the BRS scale was used. Here, the dependent variable was the BRS scale score, mental resilience had highly significant (.0001) with the duration of since incidence & BRS score interpretation.(Table-5)

Mental resilience was moderately significant ($p = .003$) in the Residential area.

Mental resilience was comparatively less significant ($p = .015$) with the ASIA impaired Scale.(Table-5)

Mental resilience was not found any association with overall age, age category, gender, Eeducation, marital status, Occupation, monthly income, types of paralysis, causes of injury & neurological level. (Table-5)

Table.5 Correlations between resilience and demographic and injury-related variables:

Dependent Variable: Mental resilience (BRS Score)			
Independent Variable	Test Name	Test Value	P-Value
Age overall (18-75) year	Pearson	0.013	0.889
Age category: 18-35, 36-50, >50	Chi square	0.646	0.587
Gender: Female, Male	Independent T-test	-1.402	0.164
Marital status: Married,Unmarried	Independent T-test	0.007	0.994
Education: <High school, >High school	Independent T-test	-1.126	0.263
Occupation:			

0.Unemployment, Student, Housewife 1.Day-laborer, Agriculture 2. Jobholder, Businessman	One-way ANOVA	0.955	0.525
Monthly-income: (0-50) Thousand	Pearson	0.043	0.652
Monthly Income category: (0-15, 16-30, >31) Thousand	One-way ANOVA	1.144	0.320
Residential area: Rural, Urban	Independent T-test	2.990	0.003**
Duration Since incidence: (1-36) month	Pearson	0.403	0.0001***
Duration Category: (1-12, 13-24, 25-36) months	One-way ANOVA	1.187	0.282
Cause of injury- Traumatic, Non-Traumatic.	Chi-square	64.920	0.410
Neurological level no: (C2-L4=1-23)	Pearson	-0.77	0.416
Neurological level category: C2-C6, T1-T12, L1-L4	One-way ANOVA	0.256	0.775
ASIA Impaired Scale no:1-5	Pearson	0.195	0.03*
ASIA scale category: Complete, Incomplete	Independent T-test	-2.186	0.031*
Types of paralysis: Paraplegic, Tetrapelgic	Independent T-test	-0.354	0.724
BRS Scale score interpretation	One-way ANOVA	127.822	0.0001***

Alpha value (p value) =[*= <0.05, **=<0.01, ***= <0.001]

4.3.2 Association with a level of mental resilience & socio- demographic information.

Here, the dependent variable was BRS scale score interpretation, mental resilience had highly significant (.0001) with the duration of since incidence.(Table.6)

Mental resilience was moderately significant with the ASIA impaired scale (p=.004), duration category (P=.001) & monthly income (p=.004).(Table.6)

Mental resilience was found no association with overall age, age in the category, gender, education, marital status, occupation, monthly income, types of paralysis, causes of injury neurological level. (Table.6)

Table.6. Correlation with BRS interpretation & Socio- demographic information:

Dependent Variable: Mental resilience category (BRS Interpretation)			
Independent Variable	Test Name	Test Value	P-Value
Age overall (18-73) year	One-way ANOVA	0.224	0.800
Age category:18-35, 36-50, >51	Chi square	4.378	0.626
Gender: Male, Female	Chi square	1.579	0.408
Marital status: Married, Unmarried	Chi square	1.129	0.569
Education: <High school, >High school	Chi square	3.319	0.190
Occupation: Unemployment, Student, Housewife, Day-laborer, Agriculture, Jobholder, Businessman	Chi-square	2.321	0.667
Monthly Income:(0-50)Thousand	One-way ANOVA	0.134	0.875
Monthly Income category: (0-15,16-30,>31)Thousand	Chi square	10.835	0.008**
Residential area: Rural, Urban	Chi square	7.752	0.13

Duration Since incidence: (1-36)month	One-way ANOVA	18.353	0.0001***
Duration Category: (1-12,13-24,25-36) months	Chi square	19.101	0.001**
Cause of injury: RTA, Fall from height, Fall of overloading, Non-traumatic.	Chi-square	3.972	0.680
Neurological level no: (C2-L4=1-23)	One-way ANOVA	0.074	0.928
Neurological level category: C2-C6, T1-T12, L1-L4	Chi-square	1.326	0.970
ASIA scale category: Complete, Incomplete	Chi square	11.238	0.004**
Types of paralysis: Paraplegic, Tetraplegic	Chi square	0.601	0.741

Alpha value (p value) = [*= <0.05, **=<0.01, *= <0.001]**

4.4 Regression with mental resilience and others variables :

According to linear regression, It was the final analysis to identify the relationship with mental resilience & socio- demographic characteristic that was associated with SCI survivors during in-patients rehabilitation in the COVID-19 pandemic.

