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Impact of pain and spasticity on quality of life in individuals with spinal cord injury

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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 written consent from the Supervisor & Department of Physiotherapy of Bangladesh Health Professions Institute (BHPI).

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Acronyms

ADLs	Activities of Daily Living
ASIA	American Spinal Injury Association
BHPI	Bangladesh Health Professions Institute
CRP	Centre for the Rehabilitation of the Paralysed
DU	University of Dhaka
IRB	Institutional Review Board
MAS	Modified Ashworth Scale
NP	Neuropathic Pain
PT	Physiotherapy
QoL	Quality of Life
SCI	Spinal Cord Injury
SF-36	Short Form-36 Health Survey
VAS	Visual Analog Scale
WHO	World Health Organization

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Abstract

Background: Spinal cord injury (SCI) is a serious health condition that affects hundreds of thousands of people around the world every year. People who suffer from a spinal cord injury (SCI) often face many problems two them are pain and spasticity (uncontrolled muscle stiffness or tightness). These problems can make it hard for individuals to move around, take care of themselves, and enjoy social or emotional activities. As a result, their overall quality of life can be seriously affected. Even with treatment and rehabilitation, many continue to struggle with these issues. That's why it is important to understand how pain and spasticity truly impact different areas of life for people living with SCI. **Objective:** The purpose of this study is to identify the impact of pain and spasticity on quality of life in individuals with spinal cord injury. **Methodology:** A cross-sectional study was conducted using hospital-based random sampling. Data were collected through face-to-face interviews using standardized tools. Pain and spasticity were measured with the Visual Analog Scale (VAS) and Modified Ashworth Scale (MAS), while quality of life was assessed using the SF-36. Data analysis was performed using SPSS. **Results:** The study revealed that participants' quality of life was significantly influenced by their experiences of pain and spasticity following spinal cord injury. Pain was strongly associated with emotional distress, reduced energy, poor general health, and limited social participation. Spasticity, on the other hand, was primarily linked to physical role limitations but showed minimal effect on emotional or social domains. These findings highlight the differential impact of pain and spasticity on daily functioning and psychological well-being in individuals with spinal cord injury. **Discussion:** The findings suggest that pain and spasticity significantly affect different aspects of quality of life (QoL) in individuals with spinal cord injury. Pain was strongly linked to emotional well-being, energy, and social participation, highlighting its deep psychological and social impact. In contrast, spasticity mainly affected physical role performance, limiting daily activities but not emotional or social domains. These results underscore the need for differentiated treatment strategies: emotional support and pain management to improve psychosocial outcomes, and targeted physical therapies to address spasticity-related impairments. The study emphasizes the importance of individualized care in SCI rehabilitation to enhance overall QoL.

Keywords: Pain, spasticity, quality of life, spinal cord injury.

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Chapter-I Introduction

1.1Background

Spinal cord injury (SCI) is a traumatic or non-traumatic event that leads to significant disturbances in an individual's sensory, motor, and autonomic functions resulting from various causes, including vertebral fractures, infections, or vascular damages (Hamid et al.,2018). SCI often results in permanent disability, with patients experiencing a loss of sensation and motor function, which has profound implications for their physical, psychological, and social well-being (White and Holmes., 2019). Globally, SCI affects millions of individuals, with the Global Burden of Disease (GBD) 2019 estimating 0.9 million new cases of SCI in 2019, with a total prevalence of 20.6 million individuals living with SCI worldwide (Ding et al., 2022). The prevalence of SCI varies significantly between regions, with the highest rates observed in high-income countries, such as North America, where the annual incidence is reported to be between 54 and 83 per million population (Singh et al., 2017). The leading causes of SCI globally include falls, road injuries, and conflicts, with a notable rise in SCI cases due to falls, especially in elderly populations (james et al., 2018). The impact of SCI extends beyond physical limitations, as individuals often experience additional complications such as chronic pain and spasticity and often these complications severely affect their quality of life, exacerbating the burden of SCI on individuals and healthcare systems alike for this reason understanding the prevalence, incidence, and the burden of SCI is essential for improving treatment outcomes and developing effective prevention strategies (Andresen et al.,2016).

Pain is one of the most prevalent secondary conditions after spinal cord injury (SCI), which leads to reduced quality of life and poorer rehabilitation outcomes, around half to two-thirds of all people with SCI have pain (Mahnig et al.,2016). The prevalence of pain after SCI has been reported as to range 11% to 94% of patients (Ehsan et al., 2018). Burke et al (2017) stated rates of pain after SCI range from 64% in Sweden,73% in Denmark,77% in the Netherlands, and 80% in the United States here SCI pain classified as nociceptive pain, neuropathic pain (NP) and other pain, here nociceptive pain includes musculoskeletal, visceral and other pain here musculoskeletal pain occurs in an area with preserved sensation either above, at, or below the level of injury with a prevalence rate of 49% in SCI, visceral pain arises from the visceral structures and prevalence rates range from 3-5% initially, increasing to 30% in those with long term

SCI and other pain includes nociceptive pain which does not fit the former categories. Neuropathic pain, defined as “pain caused by a lesion or disease of the somatosensory system”, is reported by convention as at or below SCI level, prevalence rates of NP are estimated at 53% here neuropathic pain below the SCI lesion is described as a form of deafferentation pain similar to central post-stroke pain or phantom limb pain, representing cortical re-organization, this can also may present above the level of injury and the patients who experience mixed pain presentations post injury, with those reporting increased pain severity more likely to report poorer sleep quality, life satisfaction and depression, neuropathic pain is often cited as the most severe pain post SCI and is associated with lower quality of life (QoL) when compared to those presenting without NP because it has an extensive and negative impact on physical, psychological and social health and has been described by patients as more debilitating than the SCI itself (Burke, Fullen and Lennon .,2019).

Spasticity is a common consequence of spinal cord injury (SCI) and is estimated to affect around 65%of patients with SCI discharged from acute rehabilitation and up to 93% of people living in the community here spasticity has been defined as a sensorimotor control disorder resulting from an upper motor neuron lesion, presenting as intermittent or sustained involuntary activations of muscles, and resulting in a number of impairments including hyperreflexia, hypertonia, dyssynergia, and clonus, to name few and the problematic spasticity, defined as one that either limits function and/or requires anti spasticity medications, has been estimated to affect around 35% of people living with SCI in the chronic stage, with 11–14% considered as moderate to severe problematic spasticity (stampas et al.,2022). Cha s et al (2019) in their research stated that Spasticity has been reported to affect 65–78% of people with chronic spinal cord injury (SCI) and spasticity hinders walking and self-care, causes pain and fatigue, and contributes to the development of contractures, thus spasticity severely impairing quality of life of patients with spinal cord injury. The widespread impact, spasticity remains an important focus for intervention in the rehabilitation of SCI patients, aiming to balance its useful and problematic effects on daily function (Adams, Martin Ginis and Hicks, 2017).

Pain and spasticity significantly impact the quality of life (QoL) for individuals with spinal cord injury (SCI) as both conditions are highly prevalent among SCI patients, spasticity affects up to 70% of individuals within the first-year post-injury, while

chronic pain is reported by 73% of SCI patients (Andresen et al., 2016). According to Mathiopoulou & Evangelopoulos (2022), the co-occurrence of pain and spasticity often exacerbates the severity of both conditions, painful spasticity, where spasms trigger pain or worsen pre-existing pain, further impairs functionality and life satisfaction. Effective management of both pain and spasticity is essential for improving the QoL of SCI patients here the treatments addressing both the physical and psychological aspects of these conditions, including medications, physical therapy, and psychological support, are necessary to reduce the burden and enhance the well-being of individuals with SCI (Vural et al., 2020).

1.2Rationale

Among individuals with spinal cord injury (SCI), pain and spasticity are two of the most common and challenging symptoms that significantly impact their quality of life. These conditions often affect their ability to perform basic daily tasks, reduce independence, and cause emotional distress. Pain frequently results in chronic discomfort that limits mobility and functional capacity, making activities such as dressing, eating, and personal care difficult. Spasticity, on the other hand, involves involuntary muscle contractions that can lead to muscle tightness and joint deformities. These muscle spasms restrict movement, further impairing mobility and causing additional strain on the body. Together, pain and spasticity create a cycle of discomfort and disability that hinders an individual's ability to maintain an active and fulfilling life. The effects are not limited to physical health alone; social interactions are often impacted, and mental health may also suffer as a result of these chronic symptoms. While there has been considerable research on pain management and spasticity treatment in SCI patients, the combined effect of both on quality of life has not been sufficiently explored. Most existing studies have examined these conditions separately, which fails to capture the full extent of their combined impact. The interaction between pain and spasticity remains underexplored, leaving a significant gap in understanding how these two factors together exacerbate each other and contribute to the overall disability in SCI patients. Addressing this gap in research is critical as it can offer new insights into improving rehabilitation strategies and therapeutic interventions that more effectively target the combined effects of pain and spasticity. This study aims to bridge this gap by investigating the simultaneous effects of pain and spasticity on various aspects of life for individuals with SCI. By evaluating how these two factors interact and influence physical mobility, emotional well-being, and social participation, the research will provide a more comprehensive understanding of the challenges faced by SCI patients. This knowledge will be valuable in developing more effective therapeutic interventions, enhancing both physical rehabilitation and psychological support for individuals with SCI. Furthermore, this research will contribute to the existing literature by promoting integrated approaches in physiotherapy that address both pain and spasticity together, rather than treating them as isolated issues. By focusing on a holistic management strategy, the study aims to improve patient outcomes and significantly enhance the quality of life for SCI patients.

1.3 Research question

What is the impact of pain and spasticity on quality of life in individuals with spinal cord injury.

1.4 Study objectives

1.4.1 General objective

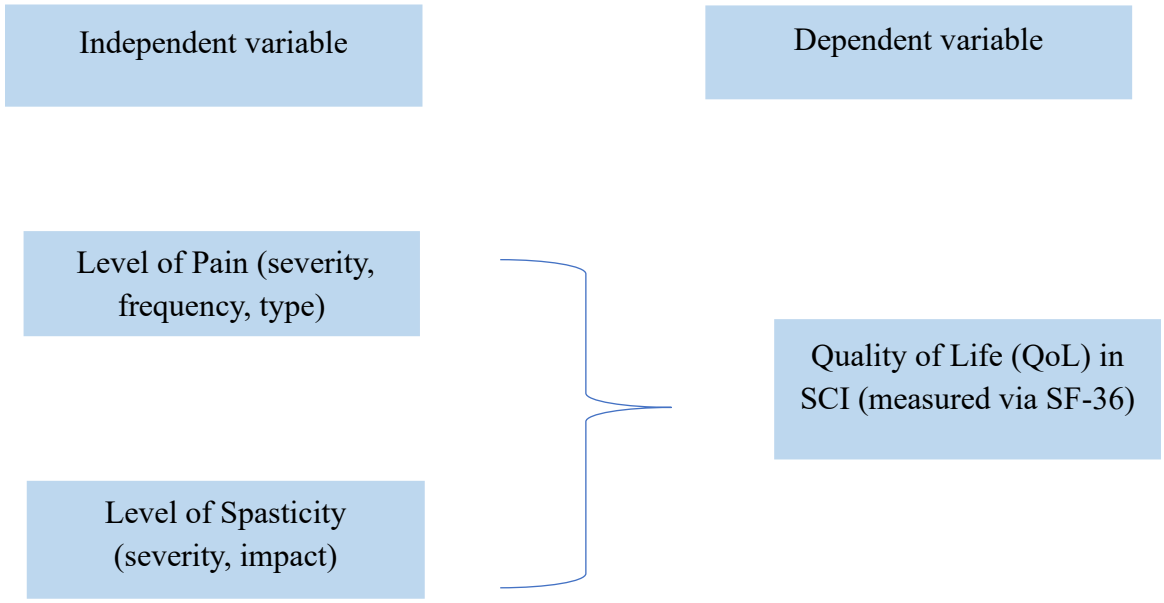
To identify the impact of pain and spasticity on quality of life in individuals with spinal cord injury.

1.4.2 Specific objectives

To-

i. Find out socio-demographic status of the participant.
ii. Find out the level of pain among the individuals with spinal cord injury.
iii. Find out the level of spasticity in individuals with spinal cord injury.
iv. Find out quality of life of the individuals with spinal cord injury.
v. Find out the association between pain and quality of life.
vi. Find out the association between spasticity and quality of life.

1.5 Conceptual framework



1.6 Operational Definitions

1.6.1 Spinal Cord Injury

A Spinal Cord Injury (SCI) is a severe condition resulting from damage to the spinal cord that affects motor, sensory, and autonomic functions below the injury level. It can be caused by trauma (e.g., accidents, falls, sports injuries) or non-traumatic factors (e.g., infections, tumors, degenerative diseases).

1.6.2 Pain

Pain is a common and challenging symptom in spinal cord injury (SCI), significantly impacting daily life and well-being. It can be neuropathic, caused by nerve damage, leading to burning or electric shock-like sensations, or musculoskeletal, resulting from overuse and poor posture, especially in wheelchair users. Some individuals also experience visceral pain, originating from internal organs like the bladder or bowel. Effective management should be done to improve comfort and quality of life. It will be measure by Visual Analog Scale.

1.6.3 Spasticity

Spasticity in spinal cord injury (SCI) patients is a condition characterized by increased muscle tone and exaggerated reflexes. It occurs due to damage to the spinal cord, disrupting the normal signals between the brain and muscles. It will be measured by Modified Ashworth Scale.

1.6.4 Quality of Life

Pain and spasticity significantly impact the quality of life in spinal cord injury patients by causing discomfort, limiting mobility, and hindering daily activities. The constant muscle stiffness and involuntary contractions can lead to chronic pain, making it difficult to perform basic tasks. It will be measured by SF-36 scale.

Chapter-II Literature Review

Spinal cord injury (SCI) is one of the major neurological condition that results in significant motor, sensory, and autonomic impairments, it is classified into two main types: traumatic spinal cord injury (TSCI) and non-traumatic spinal cord injury (NTSCI) and both of these forms of SCI contribute to a decline in quality of life (QoL) due to complications such as pain and spasticity, which limit mobility, independence, and social participation (Lu et al., 2024). Rahman et al., (2017) given the increasing incidence of SCI worldwide, understanding its causes, prevalence, and impact on QoL is essential for developing effective rehabilitation and management strategies .TSCI commonly occurs due to road traffic accidents (RTA), falls from height, sports-related injuries, and violence-related incidents such as gunshot wounds, among these RTAs remain the leading cause of TSCI worldwide, while falls are more frequent among the elderly and those in low-income communities (Tian et al., 2023). Sports and recreational activities, including diving, skiing, and football, also contribute to TSCI, particularly in younger individuals on the other hand NTSCI is primarily caused by spinal tumors, tuberculosis of the spine (Pott's disease), degenerative spinal disorders such as cervical spondylosis and spinal stenosis, and autoimmune conditions like multiple sclerosis and transverse myelitis (Quadir et al., 2023).

The worldwide prevalence of SCI varies significantly due to differences in healthcare infrastructure, economic status, and preventive measures, the global incidence of SCI is estimated at 23.77 cases per million people annually, with distinct variations between TSCI and NTSCI here TSCI occurs at a rate of 26.48 per million people, while NTSCI is slightly lower at 17.93 per million, but now a days NTSCI cases have been steadily increasing, particularly since 2007, with prevalence stabilizing at 25–35 per million people and this trend is largely attributed to the aging population and rising burden of chronic diseases, which are common causes of NTSCI in developed countries on the other hand developing nations report higher incidences of TSCI, primarily due to traffic accidents, workplace injuries, and poor safety regulations, in his study he also mentioned that regional disparities also exist, with some countries, such as Japan, reporting a significantly higher incidence of TSCI (95.25 per million people), likely due to an aging population and a high prevalence of spinal stenosis, Denmark has one of the lowest reported TSCI incidences at 10.18 per million people, reflecting effective safety regulations and healthcare interventions (Ahuja et al., 2017).