Where, the predictable variable was duration since incidence, that association with the mental resilience in SCI participants ($R^2 = .162$, Coefficient value $\beta = .403$, significant p value = .0001; 95% CI = 1.992, 2.431). Because the coefficient value was positive, I predict that mental resilience has been linear relation with duration since incidence.

Also, the predictable variable was ASIA Impaired Scale, which was associated with the mental resilience in SCI participants ($R^2 = .052$, Coefficient value $\beta = .228$, significant p value = .015; 95% CI = 2.297, 2.660). Because the coefficient value was positive, I predict that mental resilience has been linear relation with ASIA Impaired Scale.

The residential area was divided into two categories: rural & urban, where the predictable variable was rural, that association with the mental resilience in SCI participants ($R^2=.052$, Coefficient value $\beta = .228$, significant p value = .003; 95% CI = 1.947, 2.517). Because the coefficient value was positive, I predict that mental resilience has been linear relation with Rural area.(Table.7)

Table.7. Standard multiple regression with mental resilience as the dependent variable with SCI survivors:

Dependent variable: Score of brief resilience					
Predictable Variable	R²	β	P	95% CI (confidence interval)	
				Lower bound	Upper bound
Duration Since incidence	0.162	0.403	0.0001***	1.992	2.431
ASIA Impaired Scale	0.052	0.228	0.015*	2.297	2.660
Residential area	0.074	0.272	0.003**	1.947	2.517
Monthly Income	0.002	0.040	0.673	2.246	2.833
Types of paralysis	0.001	0.003	0.724	2.284	2.823
Gender	0.017	0.131	0.164	1.906	2.736
Educational level	0.011	0.106	0.263	2.284	2.727

Significant relationship Alpha value (p value) = [*= <0.05, **=<0.01, *= <0.001]**

The purpose of the present study was to expand currently limited knowledge on potential psychological and injury-related contributors to the process of learning to be resilient post-SCI. This was achieved by surveying 60 adults who had lived with their SCI for an average of 6 years. Overall, the sample reported moderate to high levels of resilience (Kilic et al., 2013)

In this study, the Brief resilience scale (BRS) and a demo-graphical questionnaire were used to measure the level of mental resilience In SCI survivors during the COVID-19 pandemic. Socio- demographic characteristics played an important role in association with resilience in this study. There had an association between socio- demographic factors and mental resilience.

This study was found, male participants 86% (n=98) were higher than the female participants 14% (n=16). Most of the injured participants of this study were male following injury. According to Razzak, (2013) found that among 56 participants 84% were male and 16.0% were female. Also found that among 231 participants males were 63% and females were 37% following SCI. So, it seems that male participants are more permeable than female participants in spinal cord injury. According to a journal on “Epidemiology of Spinal Cord Injury in Bangladesh; A Five Year Observation from a Rehabilitation Center (2017)”- SCI patients were admitted with spinal injuries at CRP, Bangladesh from January 2011 to June 2016, those were selected as the study population. Among all the 2184 participants, males were 86.8% (n=1897) and the rest of the 13.1% (n=287) were female. In my study did not identify any association with gander and mental resilience, but According to Bhattarai et al., (2018) had a strong association with Sex ($r = 0.47, p = < 0.001^{**}$)

In this study, most of the participants were from (18-35 years) age group which was 44.7%(n=51). Similarly, Bombardier et al. (2008) in their study found 29.7% were from the (25-35 years) age group. Both results claim that active younger (age around 20-40)

are more vulnerable to the incidence of injury. there had no association found in this study or previous study between age and mental resilience.