Rahman et al. (2017) conducted a five-year study at the Centre for Rehabilitation of the Paralysed (CRP) in Bangladesh, analyzing 2184 cases of SCI. Their findings indicate a strong male predominance, with 86.8% of patients being male, highlighting occupational risks and lifestyle factors that make men more susceptible to SCI in this study they also have found that 51.9% of cases involved traumatic paraplegia, while 42.6% were traumatic tetraplegia, falls from height emerged as the leading cause, accounting for 45.4% of cases, followed by road traffic accidents at 25.9% here a notable observation was that 69.2% of SCI patients were from rural areas, where hazardous working conditions, inadequate safety measures, and delayed medical interventions contribute to the high incidence of SCI, this study also reported a high prevalence of complete injuries (59.8%) based on the ASIA impairment scale, emphasizing the severe impact of SCI in Bangladesh and the urgent need for improved healthcare and rehabilitations.

Pain and spasticity are two of the most common and debilitating complications of SCI, significantly affecting the quality of life of affected individuals and these neuropathic and musculoskeletal pain often lead to sleep disturbances, reduced mobility, and psychological distress, including depression and anxiety (Smith et al., 2022). Spasticity, characterized by involuntary muscle stiffness and spasms, further restricts movement and complicates daily activities, making rehabilitation more challenging (Patel et al., 2024). Studies indicate that higher pain severity is directly associated with lower life satisfaction and increased disability, as pain interferes with social participation, employment, and mental health (Jones et al., 2021). The burden of chronic pain and spasticity is particularly pronounced in low-income countries like Bangladesh, where access to advanced pain management and rehabilitation services is limited (shafdarian et al.,2022).

Pain is a frequent and significant problem in individuals with SCI the prevalence of pain found in the present study lies within a range of 41–81% (Muller et al.,2017). Another research by Mahnig et al. (2016) found a significant overall pain prevalence of approximately 80%, with musculoskeletal pain being the most common type, followed by neuropathic pain at, below, or above the level of injury, and visceral pain, in this research musculoskeletal pain was identified as the most common pain type, followed by at-level spinal cord injury (SCI) pain and below-level SCI pain, the prevalence of visceral pain, however, was relatively low, ranging between 0 and 3%, both at-level and

below-level SCI pain were commonly described as burning (60% and 71%, respectively), while shooting pain was almost exclusively associated with at-level SCI pain (43% vs. 7%), this finding is consistent with another study that reported hot-burning (60%), stabbing (58%), and shooting (55%) as prevalent descriptors for neuropathic pain, although there was no significant difference between at-level and below-level SCI pain in terms of shooting pain

According to Smith et al., (2022), the prevalence of chronic pain in individuals with spinal cord injury (SCI) is influenced by various factors, including the severity of the injury, the time elapsed since the injury, and the presence of psychological comorbidities. Chronic pain associated with spinal cord injury (SCI) is traditionally classified into three primary categories: nociceptive, neuropathic, and other/unknown pain again nociceptive pain originating from SCI includes musculoskeletal and visceral pain, neuropathic pain, which results from damage to the somatosensory system due to SCI, is further divided into at-level, below-level, and above-level neuropathic pain (Chambel et al.,2020).

Studies indicate that approximately 68% of individuals with SCI in Bangladesh suffer from chronic pain, with neuropathic pain being the most frequently reported type (Quadir et al., 2023). A study found that a significant proportion of SCI patients in Bangladesh had complete injuries, which are associated with higher pain severity and the primary causes of SCI in Bangladesh are often falls from height (45.4%) and road traffic accidents (25.9%), both of which frequently result in severe and persistent pain and the lack of adequate pain management strategies, coupled with financial and infrastructural barriers, contributes to the ongoing struggle faced by individuals with SCI in Bangladesh (Rahman et al., 2017).

The implications for patients with pain and quality of life (QoL) indicate that those reporting higher pain intensity experience a poorer quality of life, particularly in the social domain described as personal relationships, sexual life, and the support received from friends (Almeida et al., 2018). A study conducted in Bangladesh found that SCI patients with chronic pain reported lower life satisfaction compared to those without pain as this pain interferes with daily activities, reduces mobility, disrupts sleep, and increases dependency on caregivers. (Uddin et al., 2023). Patients after spinal cord injury inevitably suffer from different degrees and types of pain, making pain

management increasingly important, with emerging interventions such as exercise therapy gaining attention as it is not limited by venue and time, and currently, patients with spinal cord injury exhibit good compliance with exercise therapy to relieve pain (Wang et al.,2021).

Spasticity is one of the most prevalent secondary complications of SCI, affecting a significant portion of individuals with SCI, with severity often correlating with the injury's level and completeness and the pathophysiology involves a loss of control over motor neurons, leading to involuntary muscle contractions that are difficult to manage (Arafat et al,.2016). Culha et al. (2017) defined Spasticity is a serious and disabling problem that poses great challenges for both patients and clinicians, with patients emphasizing that it is an important problem that can be severe enough to cause pain and affect the daily life of the patients.

Most individuals with spinal cord injury experience spasticity, with 78%–93% of those with cervical injuries and 45%–82% of those with thoracic injuries reporting symptoms but fewer individuals find their spasticity problematic, with 36%–52% of those with cervical injuries and 24%–45% of those with thoracic injuries (Mayo et al.,2017). Another research reported that 67% of individuals with new spinal cord injury (SCI) had some degree of spasticity at discharge, with 89% of those with tetraplegia, 82% with T1–T7 paraplegia, 45% with T8–T12 paraplegia, and 26% with L1–L5 paraplegia affected, and while only 26% required treatment at discharge, 46% reported problematic spasticity requiring medical management at 1-year follow-up, with similar findings from recent literature showing 65% reported spasticity at discharge and 35% requiring medical management for problematic spasticity (Billington et al.,2022).

A study by Rahman et al. (2017) at the Centre for the Rehabilitation of the Paralyzed (CRP) found that spasticity developed in 83.6% of SCI patients, indicating its high prevalence they also highlighted the severe limitations caused by spasticity, which is associated with impaired mobility, pain, and muscle tightness, all of which decrease QoL. Uddin et al. (2023) stated that spasticity is a leading complication and tetraplegia are particularly vulnerable to severe spasticity, which in turn affects their functional status, often leading to greater dependency in daily activities.

The impact of spasticity on the quality of life (QOL) of individuals with SCI is profound as it can severely restrict daily activities such as dressing, bathing, and performing

transfers, leading to increased pain, fatigue, and sleep disturbances here these condition can also contribute to the development of secondary complications such as contractures, pressure sores, and infections, which further hinder an individual's independence and overall well-being but strangely some individuals report potential benefits from spasticity, such as improved posture or assistance with transfers but despite these occasional benefits, spasticity often significantly interferes with various aspects of daily life, making it a challenging condition to manage effectively (Sangari & Perez, 2022). In thoracic SCI, the prevalence remains high, with 72-73% of individuals reporting spasticity always correlate with the injury's level or completeness, and psychological factors, such as resilience, can influence how severely spasticity affects QOL (Levi et al., 2019). Psychological factors like resilience and self-efficacy also play an essential role in how individuals cope with spasticity, influencing their perception of its severity and its impact on their life (Islam et al., 2021).

Studies have shown that individuals with SCI who experience painful spasticity report higher pain severity and greater life interference compared to those without painful spasticity as the mechanisms underlying both spasticity and pain share common pathways, including central sensitization and abnormal neurotransmitter regulation, which contribute to the overlap of these conditions, the presence of painful spasticity significantly impacts sleep quality, emotional well-being, and overall life satisfaction. (Tibbett et al., 2020). Spasticity is a multifactorial condition that significantly impacts the quality of life for individuals with SCI, with its prevalence and severity varying depending on the level and completeness of the injury, and the coexistence of spasticity, chronic pain, and psychological factors presenting complex challenges in managing these conditions, requiring a comprehensive approach that addresses both physical and psychological aspects to improve QOL in individuals with SCI (Sangari & Perez, 2022).

Quality of life is generally lower among the SCI than in the general population, many factors including older and lower age at injury, short time since injury, higher level of lesion, low functional ability, low social support, residence (cohabitation), low income, low mobility, marital status (single), neurogenic bowel and bladder dysfunction, spasticity, pain and pain interference may be associated with lower quality of life in SCI (Andresen et al.,2016). Self-evaluation of QoL by individuals with SCI could be very negative in the first stage when they experience a sudden, unexpected and dramatic

deterioration of their physical, social and work capacity once the initial impact of SCI has been overcome, the individual needs to adapt to new living conditions and to again become integrated into their community thus, in this second stage there is some degree of variation and uncertainty regarding their QoL, as with other variables related to the life of these individuals finally, predicting QoL is difficult in the third stage, when the individual with SCI is reinstated in day-to-day life insofar case subjective QoL is influenced by the objective indicators indicated above, this would be of particular relevance for individuals with SCI (Angulo et al.,2019) .Spinal cord injury (SCI) results in profound changes to the sensory, motor, and autonomic systems, leading to significant long-term disabilities among these, chronic pain and spasticity are two of the most common and debilitating conditions that can drastically affect the quality of life (QoL) in individuals with SCI these conditions not only impair physical functionality but also contribute to emotional distress, complicating the rehabilitation process (Cao et al.,2023). Pain intensity has been reported as moderate to severe across studies and as expected, pain negatively impacts overall QoL in persons with SCI (Gibbs et al.,2019). This seems notable given that determining the severity of spasticity in addition to its presence is quite important in assessing QOL in SCI patients with the likelihood of poorer QOL among patients with more severe spasticity in clinical practice (Vural et al.,2020).

Rofi'i et al,. (2019) examined QoL in SCI patients in Indonesia and found that their overall QoL scores were significantly lower compared to the general population in their study they have used the WHO Quality of Life brief form (WHOQOL-BREF) and found that the physical domain had the lowest mean score, followed by the environmental and psychological domains. Physiotherapy plays a critical role in managing these symptoms, as it offers strategies that can mitigate both pain and spasticity, enhancing functional recovery and QoL for this reason a specialized treatments such as functional electrical stimulation (FES) and neuroprosthetic devices are being increasingly utilized to facilitate motor function and reduce spasticity (Huang et al., 2022).Physiotherapy interventions for pain and spasticity are most effective when integrated into a comprehensive rehabilitation program that also addresses psychological and social factors, individuals with SCI often experience anxiety, depression, and social isolation, all of which can worsen their physical symptoms and impair recovery for this reason a holistic approach to physiotherapy includes not only

physical rehabilitation but also psychological support, promoting a sense of well-being and improving overall life satisfaction (Johnson et al., 2017).

Mato et al. (2022) In their study on musculoskeletal pain in spinal cord injury (SCI) patients, the Visual Analogue Scale (VAS) was used to measure the intensity of pain here the VAS is a commonly used tool for quantifying pain intensity, ranging from 0 (no pain) to 10 (worst pain imaginable) and the participants were assessed for pain using this scale, and based on their VAS scores, they were classified into four groups: no pain (VAS = 0), mild pain (VAS = 1-3), moderate pain (VAS = 4-6), and severe pain (VAS = 7-10) here the procedure involved participants being interviewed and assessed for their baseline demographic information and spinal cord injury characteristics in this case pain intensity was specifically measured using the VAS during the interview process and if participants had pain in multiple areas with different VAS scores, the area with the most severe pain was selected for the pain measurement often this method helped in identifying the severity of musculoskeletal pain in SCI patients walking with or without ambulatory assistive devices (AAD) and often the VAS scores were used to distinguish musculoskeletal pain from neurological pain by utilizing active, passive, and accessory movement tests

Sangari and Perez (2022) utilized a range of measurement scales in their study to assess spasticity in individuals with spinal cord injury (SCI) at different injury severities and stages, in their study included the Modified Ashworth Scale (MAS) for clinical assessment of muscle tone and the Pendulum Test for objective kinematic analysis, the MAS is a six-point ordinal scale (0-4) that measures resistance encountered during passive muscle stretching and it categorizes individuals as spastic (MAS ≥1) or non-spastic (MAS = 0) and the Pendulum Test evaluates First Swing Angle (FSA), where a lower FSA (<70°) indicates spasticity, while a higher FSA (>70°) suggests the absence of spasticity and these tools were applied to assess spasticity in the quadriceps femoris muscle, comparing subacute (~1-month post-injury) and chronic (>1-year post-injury) SCI cases, this study also found that spasticity was more prevalent in individuals with motor-incomplete injuries during the subacute phase but was equally prevalent in both motor-complete and incomplete cases in chronic SCI.

In the study by Andresen et al. (2018), they measured the quality of life (QOL) of spinal cord injury (SCI) patients using the SF-36 questionnaire, a widely recognized and

reliable tool, the SF-36v2 consists of 36 items that assess eight health domains, including physical and emotional functioning here two summary scores, the Physical Component Summary (PCS) and Mental Component Summary (MCS), are derived from these domains, providing an overall measure of physical and mental health and the procedure for assessment involved administering the SF-36 at a routine follow-up visit between 6 to 12 months after the injury here the data collected was then used to compare QOL in SCI patients with the general Canadian population, additionally, the relationship between the initial severity of the neurological injury (measured using the American Spinal Injury Association Impairment Scale, or AIS grade) and the SF-36v2 summary scores was evaluated using statistical models

According to related studies commonly used measurement tools, in this study, researchers assessed the impact of pain and spasticity on the quality of life in individuals with spinal cord injury using the Visual Analogue Scale (VAS) for pain intensity, the Modified Ashworth Scale (MAS) for spasticity severity, and the Short Form-36 Health Survey (SF-36) to evaluate pain, spasticity and quality of life of the person who are living with spinal cord injury. These outcome measurement tools provided a comprehensive approach to understanding how pain and spasticity influence daily activities, mobility, and psychological well-being in individuals with spinal cord injury.

Chapter-III Methodology

3.1 Study design

Cross-sectional study is chosen to conduct this study to identify the impact of pain and spasticity on quality of life in individuals with spinal cord injury. A cross-sectional study is an observational study in which the exposure and the outcome are determined at the same time point for each study participant. Participant of this study are chosen on the basis of inclusion and exclusion criteria. Cross-sectional study is performed when resources are limited. It is inexpensive, less time consumed study. Many cross-sectional studies had been performed to identify the impact of pain and spasticity on quality of life of spinal cord injury patient. For instance, A research has been conducted over 537 spinal cord injury survivors, where 73% of participant reported about pain, and 71% reported about spasticity. Where it has been seen, who are suffering from pain and spasticity had lower had lower satisfaction with physical and mental health than those without (Andresen et al,2016). This makes a cross-sectional design appropriate for this study as it will able o identify the impact of pain and spasticity on quality of life in individuals with spinal cord injury.

3.2 Study site

Data was collected from the patient who are taking treatment at spinal cord injury unit of Centre for the Rehabilitation of the Paralysed (CRP), Savar, Dhaka, Bangladesh which is the biggest hospital and renowned rehabilitation centre for Spinal Cord Injury (SCI) among south Asia.

3.3 Duration of data collection

The data collection for this study took place from January to April.

3.4 Study population

A study population is “a well-defined collection of individuals or objects known to have similar characteristics” and is crucial for determining the direction and validity of the research results (Taherdoost et al.,2016). In this study the people who were taking treatment at SCI unit, CRP, Savar, Dhaka and who are suffering from pain and spasticity which were affecting their quality of life was considered as study population.

3.5 Inclusion criteria

Patient who will give consent to participate.

Both traumatic and non-traumatic SCI patient.

Both male and female.

Both acute and chronic SCI patient

Patient who are taking regular physiotherapy.

Patient who are suffering from SCI related pain and spasticity.

3.6 Exclusion criteria

Patient who will not give consent to participate.

Patient who do not take regular physiotherapy.

Patient with serious illness like heart disease.

Patient with nerve related problem like multiple sclerosis.

3.7 Sample size

Sample size refers to the number of observations or participants selected from a population for a study. It plays a crucial role in determining the reliability and validity of research findings. The appropriate sample size ensures that the study results are statistically significant and representative of the target population

The equation to calculate the sample size is given below-

$$n = z^2pq / d^2$$

$$n = (1.96)^2 \times 0.26 \times (1 - 0.26) / (0.05)^2$$

$$n = 0.7391384 / (0.05)^2$$

$$n = 0.7391384 / 0.0025$$

$$n = 295.649$$

Where,

n = Sample size

z = linked to 95% confidence interval (use 1.96)

p = expected prevalence, 26% (Shafdarian et al., 2023)

q = 1- p (expected non-prevalence)

d = margin of error at 5% (standard value of 0.05)

So, the required sample size (n) is approximately 295.

My sample size is 115 due to shortage of time.

3.8 Sampling technique

Hospital-based random sampling involves the random selection of study participants from individuals who attend a specific hospital or group of hospitals. This technique is particularly useful in clinical research where patient records are accessible, allowing for efficient participant recruitment. While it offers practical advantages, such as convenience and cost-effectiveness, its findings may not be generalizable to the wider population if the hospital catchment area is not representative (Acharya et al.,2018). This study included eligible participant who were identified from hospital records of individuals diagnosed with spinal cord injury based on inclusion

3.9 Data collection

The face-to-face interview method was employed to gather data for assessing the impact of pain and spasticity on quality of life in individuals with spinal cord injury. The interview sessions were conducted in a private, quite and comfortable setting, allowing participants to express their experiences freely. These responses reflected their perspectives and challenges related to pain and spasticity.

3.10 Data collection tools and materials

The researcher utilized an information and consent form, along with a standardized questionnaire form as tools for data collection.

Questionnaire

The researcher developed the questionnaire with input and guidance from the supervisor, adhering to specific protocols. It was designed to collect data on pain intensity, spasticity level, personal details and quality of life in individual with spinal cord injury. The key areas covered include:

Socio-demographic information of SCI patient:

It typically contains some basic information about personal and social life of the participant which mainly include name, age, gender, marital status, living area, education level and occupation.

Spinal cord related information:

In this point the researcher includes some question to gather detail information about the injury of the participant which includes the date of injury, date of admission, skeletal level of injury, neurological level of injury, type of paralysis, cause of injury, co-morbidity and medications.

Visual Analog Scale (VAS)

The visual analog scale (VAS) is a validated, subjective measure for acute and chronic pain. This scale often uses in questionnaire. Scores are recorded by making a handwritten mark on a 10-cm line that represents a continuum between no pain and worst pain

Instructions:

- Provide the participant with a 10cm horizontal line with labels indicating extremes of the sensations (e.g., imagine 0= no pain and 10=no pain and worst pain)
- Ask the participant to mark a point on the line that represents the intensity of their sensation.
- Measure the distance from the no pain to the point which the participant had marked.
- Record the measurement as the VAS score.

The VAS scale was categorized as the following

- 0-3 = Mild pain.
- 4-6 = Moderate pain.
- 7-10 = Severe pain.

Modified Ashworth Scale (MAS)

The Modified Ashworth Scale is a 6- point rating scale that is used to measure muscle tone. It is a modified version of Ashworth scale which was developed by Bryan Ashworth in 1960. It is used widely as a clinical tool to measure spasticity. The scale assesses the resistance encountered when moving a joint passively through its range of motion, reflecting the degree of muscle tone and spasticity. spasticity is graded on a scale from 0-4, with higher scores indicating greater resistance.

Instructions:

- The patient is positioned comfortably, and the joint to be assesses is placed is a neutral position.
- The examiner passively moves the joint through its full range of motion, first slowly and then at a faster pace to detect resistance.
- The resistance felt during the movement is scored based on the MAS scale:

0: No increase in muscle tone

1: slight increase in muscle tone, with a catch and release at the end of the range of motion

1+: slight increase in muscle tone, followed by minimal resistance through less than half of the range of motion

2: more marked increase in muscle tone through most of the range of motion, but the joint can still be moved easily

3: considerable increase in muscle tone, making passive movement difficult.

4: affected part is rigid in flexion or extension.

The MAS scale was categorized as following

- 0-1 = Mild spasticity
- 1.5-2 = Moderate spasticity
- 3-4 = Severe spasticity

SF-36 Scale

The SF-36 Health Survey (Short Form-36) is a widely used questionnaire designed to measure health-related quality of life (HRQoL). It assesses physical, mental, and social well-being based on self-reported data. The SF-36 is often used in clinical research, health policy evaluations, and routine health monitoring. The SF-36 was developed in the Medical Outcomes Study (MOS) by the Rand Corporation in the late 1980s. It was created to provide a standardized measure of health status that could be used across various populations and medical conditions. The survey has since become a globally accepted tool for assessing health outcomes.

Domains of SF-36

The SF-36 questionnaire consists of **36 questions** divided into **eight domains**, covering both physical and mental health aspects:

General Health (GH) – Assesses overall perception of health, including current health status and future health expectations.

Physical Functioning (PF) – Evaluates limitations in physical activities, such as walking, climbing stairs, and carrying objects.

Role-Physical (RP) – Measures the impact of physical health problems on daily work and other activities.

Bodily Pain (BP) – Assesses pain levels and how pain affects normal work activities.

Vitality (VT) – Measures energy levels and feelings of fatigue.

Social Functioning (SF) – Examines the impact of physical and emotional health on social activities.

Role-Emotional (RE) – Evaluates the extent to which emotional problems interfere with work or daily tasks.

Mental Health (MH) – Assesses psychological well-being, including anxiety, depression, and overall emotional stability.

The SF-36 scores for each domain were transformed to a scale ranging from 0 to 100, where higher scores indicate better health status. For the purpose of interpretation, the scores were further categorized into four levels of health status as below

- 0-25 = Very poor status.
- 26-50 = Poor status.
- 51-75 = Fair status.
- 76-100 = Good status.

3.11 Data analysis

The data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) version 25 and Microsoft Excel 2021. The process included several key steps such as descriptive and inferential statistics, correlation analysis, and regression analysis, alongside the interpretation of results. The choice of statistical methods was determined based on the nature of the data, research objectives, and expert judgment.

The analysis began with descriptive statistics to summarize participants' socio-demographic characteristics, SCI-related information, and baseline scores for outcome measures. The normality of the data was assessed to determine whether parametric or non-parametric tests were appropriate. Correlation analysis was employed to examine the relationships between pain and QoL, spasticity and QoL. This was followed by multiple regression analysis to evaluate the predictive value of pain and spasticity on

quality of life in individual with spinal cord injury. Group comparisons were performed using chi square test.

3.12 Ethical consideration

To ensure the protection and well-being of participants, strict ethical considerations were upheld throughout this study. The research proposal underwent thorough review and received approval from the Institutional Review Board (IRB). The study adhered to the ethical guidelines established by the Bangladesh Medical Research Council (BMRC) and the World Health Organization (WHO). Prior to participation, informed consent was meticulously obtained from all participants. They were provided with comprehensive information about the study's objectives, procedures, potential risks and benefits, and the time commitment required. Participants were also assured of their right to withdraw from the study at any point without any repercussions. Confidentiality and the safety of all participants were rigorously maintained. Regular monitoring and supervision were conducted to promptly address any ethical concerns that arose during the study.

3.13 Informed consent

The process of obtaining informed consent ensured that all participants were thoroughly informed about the study and voluntarily agreed to participate. Each individual received a detailed information sheet explaining the purpose, procedures, duration, potential risks, benefits, and their rights, including the freedom to withdraw from the study at any time without providing a reason. Additionally, participants were encouraged to discuss any concerns with senior authorities. To safeguard privacy, participants were assured that their data would be anonymized, ensuring they could not be identified in any publications or reports. The information was handled with strict confidentiality. Before obtaining written consent, the study was explained verbally in detail to ensure participants fully understood its scope and implications. After acknowledging their comprehension, participants signed a consent form, confirming their voluntary agreement to participate in the research.supervision were conducted to promptly address any ethical concerns that arose during the study.

Chapter-IV Results

The findings are presented below exclusively through visual formats, illustrating the sociodemographic characteristics, pain levels, spasticity levels, and quality of life scores of the participants. Additionally, visual representations highlight the associations between pain and quality of life, as well as between spasticity and quality of life.

4.1 Socio-demographic

4.1.1 Age range of the participants

The bar graph illustrates the largest age group was 18–25 years (39.13%, n=45), followed by 26–35 years (19.13%, n=22). Both the 36–45 and 46–55 age groups accounted for 17.39% each (n=20). Smaller portions were observed in the 56–65 group (5.28%, n=6) and 66–75 group (1.74%, n=2). This indicates that younger adults made up the majority of the study participants. (Figure-1)

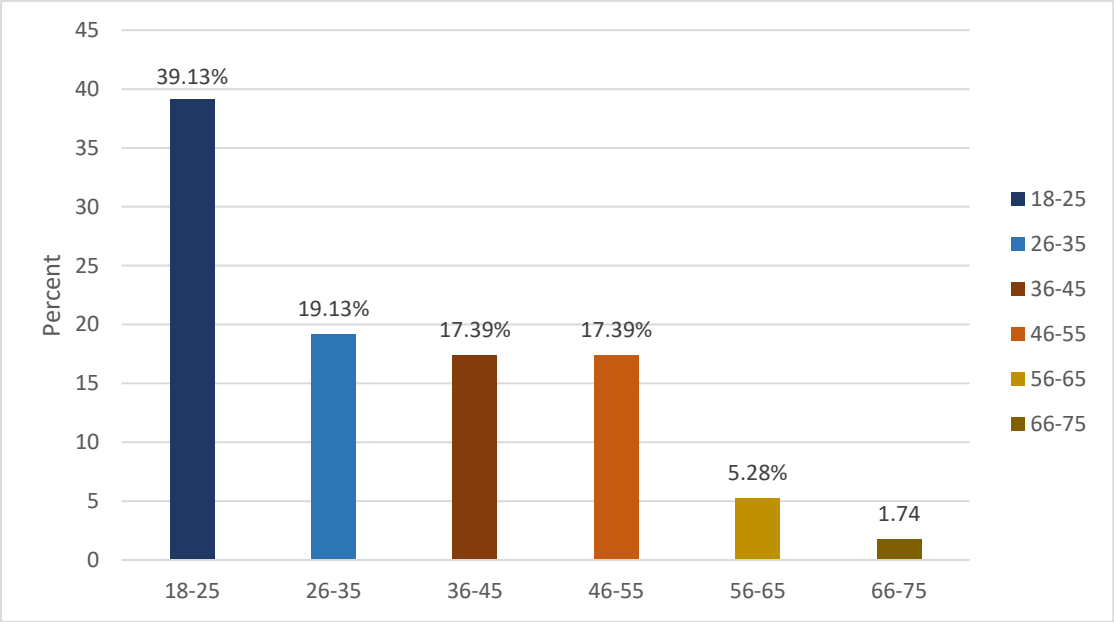


Figure-1: Age range of the participant

4.1.2 Gender of the participants

Here the pie chart illustrates that out of the total participants, 86.96% (n=100) were male and 13.04% (n=15) were female. This shows a significant predominance of male participants in the sample group. (Figure-2)

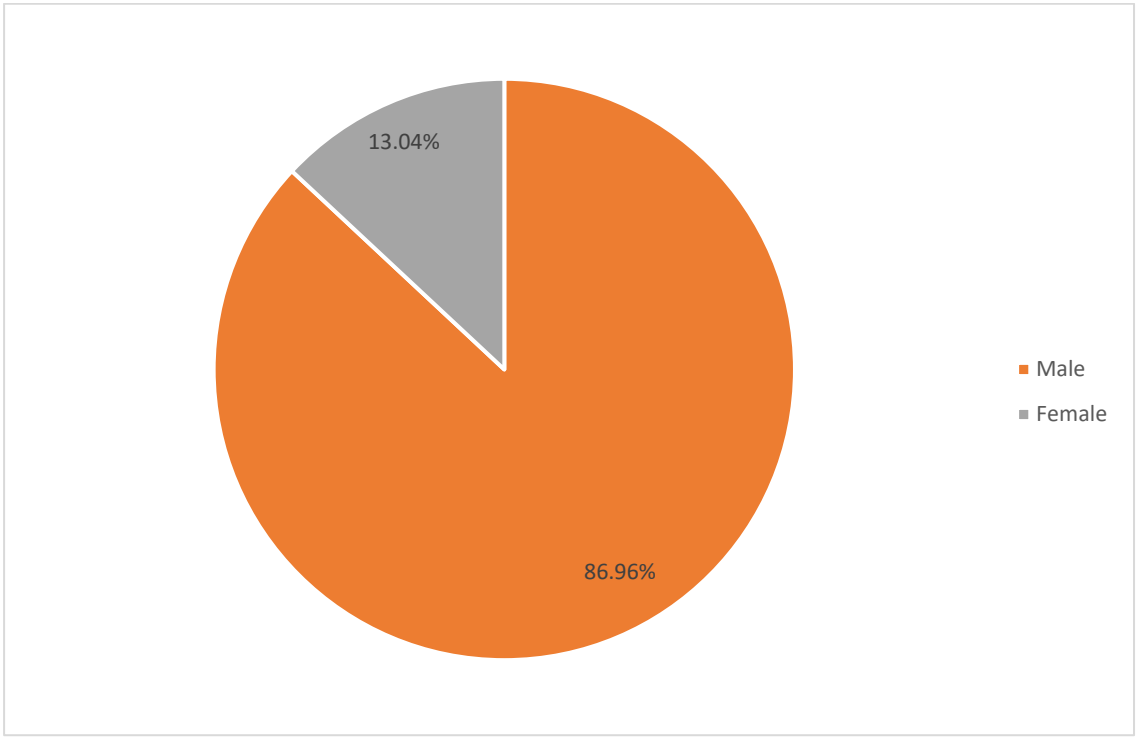


Figure-2: Gender of the participant

4.1.3 Marital status of the participants

This pie chart displays the marital status of participants around 67.83% (n=78) were married, while 32.17% (n=37) were unmarried. This indicates a higher proportion of married individuals in the sample population. (Figure-3)