The study shows that the number of 12.3% (n=14) are Businessman, Service Holder are more than other profession 25.4% (n=29), 11.4% (n=13) are Day Laborer, Agriculture are 14.9% (n=17) , Housewife are 8.8% (n=10), second most common are student 20.2% (n=23) & unemployed are 7% (n=8), Occupation among 114 participants, minority person were unemployed (n=8), 5 participants had low resilience (62.5%). 2 person had normal resilience, only one participants had high resilience. Majority of the participants (n=106) were employed, there mental resilience had different level. According to (Min et al.,2014) identify employment status among the 36 people employed 15 (40.5%), Unemployed 21 (59.5%) and also found correlation with mental resilience (p=.003). Another study identify association with Employment 0.27 (P=0.016*) (Bhattarai et al., 2018)

Most of the participant's family income was less than 15000taka and the percentage was 48.2% (n=55). And others participants lead approximately in a standard lifestyle, 32 participants family income was between 16000-30000taka, The percentage was 28.1%. 27 participants family income was above 310000 (23.7%). The my present study identified a correlation between income & mental resilience with interpretation (p=.008). The previous study found monthly income No or > Rs. 10,000 81.7% (n=67) and ≤ Rs. 10,000 income 18.3% (n=15) (Bhattarai et al., 2018).

Most of the respondents who are suffering from spinal cord injury were from rural Areas 70.2% (n=80). Only 29.8% (n=34) were from urban area. This study identified a correlation between the residential area and mental resilience (p=.003). According to (Bhattarai et al.,2018), the current living location was Rural 62.2% (n= 51). Urban 37.8% (n=31) and also determinate association mental resilience with current living location (p= 0.029*).

There was a total of 114 participants in this study, among them Tetraplegia (involved four limbs) were 36% (n=41) and paraplegia (involved two limbs) were 64% (n=73). Hammond et al., (2014) noted the different types of results that in their study among 364 participants tetraplegia were 53.3% (n=194) and paraplegia were 46.7% (n=170). There

is no significant difference between the type of injury (paraplegia and tetraplegia), anyone with spinal cord injury would be paraplegia or tetraplegia.

Among 114 participants, most of them were complete A 78.3% (n=80) according to ASIA Scale; incomplete B were 14%(n=16), incomplete C were 9.6%(n=11) and incomplete D were 6.1% (n=7). Siddall et al., (2017) found a similar type of result in their study that 58.49% (n=31) participants had complete spinal cord injury and 41.50% (n=22) patients had incomplete spinal cord injury. In this, my study identified a correlation with ASIA impaired scale and mental resilience (p=.015)

Among 114 participants, 93% (n=106) participants most of them had experienced spinal cord injury due to Traumatic causes such as Fall from height 40.4% (n=46), RTA 39.5% (n=45), Falling heavy object overhead 13.2% (n=15), etc and 7% (n=8) participants got SCI due to Non-traumatic cause such as TB Spine. Table1 shows the detailed information of the causes of injury of the respondents.

In North America, the main cause of Traumatic spinal cord injury was motor vehicle accidents rather than fall from height (Mothe & Tator, 2013). Spinal Cord Injury, which may occur suddenly but its effect can be devastating.

Razzak (2013) stated that in the perspective of Bangladesh, people live their lives under conditions that make them vulnerable to SCI. SCI affects persons for the long term, as well as it also impacts on persons mental resilience.

Among 114 participants duration of injury From Date of injury to October 2021 (months), 1-12months Low resilience were 71.8% (n=74), normal resilience were 21.4% (n=22), high resilience 6.8% (n=7), 13-24 months Low resilience were 16.77% (n=1), normal resilience were 33.3% (n=2), high resilience 50% (n=3), 25-36 months Low resilience were 20% (n=1), normal resilience were 60% (n=3), high resilience 20% (n=1). This study found an association in between duration since incidence and mental resilience (P<0.0001) which was strongly significant.

Among 114 participants, most of them were complete A 78.3% (n=80) according to ASIA Scale; incomplete B were 14% (n=16), incomplete C were 9.6% (n=11) and incomplete D were 6.1% (n=7).In this, my study identified a correlation between ASIA

impaired scale and mental resilience ($p=.015$). Siddal et al., (2017) found a similar type of result in their study that 58.49% ($n=31$) participants had complete spinal cord injury and 41.50% ($n=22$) patients had incomplete spinal cord injury. There was also an association between the severity of the injury and mental resilience which was significant ($p<0.015$).