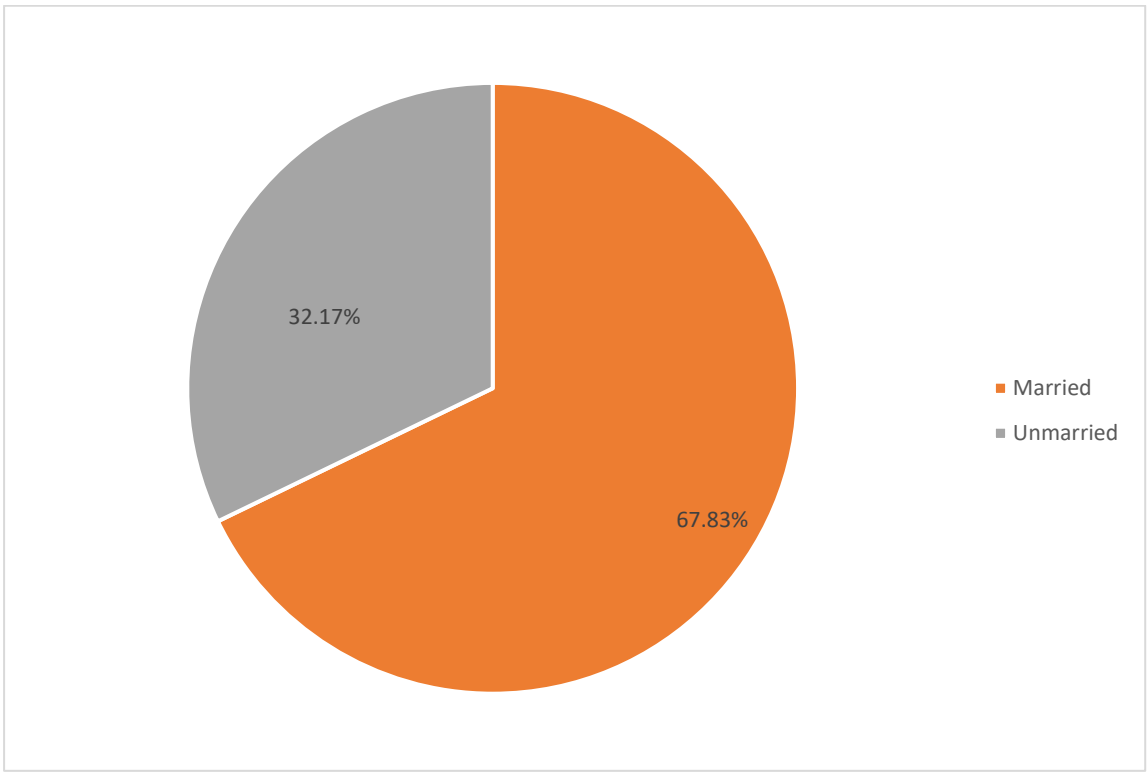


Figure-3: Marital status of the participant

4.1.4 Living area of the participants

The bar chart illustrates the residence distribution of participants here a majority of the participant which is about 80.87% (n=92) resided in rural areas, followed by 15.65% (n=18) in urban areas and 3.48% (n=4) in semi-urban settings. This indicates that most participants were from rural backgrounds. (Figure -4.)

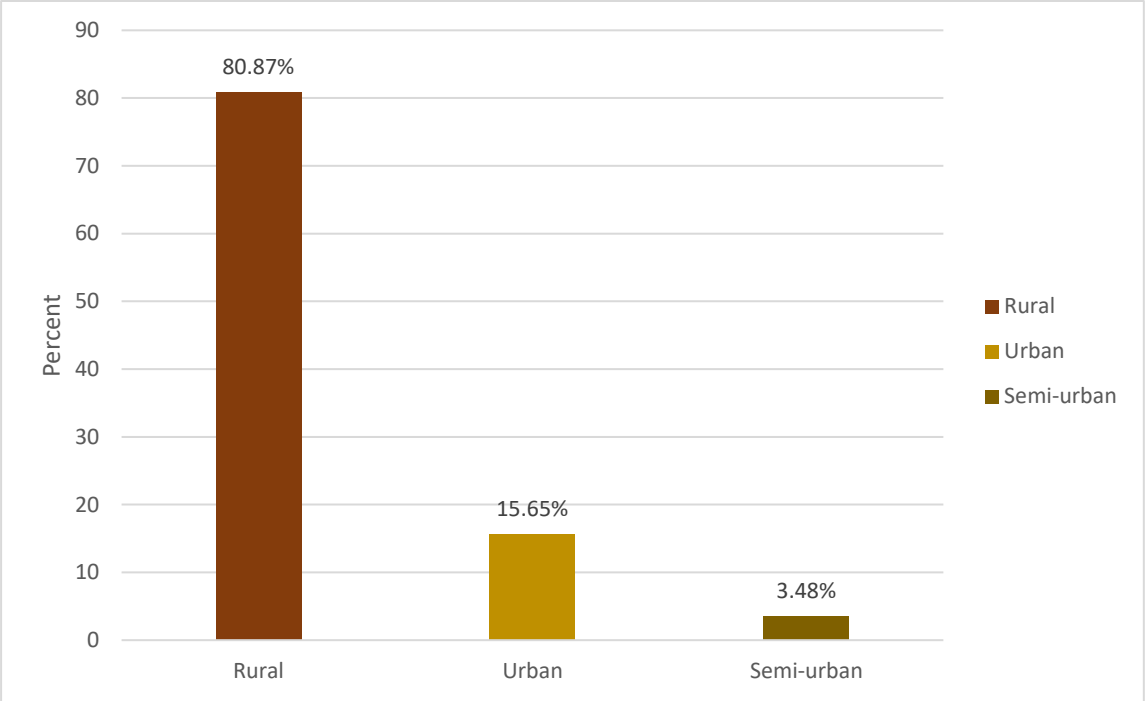


Figure-4: Living area of the participant

4.1.5 Education level of the participants

The bar chart shows the educational background of participants in the study on the impact of pain and spasticity on quality of life in individuals with spinal cord injury. Most had secondary education 39.13% (n=45), followed by higher secondary 27.83%, (n=32), no formal schooling 13.04%, (n=15), and primary 10.43%, (n=12). Only a few were graduates 7.83%, (n=9), while 0.87% (n=1) each had education at the master's level and in other categories. (Figure 3).

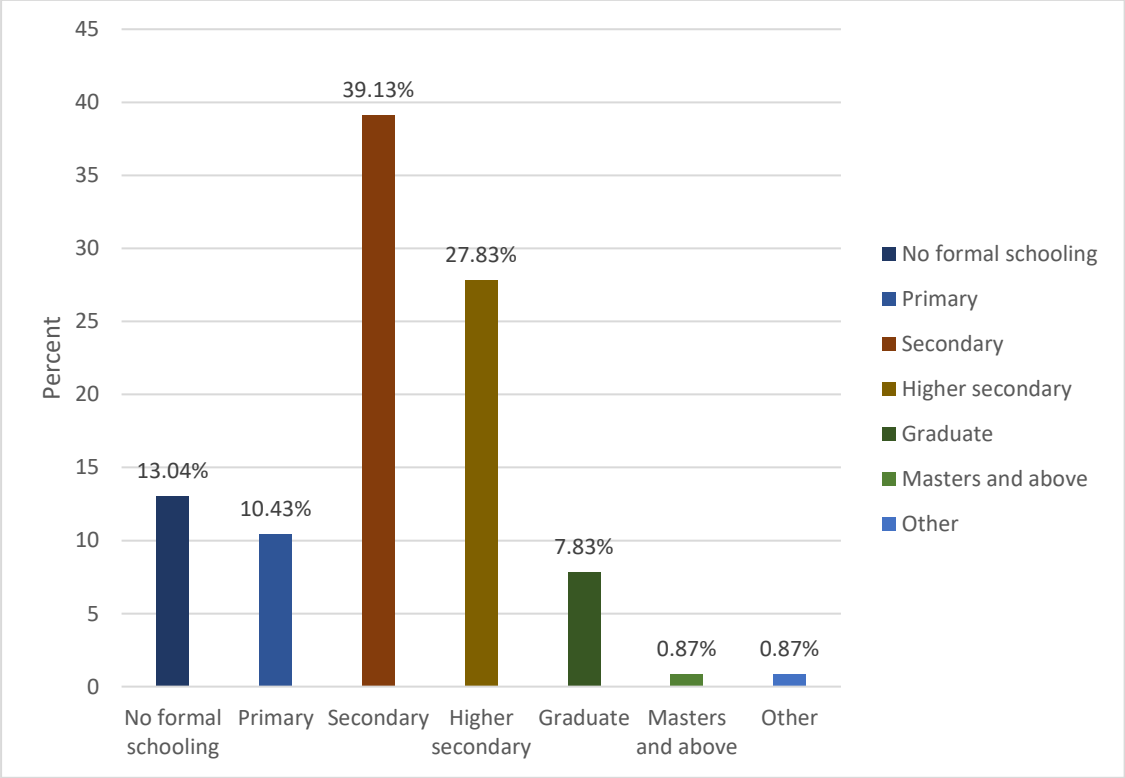


Figure-5: Education level of the participant

4.1.6 Occupation of the participant

The bar chart illustrates the occupational status of individuals with spinal cord injury affected by pain and spasticity. Among the respondents, 20.87% each were businessmen (n=24), day laborers (n=24), and farmers (n=24), while 19.13% were students (n=22). Others included service holders 7.87% (n=9), housewives 7.83%, (n=9), garments workers 1.74% (n=2), and jobless individuals 0.87% (n=1). (Figure-6).

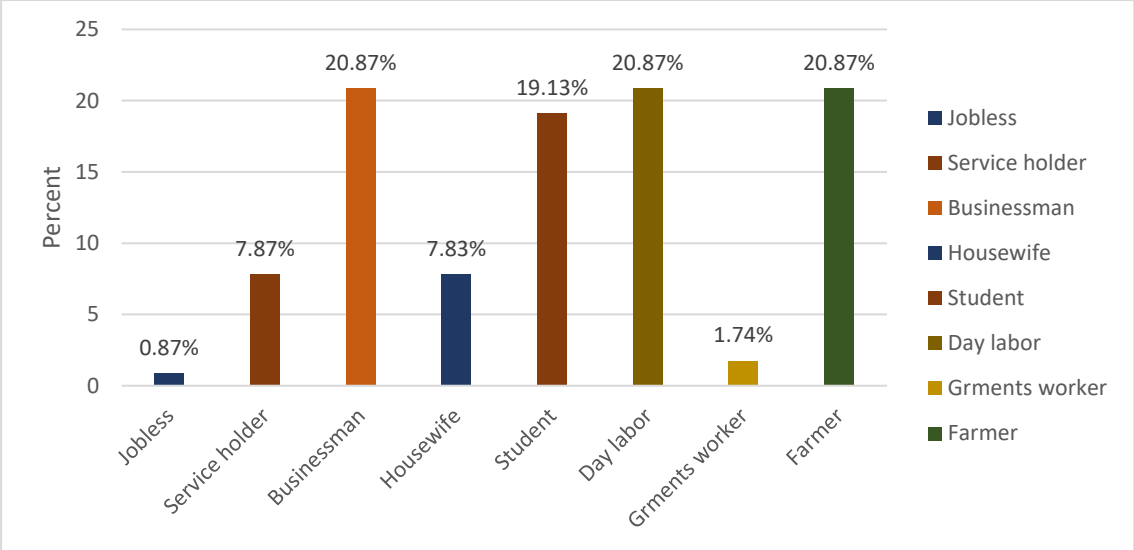


Figure-6: Occupation of the participant

4.2 Level of pain of the participant (VAS scale)

The chart represents the severity of pain experienced by individuals with spinal cord injury. A majority (58.26%, n=67) reported moderate pain, followed by 39.13% (n=45) who experienced severe pain. Only 2.61% (n=3) reported mild pain levels. This indicates that pain is a significant issue, with most individuals experiencing moderate to severe discomfort. (Figure 5**)**.

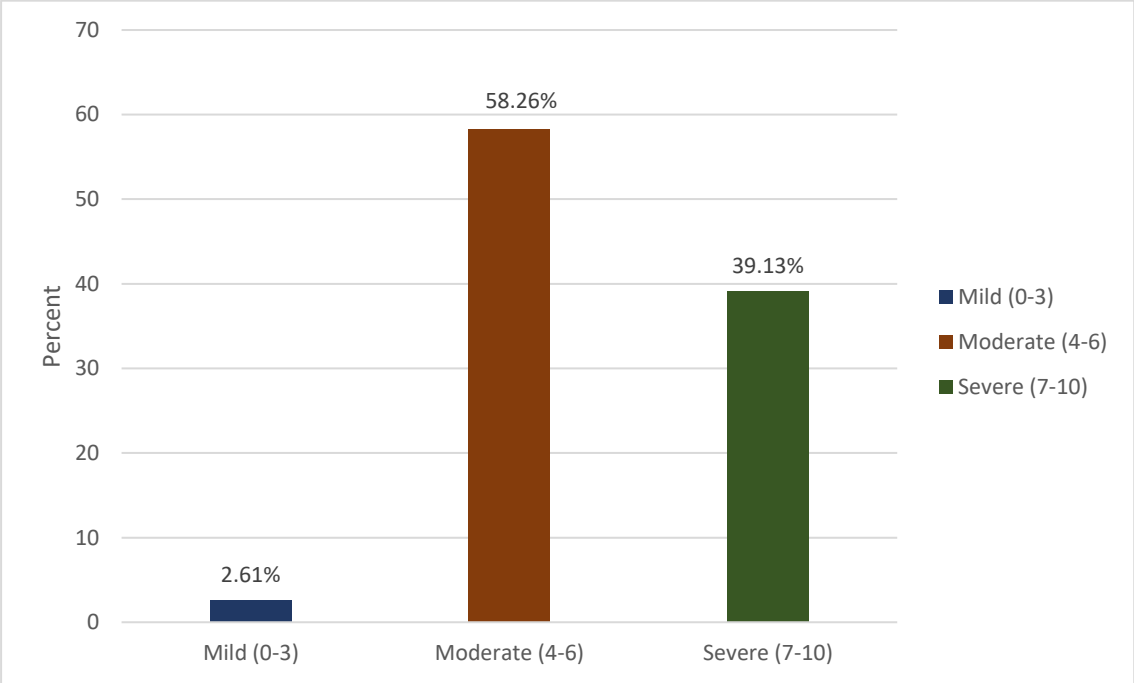


Figure-7: Pain level of the participant (VAS scale)

4.3 Level of spasticity of the participant (MAS scale)

The bar chart presents the impact of pain and spasticity on the quality of life in individuals with spinal cord injury. Among participants, 52.17% (n=60) reported moderate pain and spasticity levels, while 45.22% (n=52) experienced severe levels. Only 2.61% (n=3) reported mild symptoms. This indicates a substantial burden of moderate to severe pain and spasticity affecting their overall well-being. (Figure 6).

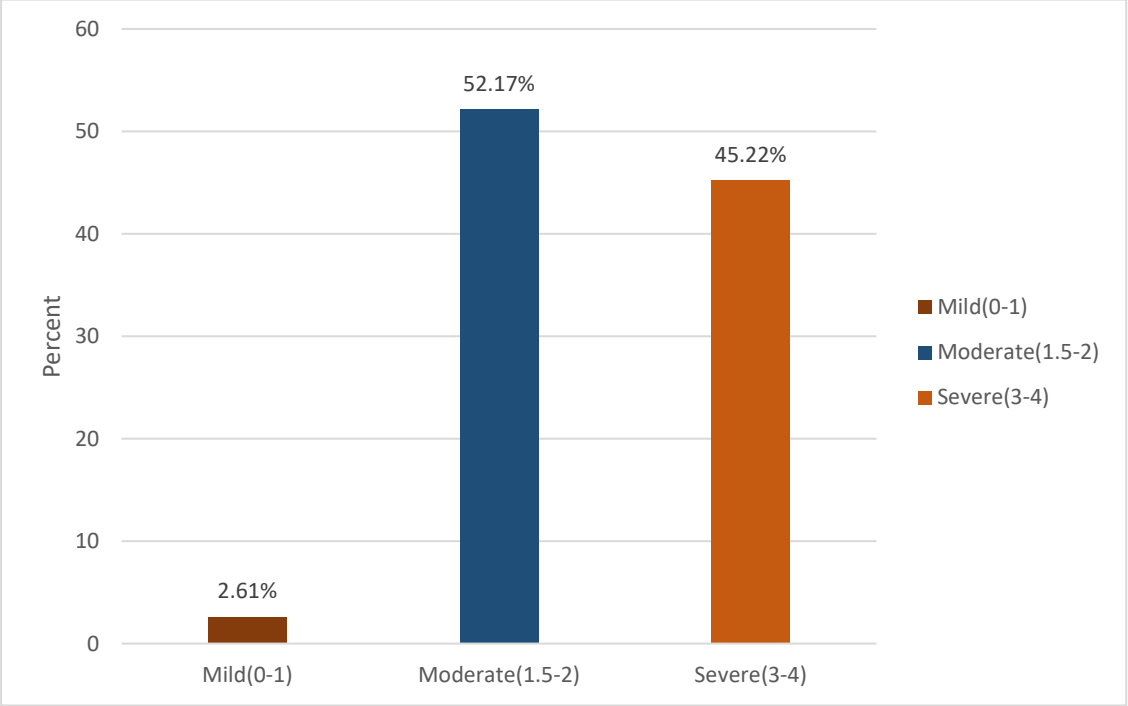


Figure-8: Muscle tone (MAS scale)

4.4 Quality of life of the participant

4.4.1 Physical functioning of the participant

The bar graph shows the quality of life among 115 individuals with spinal cord injury affected by pain and spasticity. A significant majority 81.74% (n=94) rated their quality of life as "Very poor status," while 13.91% (n=16) reported "Fair status." Only 4.35% (n=5) experienced a "Poor status," and none reported a "Good status." This highlights a severe negative impact of pain and spasticity on overall well-being in this population. (Figure-9).

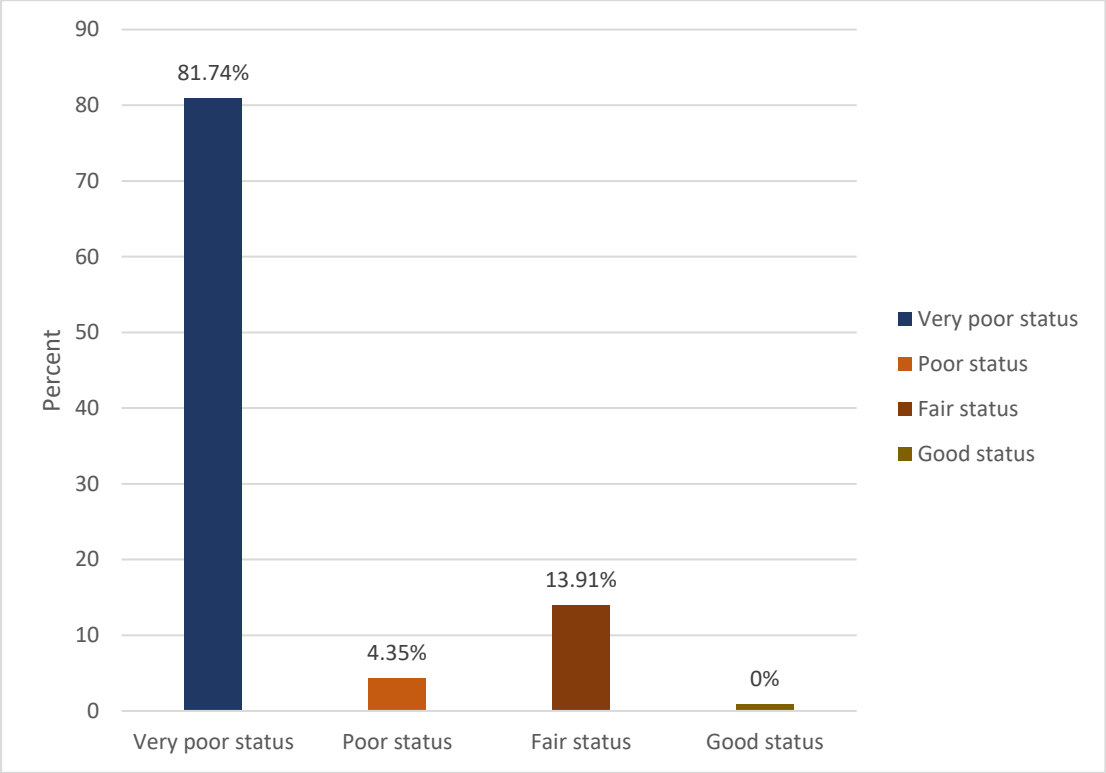


Figure-9: physical functioning of the participant

4.4.2 Role of limitation due to physical health

In the bar graph we can see the quality of life among 115 individuals with spinal cord injury affected by pain and spasticity. A significant majority 80.87% (n=93) rated their quality of life as "Very poor status," while 19.13% (n=22) reported "Poor status." None reported "Fair" or "Good status." This highlights a severe negative impact of pain and spasticity on overall well-being in this population. (Figure-10)

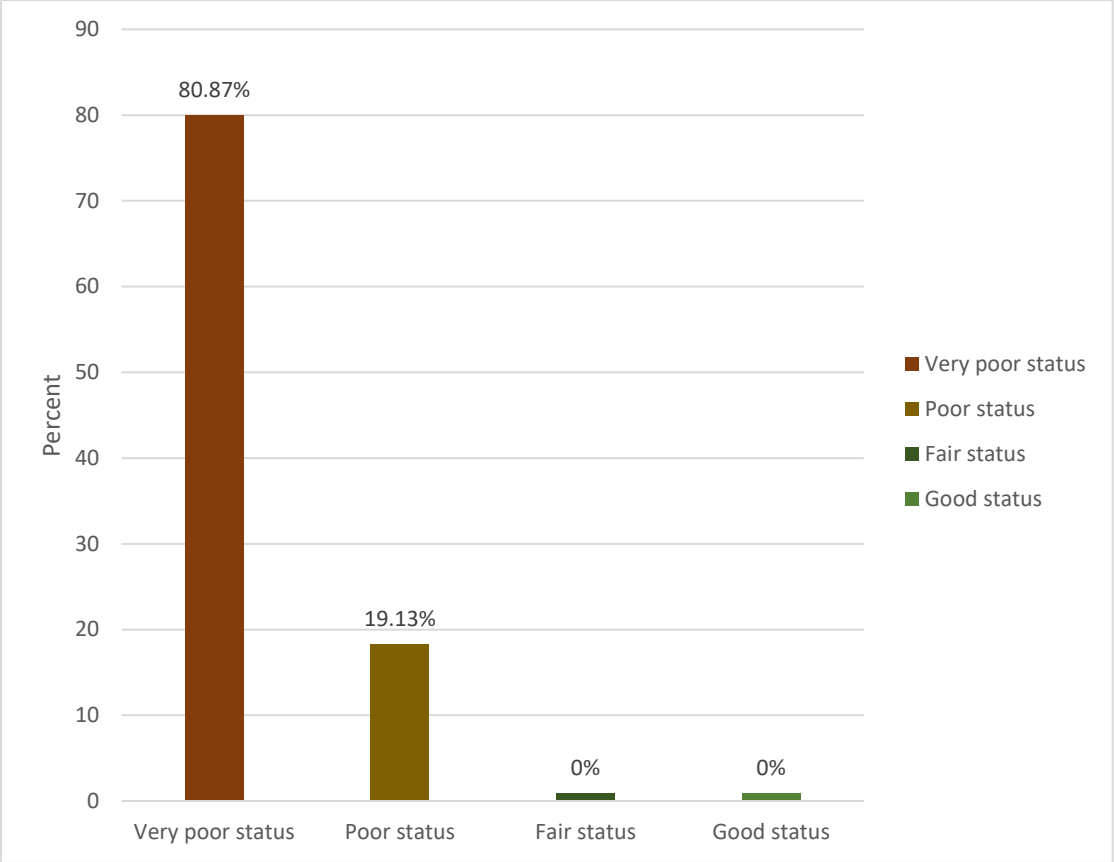


Figure-10: Role of limitation due to physical health

4.4.3 Role of limitation due to emotional problem

The bar graph illustrates the highest proportion 40.00% (n=46) reported a "Poor status," followed by both "Very poor status" and "Fair status" at 21.74% (n=25 each). Additionally, 16.52% (n=19) of participants rated their quality of life as "Good status." These findings reflect varying degrees of physical limitations, with a notable portion experiencing poor to very poor outcomes. (Figure-11)

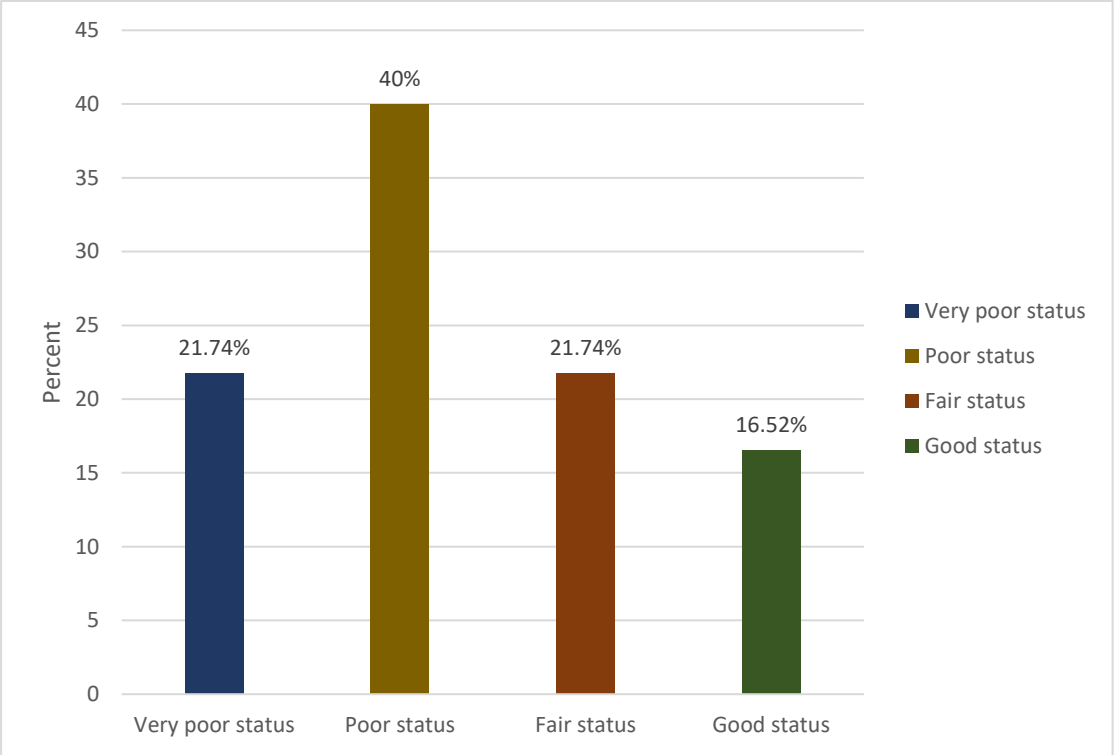


Figure-11: Role limitation due to emotional problem

4.4.4 Energy level of the participant

This bar graph shows the highest proportion 37.39% (n=43) reported a "Fair status," followed by "Poor status" at 26.96% (n=31), "Very poor status" at 18.26% (n=21), and "Good status" at 17.39% (n=20). These results suggest a wide variation in perceived quality of life, with a notable portion still experiencing considerable limitations. (Figure-12)

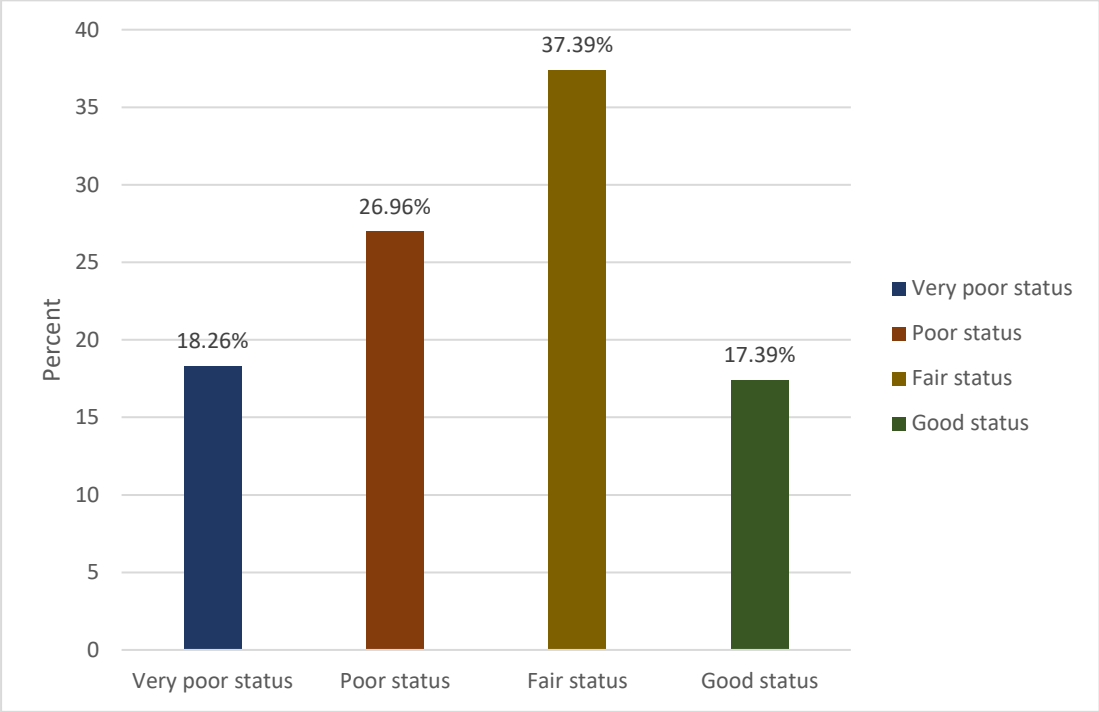


Figure-12: Energy level of the participant

4.4.5 Emotional well-being of the participant

The bar graph illustrates highest proportion 27.83% (n=32) reported a "Good status," followed closely by "Poor status" at 26.96% (n=31), "Fair status" at 26.09% (n=30), and "Very poor status" at 19.13% (n=22). These findings indicate a relatively balanced distribution across all categories, with a notable number reporting moderate to good quality of life. (Figure-13)