5.1 Study Limitations

There might be some limitations in every research. In this study, a small sample size may constitute a limitation. As the study was conducted at a selected area of the Centre for the Rehabilitation of the Paralysed (CRP) in the Spinal Cord Injury (SCI) unit which might not represent the whole population with SCI in the context of Bangladesh. Another major limitation was time and resources which have a great impact on the study and affect the result to generalize for a wider population. As the study period was short so an adequate number of samples could not arrange for the study.

6.1 Conclusion:

A spinal cord injury (SCI) is a sudden, unexpected event that may occur acutely or chronically and has a long-term impact on physical functioning and psychological well-being. It is a major cause of disability in Asia as well as in Bangladesh. Every year many people are affected by spinal cord injury with traumatic or non-traumatic causes. Spinal cord injury can affect any person, at any age, at any time but active younger males are more prompt to having spinal cord injury than females. Spinal cord injury negatively affects not only the patient's physical condition but also all aspects of their lives more importantly their mental status. After spinal cord injury, mental resilience becomes an unavoidable event. It is a prominent psychiatric disorder among spinal cord injury patients and appears to be more common in disabled persons than in non-disabled persons. Mental resilience levels may change over time since injury. It has such a harmful effect on a spinal cord injury person's ability to function in day-to-day life. It can make the pain worse, make sleep difficult, sap the energy, take away the enjoyment and make it difficult to take good care of health. In this study, the level of mental resilience of spinal cord injury patients has been found. It has been also significant that there has been an association between mental resilience and socio- demographic information during the COVID-19 pandemic. So it is immensely essential to assess mental resilience in patients having spinal cord injury and make proper treatment plans during the rehabilitation period and always should be considered with priority.

6.2 Recommendation: Mental resilience is an inevitable consequence after having spinal cord injury and has a negative influence on patients with spinal cord injury. So, the necessity is to give more attention to this psychological aspect which is linked to spinal cord injury (SCI). There are so many studies based on spinal cord injury but there are few amounts of studies related to the concept of this patient's psychology such as mental resilience. If other authors want to do further related studies, they are recommended to do their study from a whole country perspective with an increased sample size.

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APPENDIX

English Verbal Consent Form

(Please read out to the participants)

Assalamualikum,

My name is Jannatul Ferdus; I am conducting this study for a B.Sc. in Physiotherapy project study dissertation titled “**Mental Resilience of SCI Survivors During in Patient Rehabilitation in COVID-19 Pandemic**” under Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some personal and other related information regarding SCI. You have to answer some questions which are mentioned in the attached form. This will take approximately 10-15 minutes. I would like to inform you that this is a purely academic study and will not be used for any other purpose. The researcher is not directly related to this SCI area, so your participation in the research will have no impact on your present or future treatment in the SCI unit. All information provided by you will be treated as confidential and in the event of any report or publication, it will be ensured that the source of information remains anonymous, and also all information will be destroyed after completion of the study. Your participation's in this study is voluntary and you may withdraw yourself at any time during this study without any negative consequences. You also have the right not to answer a particular question that you don't like or do not want to answer during an interview.

If you have any queries about the study or your right as a participant, you may contact me or Professor Md. Obaidul Haque, Vice Principal, BHPI, CRP, Savar, Dhaka.

So, may I have your consent to proceed with the interview or work?

YES

NO

Signature of the Participant _____ Date _____

Signature of the Interviewer _____ Date _____

সম্মতিপত্র

(অংশগ্রহনকারীকে পরে জ্ঞাতে হবে)

আসসালামুআলাইকুম/আদাব

আমার নাম জান্নাতুল ফেরদৌস, আমি এই গবেষণা প্রকল্পটি বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউটের (বিএইচপিআই) এ পরিচালনা করছি যা আমার ৪র্থ বর্ষ বি এস সি ইন ফিজিওথেরাপী কোর্সের অর্ন্তভুক্ত।

আমি “কোভিড-১৯ মহামারীতে মেরুরজ্জুতে আঘাত প্রাপ্ত হয়ে বেঁচে থাকা রোগীর পুনর্বাসনের সময় মানসিক সহনশীলতার” এর উপর গবেষণা করছি। আপনাকে আমি একসাথে কিছু ব্যক্তিগত এবং সংশ্লিষ্ট বিষয়ের উপর প্রশ্ন করতে চাচ্ছি। এর জন্য আনুমানিক ১০-১৫ মিনিট সময় লাগবে। আমি আপনাকে আশ্বস্ত করছি যে এটা আমার অধ্যয়ন এর অংশ এবং যা অন্য কোন উদ্দেশ্যে ব্যবহৃত হবে না। এই গবেষণায় আপনার অংশগ্রহন বর্তমান ও ভবিষ্যৎ চিকিৎসাতে কোন প্রকার প্রভাব ফেলবে না। আপনি যে সব তথ্য প্রদান করবেন তার গোপনীয়তা বজায় থাকবে এবং আপনার নাম অপ্রকাশিত থাকবে। এই গবেষণায় আপনার অংশগ্রহন হবে ঐচ্ছিক এবং আপনি কোন নেতিবাচক ফলাফল ছাড়াই এই গবেষণা থেকে যে কোন সময় নিজেকে প্রত্যাহার করতে পারবেন।

আপনার যদি এই গবেষণা সম্পর্কে আরও কিছু জানার আগ্রহ থাকে তাহলে আপনি আমার সাথে অথবা আমার সুপারভাইজার অধ্যাপক মোহাম্মদ ওবায়দুল হক, উপাধ্যক্ষ, বিএইচপিআই, সিআরপি, সাভার, ঢাকাতে যোগাযোগ করতে পারবেন।

শুরু করার পূর্বে আপনার কোন প্রশ্ন থাকলে আপনি করতে পারেন?

আপনার সম্মতি থাকলে আমি কি আপনার সাক্ষাত আরম্ভ করতে পারি?

হ্যাঁ

না

অংশগ্রহনকারীর স্বাক্ষর ও তারিখ:.....

উপাত্ত সংগ্রহকারীর স্বাক্ষর ও তারিখ:.....

সাক্ষীর স্বাক্ষর ও তারিখ:.....

Questionnaire- English

Interview Schedule Part- I: Patient's Identification (to be provided by patient or attendant)		
1.1	Identification number:	Date of Interview:
1.2	Address:	Contact no:
1.3	Consent Taken : Yes No	

Part- II: Patient's Socio-demographic Information (To be collected from Record/Patient/Caregiver)		
2.1	Age (In the year): Yrs	
2.2	Sex	1. Female 2. Male
2.3	Marital status:	1. Married 2. Unmarried
2.4	Educational level?	1. Illiterate 2. Primary 3. Secondary 4. Higher secondary 5. Graduated
2.5	Occupation?	1. Businessman. 2. Jobholder (.....) 3. Day laborer (.....) 4. Agriculture

		5. Housewife 6. Student 7. Unemployed 8. Other(Specify):_____
2.6	What is the average monthly income of your household?	_____ (Taka)
2.7	Residential Area	1. Rural 2. Urban

Part-III: Physiotherapy related Information (To be collected from Record/ Care provider/Clinical examination)		
3.1	Date of injury:	
3.2	Causes of injury:	1. Motor Vehicle Injury 2. Fall From Height 3. Fall while carrying heavy Load 4. Sports-related 5. Fall of heavy object on the back 6. Non-traumatic
3.3	Skeletal level :	
3.4	Neurological level :	
3.5	ASIA classification scale :	1. Complete A 2. Incomplete B 3. Incomplete C 4. Incomplete D 5. Normal E
3.6	Types of paralysis:	1. Tetraplegic 2. Paraplegic

Brief Resilience Scale (BRS):

Please respond to each item by marking one box per row		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
BRS 1	I tend to bounce back quickly after hard times	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
BRS 2	I have a hard time making it through stressful events.	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
BRS 3	It does not take me long to recover from a stressful event.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
BRS 4	It is hard for me to snap back when something bad happens.	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
BRS 5	I usually come through difficult times with little trouble.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
BRS 6	I tend to take a long time to get over setbacks in my life.	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1

Scoring: Add the responses varying from 1-5 for all six items giving a range from 6-30.

Divide the total sum by the total number of questions answered.