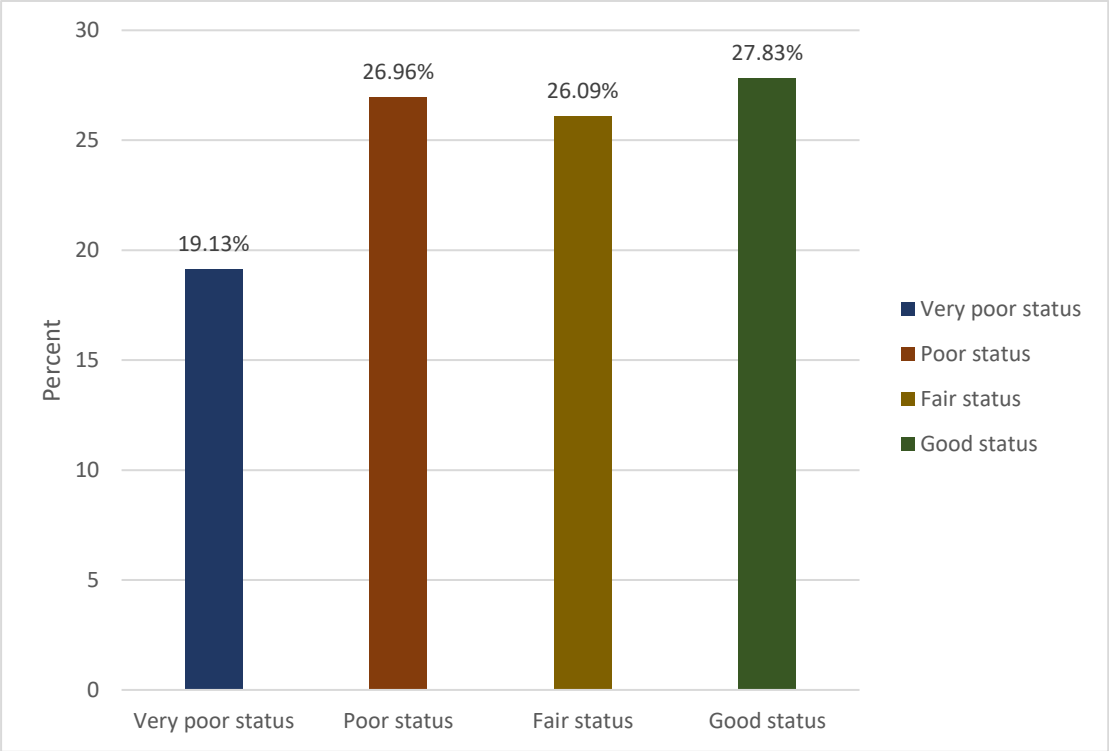


Figure-13: Emotional well-being of the participant

4.4.6 Social functioning of the participant

The bar graph shows nearly half 47.83% (n=55) rated their quality of life as "Very poor status," followed by 43.48% (n=50) reporting "Poor status." Only 6.09% (n=7) indicated a "Fair status," and a very small proportion (2.61%, n=3) reported a "Good status." These findings highlight a predominantly low perceived quality of life in this population. (Figure-14)

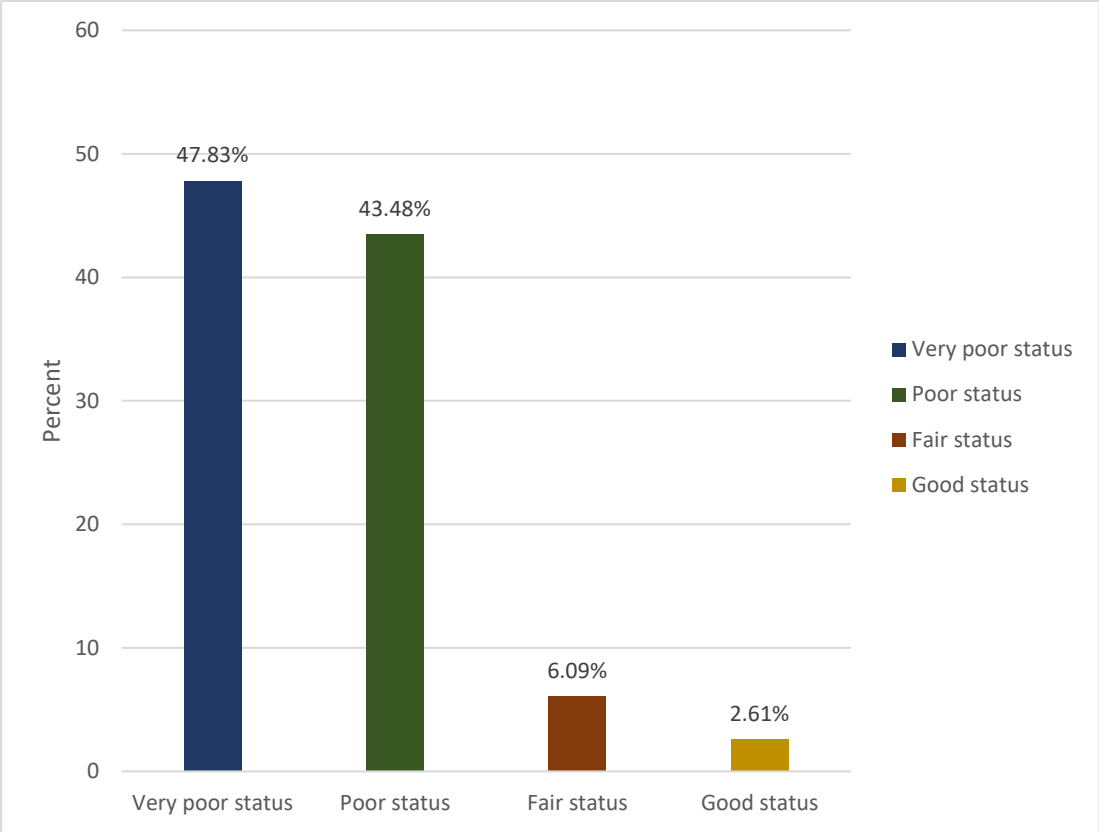


Figure-14: Social functioning of the participant

4.4.7 Pain of the participant

The bar graph illustrates a majority portion reported very poor pain status 33.04% (n=38), while good pain status was reported by 25.22% (n=29). Additionally, 23.48% (n=27) experienced a fair status, and 18.26% (n=21) reported a poor pain status. These findings reflect a wide distribution of pain experiences within the population. (Figure-15)

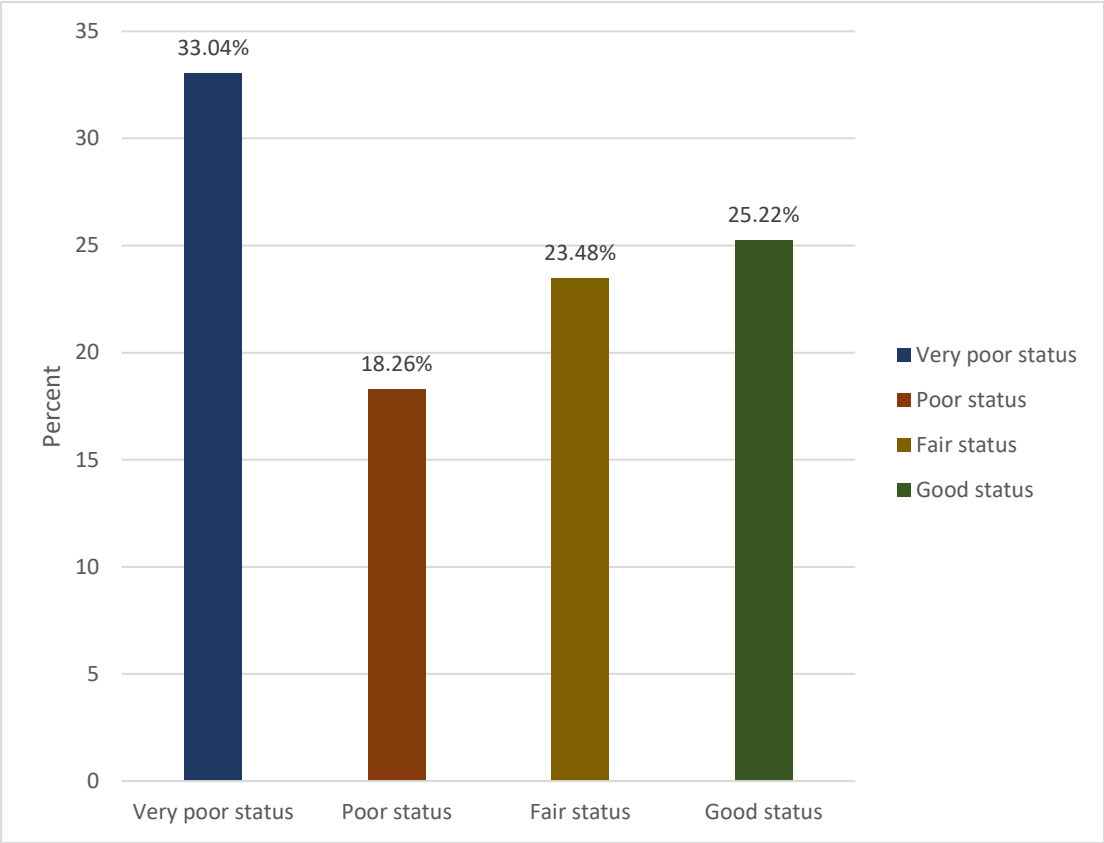


Figure-15: Pain of the participant

4.4.8 General health of the participant

The bar graph illustrates majority reported a fair pain status (46.96%, n=54), followed by poor pain status at 40.00% (n=46). A smaller portion experienced very poor pain status (10.43%, n=12), and only 2.61% (n=3) reported a good pain status. These results suggest that most participants experience moderate to poor levels of pain. (Figure-16)

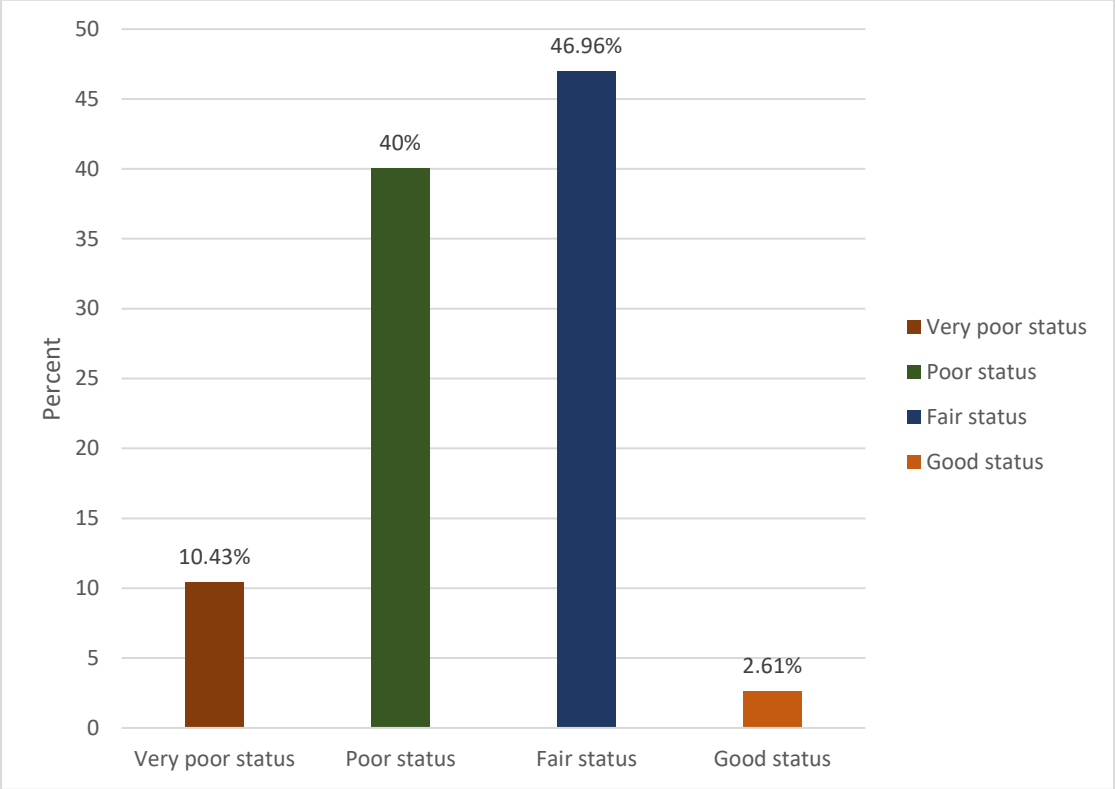


Figure-16 General health of the participant

4.5 Association between pain and quality of life

Table-1: Association between pain and quality of life of the spinal cord injury patient

Pain vs QoL domain	Chi-Square (χ^2)	df (Degree of Freedom)	P value	Significant
Pain vs physical functioning	6.642	4	0.156	Not statistically significant
Pain vs role limitation (physical health)	1.828	2	0.401	Not statistically significant
Pain vs role limitation (emotional problem)	18.719	6	0.005	Statistically Significant
Pain vs energy level	17.713	6	0.007	Statistically Significant
Pain vs emotional well-being	19.699	6	0.003	Statistically significant
Pain vs social functioning	57.999	6	0.000	Highly statistically significant
Pain vs pain	32.263	6	0.000	Highly statistically significant
Pain vs general health	22.249	6	0.001	Statistically significant

The results of the Chi-square tests analyzing the association between pain level (as measured by the VAS scale) and various domains of quality of life among individuals with spinal cord injury revealed mixed findings. No statistically significant associations were found between pain and physical functioning ($\chi^2 = 6.642$, df = 4, $p = 0.156$) or role limitations due to physical health ($\chi^2 = 1.828$, df = 2, $p = 0.401$). However, significant associations emerged in several other domains. Role limitations due to emotional problems demonstrated a statistically significant association ($\chi^2 = 18.719$, df = 6, $p = 0.005$), as did energy level ($\chi^2 = 17.713$, df = 6, $p = 0.007$) and emotional well-being ($\chi^2 = 19.699$, df = 6, $p = 0.003$). Particularly strong associations were observed with social functioning ($\chi^2 = 57.999$, df = 6, $p < 0.001$) and pain perception itself ($\chi^2 = 32.263$, df = 6, $p < 0.001$), both highly statistically significant. General health status also showed a significant association with pain level ($\chi^2 = 22.249$, df = 6, $p = 0.001$). These findings indicate that while pain may not directly influence physical limitations, it has a profound and statistically significant impact on emotional, social, and perceptual domains of quality of life.

4.6 Association between spasticity and quality of life

Table-2: Association between spasticity and quality of life of the spinal cord injury

Spasticity vs QoL domain	Chi-Square (χ^2)	df (Degree of Freedom)	P value	Significant
Spasticity vs physical functioning	8.407	4	0.078	Not statistically significant
Spasticity vs role limitation (physical health)	8.761	2	0.013	Statistically significant
Spasticity vs role limitation (emotional problem)	8.579	6	0.199	Not statistically significant
Spasticity vs energy level	4.816	6	0.568	Not statistically significant
Spasticity vs emotional well-being	6.760	6	0.344	Not statistically significant
Spasticity vs social functioning	8.972	6	0.175	Not statistically significant
Spasticity vs pain	9.804	6	0.133	Not statistically significant
Spasticity vs general health	4.272	6	0.640	Not statistically significant

The relationship between spasticity and various domains of quality of life among individuals with spinal cord injury was examined using Chi-Square tests. The analysis

revealed a statistically significant association between spasticity and role limitations due to physical health ($\chi^2 = 8.761$, df = 2, $p = 0.013$), suggesting that increased muscle tone is associated with greater physical role impairment. However, no statistically significant associations were found between spasticity and other quality of life domains, including physical functioning ($\chi^2 = 8.407$, df = 4, $p = 0.078$), role limitations due to emotional problems ($\chi^2 = 8.579$, df = 6, $p = 0.199$), energy level ($\chi^2 = 4.816$, df = 6, $p = 0.568$), emotional well-being ($\chi^2 = 6.760$, df = 6, $p = 0.344$), social functioning ($\chi^2 = 8.972$, df = 6, $p = 0.175$), pain ($\chi^2 = 9.804$, df = 6, $p = 0.133$), and general health ($\chi^2 = 4.272$, df = 6, $p = 0.640$). These findings suggest that spasticity primarily affects physical role participation but does not have a statistically significant influence on other quality of life indicators in this population.