My score: _____ **item average / 6**

BRS Score	Interpretation
1.00 - 2.99	Low resilience
3.00-4.30	Normal resilience
4.31-5.00	High resilience

প্রশ্নপত্র বাংলা

	<p>অংশ- ১: রোগীর শনাক্তকরণ (রোগী বা পরিচারক দ্বারা প্রদান করা হবে)</p>	
১.১	সনাক্তকরণ নম্বর:	সাক্ষাৎকারের তারিখ:
১.২	ঠিকানা:	মোবাইল নম্বর:
১.৩	সম্মতি নেওয়া হয়েছে: হ্যাঁ না	

	<p>অংশ- ২: রোগীর সামাজিক-জনসংখ্যাতাত্ত্বিক তথ্য (রেকর্ড / রোগী / কেয়ার দাতা থেকে সংগ্রহ করা হবে)</p>	
২.১	বয়স: বছর	
২.২	লিঙ্গ:	<p>১. মহিলা</p> <p>২. পুরুষ</p>
২.৩	বৈবাহিক অবস্থা:	<p>১. বিবাহিত</p> <p>২. অবিবাহিত</p>
২.৪	শিক্ষাগত যোগ্যতা:	<p>১. অক্ষর-জ্ঞান অসম্পূর্ণ</p> <p>২. প্রাথমিক</p> <p>৩. মাধ্যমিক</p> <p>৪. উচ্চ-মাধ্যমিক</p> <p>৫. স্নাতক</p>

২.৫	পেশা:	১. ব্যবসায়ী ২. চাকুরীজীবী (.) ৩. দিনমজুর (.) ৪. কৃষি ৫. গৃহিনী ৬. ছাত্র ৭. অন্যান্য (নির্দিষ্ট করুন): -----
২.৬	আপনার পরিবারের মাসিক গড় আয় কত?	----- (টাকা)
২.৭	আবাসিক এলাকা:	১. গ্রাম ২. শহর
২.৮	আপনি কি কোভিড-১৯ টেস্ট করেছেন?	১. না ২. হ্যাঁ: ক. পজেটিভ খ. নেগেটিভ

		৩. স্বারী বোঝাবহন করার সময় পতন ৪. ক্রীড়া সম্পর্কিত ৫. পিছনে ভারী বস্তুর পতন ৬. অন্যান্য (দয়া করে নির্দিষ্ট করুন) -----
৩.৩	স্কেলেটাল লেভেল:	
৩.৪	নিউরোলজিকাল লেভেল:	
৩.৫	এএসআইএ শ্রেণীবিভাগ স্কেল:	১. কম্পলিট এ ২. ইনকম্পলিট বি ৩. ইনকম্পলিট সি ৪. ইনকম্পলিট ডি ৫. নরমাল ই
৩.৬	পক্ষাঘাতের প্রকারভেদ:	১. ট্রেট্রাপ্লেজিক ২. প্যারাপ্লেজিক

ব্রিফ রেসিলিএন্স স্কেল (বিআরএস) / সংক্ষিপ্ত স্থিতিস্থাপকতা স্কেল (বিআরএস)

প্রতি সারিতে একটি বাক্স চিহ্নিত করে প্রতিটি আইটেমের প্রতিক্রিয়া জানান	দৃঢ়ভাবে অসম্মতি	অসম্মতি	নিরপেক্ষ	একমত	দৃঢ়ভাবে সম্মতি
বিআরএস ১. আমি কঠিন সময়ের পরে দ্রুত ফিরে আসি।	১	২	৩	৪	৫

বিআরএস ২.	মানসিক চাপের মধ্য দিয়ে এটিকে তৈরী করতে আমার খুব কষ্ট হয়েছে।	৫	৪	৩	২	১
বিআরএস ৩.	মানসিক চাপের ঘটনা থেকে সেরে উঠতে আমার বেশি সময় লাগে না।	১	২	৩	৪	৫
বিআরএস ৪.	আমার যখন খারাপ কিছু ঘটে তখন ফিরে আসা খুব কঠিন।	৫	৪	৩	২	১
বিআরএস ৫.	আমি সাধারণত সামান্য কষ্টের মধ্যে আছি।	১	২	৩	৪	৫
বিআরএস ৬.	আমি আমার জীবনে বিপত্তিগুলি কাটিয়ে উঠতে দীর্ঘ সময় নেই।	৫	৪	৩	২	১