Chapter-V Discussion

This study was conducted to explore the influence of two common complications—pain and spasticity—on the quality of life (QoL) among individuals with spinal cord injury (SCI). The findings revealed distinct patterns in how these factors affect various domains of life, underlining the complex nature of living with SCI. In comparing the sociodemographic characteristics of this study with those from international research conducted in Denmark by Andresen et al. (2016) and in the United States by Westerkam et al. (2017), several contextual differences emerge that may account for variations in the impact of pain and spasticity on quality of life among individuals with spinal cord injury (SCI). Notably, this study included a younger population, with the highest proportion (39.13%) in the 18–25 age group, in contrast to a mean age of 54.6 years in the Danish cohort and 45.1 years in the American sample. This age disparity suggests potential differences in emotional response, adaptability, and vocational disruption post-injury, as younger individuals may experience greater psychological and functional challenges related to interrupted education or early-stage careers. Gender distribution in this study revealed a higher proportion of male participants (86.96%), exceeding the 77% and 72.9% male representation reported in the Danish and American studies respectively. While all studies indicate male predominance, the relatively higher male proportion in the present sample may reflect local healthcare-seeking behaviors or sociocultural dynamics influencing service utilization. This study also highlighted a primarily rural sample (80.87%), a demographic largely unaddressed in the referenced studies, which were conducted in high-income, predominantly urbanized settings. This rural predominance is a critical contextual factor, as individuals from rural areas may face additional barriers to specialized rehabilitation services, continuity of care, and social reintegration. Such limitations likely contribute to the observed poor outcomes in quality of life domains, particularly physical functioning and social engagement.In terms of education, most participants in this study had completed only secondary (39.13%) or higher secondary (27.83%) levels, suggesting relatively lower educational attainment compared to the Danish study, where participants had an average of 13.6 years of education. Lower education levels may affect health literacy, adherence to pain and spasticity management strategies, and ability to navigate complex healthcare systems, potentially exacerbating the impact of SCI on quality of life.Employment status also differed substantially. Whereas a notable portion of participants in the

Danish study were employed either full-time or part-time, participants in the present study were largely engaged in informal occupations such as farming, day labor, or were students, with formal employment (e.g., service holders) comprising only 7.87%. This may limit access to structured support systems such as workplace rehabilitation or insurance coverage, thereby influencing post-injury socioeconomic stability and rehabilitation outcomes.

A significant portion of the participants reported experiencing both pain and spasticity, emphasizing the high prevalence of these conditions post-injury. The data showed that pain had statistically significant associations with several domains of QoL, particularly emotional well-being, energy level, general health perception, social functioning, and emotional role performance. These associations suggest that pain affects not just the body but the mind and daily interactions. Despite its subjective nature, pain exerted a profound influence on participants' mood, motivation, social connections, and overall emotional balance. Interestingly, no significant relationship was found between pain and physical functioning or physical role limitations. This suggests that although individuals may still physically perform tasks, the emotional burden of persistent pain affects how they experience and engage with the world. In contrast, spasticity demonstrated a very different pattern. It showed a statistically significant relationship only with role limitations due to physical health. Other quality of life domains, such as energy, emotional well-being, social life, or general health, were not significantly affected. This implies that spasticity primarily interferes with physical performance and independence, such as mobility, dressing, or managing personal care, rather than emotional or social well-being. In essence, while pain tends to undermine emotional and psychological resilience, spasticity emerges more as a physical barrier, constraining autonomy and physical capability. This differentiation between the effects of pain and spasticity supports the idea that these two conditions should not be treated as a singular problem but understood as unique challenges with different impacts on life quality.To further validate these findings and place them in a broader clinical context, comparisons were made with existing international studies. A large nationwide study conducted by Andresen et al., (2016) in Denmark offers compelling parallels. This study involved 537 individuals living with traumatic spinal cord injury and examined how pain and spasticity influenced QoL, using self-reported questionnaires to collect data. Similar to the present study, Andresen et al., (2016) found that 73% of participants experienced

chronic pain, and 71% experienced spasticity. Pain was shown to have a much stronger impact on QoL than spasticity. Specifically, pain intensity and interference were linked with lower scores across multiple QoL domains, including physical health, mental well-being, and overall life satisfaction. Participants who reported neuropathic pain—described as burning, tingling, or electric shock-like sensations—were particularly affected, reporting worse emotional and physical health outcomes. This observation mirrors the current study's finding that pain negatively impacts emotional functioning, energy levels, and social participation, highlighting how persistent pain can be deeply distressing and isolating, even if the person remains physically functional. In contrast, while spasticity was prevalent, its interference score was lower and had less influence on mental or emotional health. This aligns with our results, where spasticity only showed a significant association with role limitations due to physical health and no statistical link with social or emotional domains. Andresen et al. also observed that women and individuals with higher pain interference scores had significantly lower QoL, reinforcing the notion that the psychological and social impact of pain may differ across subgroups. These findings validate the multidimensional toll pain takes on individuals with SCI and highlight how emotional distress and social withdrawal are major consequences of unaddressed chronic pain.

Further confirmation of the differing effects of pain and spasticity is found in a study conducted by Vural et al. in Turkey. This research focused specifically on the role of spasticity in quality of life and used both the Modified Ashworth Scale (MAS) and the WHOQOL-BREF to assess participants. Vural et al. reported that increased levels of spasticity were significantly associated with poor physical health and diminished social relationships. Participants with high spasticity experienced difficulty in mobility, self-care, and independence, which often translated into a reduced sense of physical control and greater reliance on caregivers. These findings partly align with the current study's conclusion that spasticity mainly affects physical functioning. However, the Turkish study also found significant associations with social domains, which contrasts with the findings in the present study where such associations were not statistically significant. The discrepancy could be due to differences in sample size, cultural contexts, access to rehabilitation services, or severity of spasticity in the population studied. Vural et al. emphasized the need for comprehensive spasticity management, recommending physical therapy, medication, and regular assessment to prevent the decline of physical

independence and reduce caregiver burden. Lastly, another valuable contribution comes from a study conducted by Hassanijirdehi et al., (2015) in Iran, which examined musculoskeletal pain and its impact on QoL among war veterans with SCI. The researchers found that chronic pain, especially in the shoulders and lower back, was linked to lower scores in general health and emotional well-being. Participants often reported fatigue, sleep disturbances, high stress levels, and reduced life satisfaction—outcomes that strongly mirror those found in the current study. These findings reinforce the conclusion that pain is a multi-dimensional burden, affecting not only physical comfort but also energy, mood, and social engagement. The Iranian study also stressed the importance of combining pharmacological, physical, and psychological treatments to address the complex effects of pain and improve overall quality of life in SCI populations.Together, the findings from these three international studies strongly support the results of the current research. Across all studies, pain emerges as a dominant factor that deeply influences emotional, psychological, and social aspects of quality of life in individuals with spinal cord injury. Pain was consistently linked to lower energy, reduced social participation, emotional distress, and poor sleep, which in turn lead to reduced well-being and increased risk of mental health issues like depression or anxiety. Even in the absence of direct physical disability, the emotional and cognitive weight of pain can diminish a person's perceived quality of life. In contrast, spasticity appears more confined to physical limitations such as reduced mobility, stiffness, and challenges in performing routine tasks independently. Although its impact on emotional or social life may be indirect, spasticity still presents a major challenge to daily functioning and physical independence, especially in cases of high severity. The international literature thus reinforces the need to address pain and spasticity as distinct clinical concerns, each with unique consequences and management requirements. Effective rehabilitation must go beyond general care and instead adopt symptom-specific approaches. Understanding the distinct pathways through which pain and spasticity influence different domains of life can help clinicians, therapists, and caregivers create better, more personalized interventions that not only restore function but also enhance emotional and social well-being in the long term.

Limitation of the study

The study's cross-sectional design prevents establishing causal relationships between variables, the sample was small, non-random, and geographically limited, reducing generalizability and also key psychological and social factors like depression, anxiety, and social support were not included.

Chapter-VI Conclusion& recommendation

6.1 Conclusion

The present study explored the impact of pain and spasticity on the quality of life (QoL) in individuals with spinal cord injury (SCI). The findings revealed that a significant proportion of participants experienced moderate to severe levels of pain and spasticity, which appeared to influence various aspects of their daily functioning and well-being. Descriptive data showed poor physical functioning, limited social engagement, and overall reduced health status among the majority of participants. Through Chi-square analysis, pain was found to be significantly associated with several domains of QoL, particularly emotional well-being, energy levels, general health, social functioning, and emotional role limitations. However, it did not show any significant relationship with physical functioning or role limitations due to physical health, suggesting that pain may not directly affect physical abilities but has a considerable negative impact on emotional and social life.In contrast, spasticity demonstrated a statistically significant association only with role limitations due to physical health. No significant associations were found between spasticity and emotional well-being, energy levels, pain perception, or general health. This indicates that spasticity primarily interferes with physical role participation, such as mobility and daily task performance, without having a strong influence on the psychological or social dimensions of quality of life.

These results highlight the distinct ways in which pain and spasticity contribute to reduced quality of life among SCI individuals. Pain tends to affect emotional and psychosocial health, while spasticity predominantly restricts physical role performance. Therefore, effective rehabilitation strategies should adopt a multidimensional approach—emphasizing pain management for emotional and social well-being, alongside physical therapy to manage spasticity. Tailored interventions focusing on both aspects could lead to significant improvements in the overall quality of life for individuals living with spinal cord injuries.

6.2 Recommendation

Given that this study identified distinct yet limited associations between pain, spasticity, and various quality of life domains in individuals with spinal cord injury, future research should adopt a longitudinal, multi-center design to better understand how these relationships evolve over time. A follow-up study could investigate whether pain and spasticity continue to impact QoL in the same domains as patients move from acute care to rehabilitation and long-term living. Additionally, integrating qualitative interviews alongside quantitative measures could offer deeper insights into the lived experiences behind the data, capturing emotional, psychological, and social burdens that standardized tools might miss. Expanding the study population to include more gender-balanced, urban-rural diverse, and age-varied samples would also improve generalizability. Finally, future studies should explore the effectiveness of targeted interventions, such as cognitive-behavioral therapy for pain or advanced physiotherapy for spasticity, to evaluate not just correlations but causative outcomes in QoL improvement.

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Appendix-1

বাংলাদেশ হেলথ্ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
Bangladesh Health Professions Institute (BHPI)
(The Academic Institute of CRP)

Ref: CRP-BHPI/IRB/12/2024/1012 Date: 15/12/2024

To
Samia Islam Tisha
4th Year B.Sc. in Physiotherapy
Session: 2019-20 Student ID: 112190489
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of the thesis proposal "Impact of pain and spasticity on quality of life in individuals with spinal cord injury" by ethics committee.

Dear Samia Islam Tisha,
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 and Professor Dr. Md. Obaidul Haque, Vice Principal, BHPI, CRP as thesis supervisor. The Following documents have been reviewed and approved:

Sl. No.	Name of the Documents
1	Research Proposal
2	Questionnaire (English version)
3	Information sheet & consent form.

The purpose of the study is to determine the impact of pain and spasticity on quality of life in individuals with spinal cord injury. The study involves use of a VAS, SF-36 and Modified Ashworth Scale (MAS) to identify the pain, spasticity and quality of life that may take 20 to 30 minutes to answer the questionnaire or any instruction or precaution for collection of specimen and there is no likelihood of any harm to the participants and participation in the study may benefit the participants. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at **9 AM on 15th July 2024 at BHPI (44thIRB 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
Associate professor & Course Coordinator, MRS
Member Secretary, Institutional Review Board (IRB)
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

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Appendix-2

29th December, 2024

Head

Department of Physiotherapy

Centre for the Rehabilitation of the Paralysed (CRP)

Chapain, Savar, Dhaka-1343

Through: Head, Department of Physiotherapy, BHPI.

Subject: Application for seeking permission to collect data for conducting research project.

Sir,

With due to respect and humble submission to state that I am Samia Islam Tisha, a student of 4th year B.Sc. in physiotherapy at Bangladesh Health Professions Institute (BHPI). The Ethical committee has approved my research project entitled: "Impact of pain and spasticity on quality of life in individuals with spinal cord injury" under the supervision of Professor Dr. Md. Obaidul Haque, Vice Principal, BHPI, CRP. I want to collect data for my research project from the Department of Physiotherapy at CRP. So, I need permission for data collection from the Spinal Cord Injury Unit of Physiotherapy Department at CRP-Savar, Dhaka-1343. I would like to assure that anything of the study will not be harmful for the participants and the Department itself.

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

Yours faithfully,
Samia Islam Tisha
Samia Islam Tisha

4th Year B.Sc. in Physiotherapy

Class Roll: 05; Session: 2019-20

Bangladesh Health Professions Institute (BHPI)

(An academic Institution of CRP)

CRP-Chapain, Savar, Dhaka-1343.

Recommended & forwarded
29.12.24
Prof. Md. Obaidul Haque
Vice-Principal
BHPI, CRP, Savar, Dhaka

Allow for data collection from SCI unit.
MHossain 31/12/24
MUZAFOR HOSSAIN
Consultant-Physiotherapy and Incharge
Spinal Cord Injury (SCI) Unit
Physiotherapy Department
CRP Chapain, Savar, Dhaka-1343

Approved
31/12/24
Prof. Dr. Mohammad Anwar Hossain, PhD
Professor Physiotherapy Department BHPI
Senior Consultant & Head
Physiotherapy Department
CRP, Savar, Dhaka-1343

Forwarded
Dr. Shazal Kumar Das, PhD
Assistant Professor and Head
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka-1343.

Appendix-3

Information sheet (English)

Research study tittle: Impact of pain and spasticity on quality of life in individuals with spinal cord injury.

Objective of the study:

1. This study is being conducted to identify the impact of pain and spasticity on quality of life in individuals with spinal cord injury.
2. To determine the socio-demographic information of the participant.

Participants of the study: Individuals with spinal cord injury who are suffering fro pain and spasticity which are affecting their quality of life are invited to participate in this research study.

Data collection procedure: If you participate in this study, you will be asked to some personal and other related information regarding for the study by using a questionnaire. This will take approximately 20-30 minutes of your time.

Benefits of participations: Participants will have the opportunity to reflect on, share and more aware of their thoughts and feelings about pain and spasticity. Additionally, your participation and better statements are likely to help us find the answer to the research questions and in future study it may benefitted to the researcher.

Risks of participations: We do not foresee any risk or discomfort from your participation in the study.

Economic benefits: You will not be given any money or gifts to take part in this research.

Confidentiality: All information provided by you will be treated as confidential it will ensure that the source of information remains secret. Also, your name will not appear anywhere and no one except me will know about your specific answers.

Voluntary participation: Yours participation in this study is voluntary, so you may choose to participate or not. Your decision will not to volunteer will not influence the treatment you may be receiving either now or in the future. If you do not wish to continue, you have the right to withdraw from the study, without penalty, at any time.

Who to contact: If you have any query, you may ask me now or later, even after the study has started. If you wish to ask questions later, you may contact any of the following:

Researcher:

Samia Islam Tisha

4th Professional B.Sc. in Physiotherapy

Bangladesh Health Professions Institute (BHPI)

0r,

My research supervisor:

Professor Md. Obaidul Haque

Vice Principal, Bangladesh Health Professions Institute (BHPI), CRP, Savar, Dhaka-1343.

Consent Certificate

A) Participant or witness:

1. Did you understand the information sheet?

    1. Yes
    2. No

2. Do you have anything else to know?

    1. Yes
    2. No

(If yes, ……..)