স্কোরিং: সমস্ত ছয় আইটেম থেকে রেঞ্জ দেওয়ার জন্য ১-৫ থেকে পৃথক প্রতিক্রিয়া যুক্ত করুন ৬-৩০।

উত্তর দেওয়া মোট প্রশ্নের সংখ্যার দ্বারা মোট যোগফলকে ভাগ করুন।

আমার স্কোর-----আইটেম গড় /৬

Permission Letter

Date: June 15, 2021

The Head of Department

Department of physiotherapy

Bangladesh Health Professions Institute (BHPI)

Chapain, Savar, Dhaka-1343.

Subject: Prayer for seeking permission for data collection of 4th year physiotherapy research project.

Sir,

With due respect and humble submission to state that I am Jannatul Ferdus, a student of 4th year B.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI). The Ethical committee has approved my research project entitled: "Mental resilience in Spinal Cord Injury survivors during in-patient rehabilitation aimed COVID-19 Pandemic" under the supervision of Md. Obaidul Haque, Associate Professor, Department of Physiotherapy, BHPI, CRP, SAVAR, Dhaka. Conducting this research project is partial fulfillment of the requirement for the degree of B.Sc. in Physiotherapy. I want to collect data for SCI patients at physiotherapy Department. So, I need your kind permission for data collection at SCI Unit of CRP in Savar, Dhaka. I would like to assure that nothing of the study would be harmful for the participants.

I therefore, pray and hope that your honor would be kind enough to grant my application and give me permission for data collection and oblige thereby.

Yours faithfully,

Jannatul Ferdus

4th Year

B.Sc. in Physiotherapy

Class Roll: 22; Session: 2015-16

Bangladesh Health Professions Institute (BHPI)

(An academic Institution of CRP)

CRP-Chapain, Savar, Dhaka-1343.

Request for consideration

Shofiq

15.06.21

Md. Shofiqul Islam

Associate Professor & Head

Department of Physiotherapy

Bangladesh Health Professions Institute (BHPI)

CRP, Chapain, Savar, Dhaka-1343

Approved



MOHAMMED ANWAR HOSSAIN
Senior Consultant
Head of Physiotherapy Dept
Associate Professor, BHPI
CRP Savar, Dhaka-1343



বাংলাদেশ হেল্থ প্রফেশন ইনস্টিটিউট (বিএইচপিআই)
Bangladesh Health Professions Institute (BHPI)
(The Academic Institute of CRP)

Ref

CRP/BHPI/IRB/06/2021/471

Date:

16/06/2021

To
Jannatul Ferdus
4th year B.Sc. in Physiotherapy
Session: 2015-16, Student ID: 112150293
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of the thesis proposal “**Mental resilience in spinal cord injury survivors during in-patient rehabilitation aimed COVID-19 pandemic**” by ethics committee.

Dear Jannatul Ferdus,
Congratulations.

The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above-mentioned dissertation, with yourself, as the Principal investigator. The following documents have been reviewed and approved:

Sr. No.	Name of the Documents
1	Dissertation Proposal
2	Questionnaire (English and Bengali version)
3	Information sheet & consent form.

The purpose of this study is to identify mental resilience in spinal cord injury survivors during in-patient rehabilitation aimed COVID-19 pandemic. The study involves use of a questionnaire to explore the nature of physiotherapy practice in Bangladesh that may take 15 to 20 minutes to answer the questionnaire and there is no likelihood of any harm to the participants. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 08:30 am on 1st March 2020 at BHPI (23rd IRB Meeting).

The institutional Ethics committee expects to be informed about the progress of the study, any changes occurring in the course of the study, any revision in the protocol and patient information or informed consent and ask to be provided a copy of the final report. This Ethics committee is working accordance to Nuremberg Code 1947, World Medical Association Declaration of Helsinki, 1964 - 2013 and other applicable regulation.

Best regards,

Muhammad Millat Hossain
Assistant Professor, Dept. of Rehabilitation Science
Member Secretary, Institutional Review Board (IRB)
BHPI, CRP, Savar, Dhaka-1343, Bangladesh