3. Do you understand that you will not benefit financially from this research?

    1. Yes
    2. No

4.Are you allowed to ask question?

    1. Yes
    2. No

5. Do you consent to your information being recorded?

    1. Yes
    2. No

6. Have you got enough time to decide?

    1. Yes
    2. No

7. Are you consenting to participate in this study?

    1. Yes
    2. No

Name of participant …….

Signature of participant …… Date …….

If participant is Illiterate

Name of literate witness …….

Thumb print of participant 

Signature of literate witness …… Date ……

B) Researcher:

I explained the above study precisely to the participant and the participant indicated willingness to participate in the study.

Name of Researcher …….

Signature of Researcher …….. Date …….

Questionnaire (English version)

Thank you for participating in this questionnaire. The purpose of this study is to identify the impact of pain and spasticity on quality of life in individuals with spinal cord injury. Below questionnaire are designed to gather information from the spinal cord injury survivors who are suffering from pain and spasticity.

Please answer every section and mark one option from each which is most appropriate

Part-I: Patient's Identification:

Date:

Patient's name: Patient's ID:

Code No: Mobile No:

Address:

Part-II: Socio- Demographic Information:

No	Question	Response
1	Age	..... years
2	Gender	1. Male 2. Female
3	Marital status	1. Married 2. Unmarried 3. Widow 4. Separated 5. Divorced
4	Living area	1. Rural 2. Urban 3. Semi-urban

5	Educational level	1. No formal schooling 2. Primary 3. Secondary 4. Higher Secondary 5. Graduate 6. Post -graduate 7. Others
6	Occupation	1. Jobless 2. Service holder 3. Businessman 4. Housewife 5. Student 6. Day labor 7. Garments worker 8. Farmer

Part-III: Spinal Cord Injury Related Information:

No	Question	Response
7	Date of injury	……..
8	Date of admission	
9	Skeletal level of injury	1. Cervical 2. Thoracic 3. Lumbar
10	ASIA level of injury	1. ASIA-scale-A 2. ASIA-scale-B 3. ASIA-scale-C 4. ASIA-scale-D 5. ASIA-scale-E 6. Normal

11	Type of paralysis	1. Complete paraplegia 2. Incomplete paraplegia 3. Complete tetraplegia 4. Incomplete tetraplegia
12	Cause of injury	1. Road traffic accident 2. Fall from height 3. Falling with carrying something heavy on the neck or head 4. Carrying something heavy on the neck or head 5. Shallow diving 6. Gunshot injury 7. Scarf injury 8. Others
13	Co-morbidity	1. Hypertension 2. Diabetes 3. Heart Disease 4. Arthritis 5. Others 6. None
14	Medications	…….

Part-IV: Pain related information:

No	Question	Response
15	Any current pain because of SCI?	1. Yes 2. No
16	Is the pain persisted before injury?	1. Yes 2. No
17	Is there any surgery because of SCI?	1. Yes 2. No
18	Which type of surgery you have?	1. Spinal fixation 2. Pressure sore

		3. Spinal deformity correction 4. Amputation 5. Injury related deformity correction 6. No operation
19	Is there any surgery you have done before SCI?	1. Yes 2. No
20	If yes, which type of surgery	
21	Is the pain felt on the surgical site?	1. Yes 2. No
22	Where is the pain?	1. Region of normal sensation 2. Above level of injury 3. At the level of injury 4. Below the level of injury 5. No pain
23	How will you describe your pain	1. Burning 2. Stabbing 3. Pricking 4. Aching 5. Sharp 6. Shooting 7. Pulsating 8. Radiating 9. Throbbing 10. Dull 11. Cramping 12. Other

24. what score will you give your pain if 0 is no pain and 10 is severe pain? (severity of pain according to VAS scale)

00……..10

24	Character of pain?	1. Continuous 2. Intermittent
25	Aggravating factors	1. Personal care 2. Mobility 3. Abnormal positioning 4. Compression 5. Stress 6. Weather change 7. Spasticity 8. other
26	Ease factors	1. Rest 2. Medication 3. Position/posture change 4. Distraction 5. Activity pacing 6. Exercise 7. Other
27	Have you taken any treatment for pain?	1. Yes 2. No

Part-V: Spasticity related information (According to Modified Ashworth Scale)

No	Description	Grade
28	No increase in tone	0

29	Slight increase in muscle tone, manifested by a catch and release or by minimal resistance at the end of the range of motion when the affected part is moved in flexion or extension	1
30	Slight increase in muscle tone, manifested by a catch, followed by minimal resistance throughout the remainder (less than half) of the range of motion	1+
31	More marked increase in muscle tone through most of the ROM, but affected part easily moved	2
32	Considerable increase in muscle tone, passive movement difficult	3
33	Affected part rigid in flexion or extension	4

Part-VI: Quality Of Life related information:

GENERAL HEALTH

No	Question	Response
1	In general, would you say your health is	1. Excellent 2. Very good 3. Good 4. Fair 5. Poor
2	Compared to one year ago, how would you rate your health in general now?	1. Much better now than one year ago 2. Somewhat better now than one year ago 3. About the same 4. Somewhat worse now than one year ago

		5. Much worse than one year ago

LIMITATION OF ACTIVITIES:

No	Question	Response
3	Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports.	1. Yes, limited a lot 2. Yes, limited a little 3. No, not limited at all
4	Moderate activities such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	1. Yes, limited a lot 2. Yes, limited a little 3. No, not at all limited
5	Limiting or carrying groceries	1. Yes, limited a lot 2. Yes, limited a little 3. No, not at all limited
6	Climbing several flights of stairs	1. Yes, limited a lot 2. Yes, limited a little 3. No, not limited at all
7	Climbing one flight of stairs	1. Yes, limited a lot 2. Yes, limited a little 3. No, not limited at all
8	Bending, kneeling, or stooping	1. Yes, limited a lot 2. Yes, limited a little 3. No, not limited at all

9	Walking more than a mile	1. Yes, limited a lot 2. Yes, limited a little 3. No, not limited at all
10	Walking several blocks	1. Yes, limited a lot 2. Yes, limited a little 3. No, not limited at all
11	Walking one block	1. Yes, limited a lot 2. Yes, limited a little 3. No, not limited at all
12	Bathing or dressing yourself	1. Yes, limited a lot 2. Yes, limited a little 3. No, not limited at all

PHYSICAL HEALTH PROBLEMS:

No	Question	Response
13	Cut down the amount of time you spent on work or other activities	1. Yes 2. No
14	Accomplished less than you would like	1. Yes 2. No
15	Were limited in the kind of work or other activities	1. Yes 2. No
16	Had difficulty performing the work or other activities (for example, it look extra effort)	1. Yes 2. No

EMOTIONAL HEALTH PROBLEMS:

No	Question	Response
17	Cut down the amount of time you spent on work or other activities	1. Yes 2. No
18	Accomplished less than you would like	1. Yes 2. No
19	Didn't do work or other activities as carefully as usual	1. Yes 2. No

SOCIAL ACTIVITIES:

No	Question	Response
20	Emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?	1. Not at all 2. Slightly 3. Moderately 4. Severe 5. Very severe

PAIN:

No	Question	Response
21	How much bodily pain have you had during the past 4 weeks?	1. None 2. Very mild 3. Mild 4. Moderate 5. Severe 6. Very severe
22	During the past 4 weeks, how much did pain interfere with your normal work(including both work outside the home and housework)	1. Not at all 2. A little bit 3. Moderately 4. Quite a bit 5. Extremely

ENERGY AND EMOTION:

No	Question	Response
23	Did you feel full of pep?	1. All of the time 2. Most of the time 3. A good bit of the time 4. Some of the time 5. A little bit of the time 6. None of the time
24	Have you been a very nervous person?	1. All of the time 2. Most of the time 3. A good bit of the time 4. Some of the time 5. A little bit of the time 6. None of the time
25	Have you felt so down in the dumps that nothing could cheer you up?	1. All of the time 2. Most of the time 3. A good bit of the time 4. Some of the time 5. A little bit of the time 6. None of the time
26	Have you felt clam and peaceful?	1. All of the time 2. Most of the time 3. A god bit of the time 4. Some of the time 5. A little bit of the time

		6. None of the time
27	Did you have a lot of energy?	1. All of the time 2. Most of the time 3. A good bit of the time 4. Some of the time 5. A little bit of the time 6. None of the time
28	Have you felt downhearted and blue?	1. All of the time 2. Most of the time 3. A good bit of the time 4. Some of the time 5. A little bit of the time 6. None of the time
29	Did you feel worn out?	1. All of the time 2. Most of the time 3. A good bit of the time 4. Some of the time 5. A little bit of the time 6. None of the time
30	Have you been a happy person?	1. All of the time 2. Most of the time 3. A good bit of the time 4. Some of the time 5. A little bit of the time 6. None of the time

31	Did you fee tired?	1. All of the time 2. Most of the time 3. A good bit of the time 4. Some of the time 5. A little bit of the time 6. None of the time

SOCIAL ACTIVITIES:

No	Question	Response
32	During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, ect)	1. All of the time 2. Most of the time 3. Some of the time 4. A little bit of the time 5. None of the time

GENERAL HEALTH:

No	Question	Response
33	I seem to get sick a little easier than other people	1. Definitely true 2. Mostly true 3. Don't know 4. Mostly false 5. Definitely false
34	I am as healthy as anybody I know	1. Definitely true 2. Mostly true 3. Don't know 4. Mostly false 5. Definitely false
35	I expect my health to get worse	1. Definitely true 2. Mostly true 3. Don't know 4. Mostly false

		5. Definitely false
36	My health is excellent	1. Definitely true 2. Mostly true 3. Don't know 4. Mostly false 5. Definitely false

তথ্য তালিকা

গবেষণার শিরোনাম: মেরু রজ্জুতে আঘাতপ্রাপ্ত ব্যক্তিদের জীবনমানের উপর ব্যথা ও খিচুনির প্রভাব

গবেষণার উদ্দেশ্য: ১. এই গবেষণাটি মেরু রজ্জুতে আঘাতপ্রাপ্ত ব্যক্তিদের জীবনমানের উপর ব্যথা ও খিচুনির প্রভাব নির্ধারণ করার জন্য পরিচালিত হচ্ছে

২. অংশগ্রহণকারীদের সামাজিক ও জনসংখ্যা বিষয়ক তথ্য সংগ্রহ করা হবে

গবেষণায় অংশগ্রহণকারী ব্যক্তিগণ : মেরুজ্জুতে আঘাতপ্রাপ্ত হওয়ার ফলে ব্যথা ও খিচুনিতে ভুগছেন এমন ব্যক্তিগণ এই গবেষণায় অংশগ্রহণ করেছেন

তথ্য সংগ্রহ পদ্ধতি: তথ্য সংগ্রহ গবেষণায় অংশগ্রহণ করলে আপনাকে কিছু ব্যক্তিগত এবং গবেষণার প্রয়োজনীয় প্রশ্ন করা হবে এবং আপনাকে তার উত্তর প্রদান করতে হবে এটি প্রায় 20 থেকে 30 মিনিট সময় নিবে

অংশগ্রহণের সুবিধা: গবেষণায় অংশগ্রহণ করলে আপনি আপনার ব্যথা ও খিচুনি সম্পর্কিত তথ্য তুলে ধরতে পারবেন গবেষণাটি সমাপ্ত হলে এর ফলাফল পরবর্তীতে রোগীদের প্রয়োজনীয় চিকিৎসা প্রদানে এবং পেশাগত কাজে ব্যবহার করা হবে

অংশগ্রহণের ঝুঁকি: গবেষণায় অংশগ্রহণের কারণে আপনার কোন ক্ষতি হবে না

আর্থিক সুবিধা:এই গবেষণায় অংশগ্রহণের জন্য আপনাকে কোনো অর্থ বা উপহার প্রদান করা হবে না।

গোপনীয়তা:আপনার প্রদত্ত সমস্ত তথ্য গোপন রাখা হবে এবং আপনার নাম কোথাও প্রকাশ করা হবে না। আপনার বিশেষ উত্তরগুলি শুধুমাত্র গবেষক জানবেন।

স্বেচ্ছাসেবামূলক অংশগ্রহণ: আপনার এই গবেষণায় অংশগ্রহণ সম্পূর্ণ স্বেচ্ছাসেবামূলক আপনি অংশগ্রহণ করবেন কিনা তা আপনার ইচ্ছা অংশগ্রহণ না করার সিদ্ধান্তের কারণে আপনার বর্তমানে বা ভবিষ্যতে কোন চিকিৎসার উপর প্রভাব পড়বে না আপনি যেকোনো সময় গবেষণা থেকে কোনরকম কারণ ছাড়াই সরে আসতে পারেন

যোগাযোগের জন্য:আপনার যদি কোনো প্রশ্ন থাকে, আপনি এখন বা পরে জিজ্ঞাসা করতে পারেন। গবেষণা শুরু হওয়ার পরেও, আপনি নিচের যেকোনো ব্যক্তির সাথে যোগাযোগ করতে পারেন:

গবেষক:

সামিয়া ইসলাম তিশা

৪র্থ বর্ষ, বি.এসসি ইন ফিজিওথেরাপি

বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (BHPI)

অথবা,

গবেষণা তত্ত্বাবধায়ক:

অধ্যাপক মোঃ ওবায়েদুল হক

উপাধ্যক্ষ, বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (BHPI), সিআরপি, সাভার, ঢাকা।

সম্মতির সনদপত্র

ক) অংশগ্রহণকারী বা সাক্ষী:

১. আপনি কি তথ্য পত্রটি বুঝেছেন?

১।হ্যাঁ

২।না

২. আপনার কি আরও কিছু জানার প্রয়োজন আছে?

১।হ্যাঁ

২।না

(যদি হ্যাঁ হয়, ……..)

৩. আপনি কি বুঝতে পেরেছেন যে আপনি এই গবেষণায় আর্থিক সুবিধা পাবেন না?

১।হ্যাঁ।

২।না

৪. আপনি কি প্রশ্ন করতে পারবেন?

১।হ্যাঁ.

২।না

৫. আপনি কি সম্মতি দিচ্ছেন যে আপনার তথ্য রেকর্ড করা হবে?

১।হ্যাঁ.

২।না

৬. সিদ্ধান্ত নেওয়ার জন্য কি আপনার পর্যাপ্ত সময় পেয়েছেন?

১।হ্যাঁ.

২।না

৭. আপনি কি এই গবেষণায় অংশগ্রহণে সম্মতি দিচ্ছেন?

১।হ্যাঁ.

২।না

অংশগ্রহণকারীর নাম: ……..

অংশগ্রহণকারীর স্বাক্ষর: …… তারিখ: .....

যদি অংশগ্রহণকারী নিরক্ষর হয়:

সাক্ষীর নাম: ……..

অংশগ্রহণকারীর টিপসই:

সাক্ষীর স্বাক্ষর: …… তারিখ: .....

গবেষক:

আমি উপরোক্ত গবেষণাটি অংশগ্রহণকারীকে সঠিকভাবে বুঝিয়ে বলেছি এবং অংশগ্রহণকারী এতে অংশগ্রহণের ইচ্ছা প্রকাশ করেছেন।

গবেষকের নাম: ……..

গবেষকের স্বাক্ষর: …… তারিখ: .....

প্রশ্নপত্র

এই প্রশ্নপত্রে অংশগ্রহণ করার জন্য আপনাকে ধন্যবাদ। এই গবেষণার উদ্দেশ্য হলো মেরু রজ্জুতে আঘাতপ্রাপ্ত ব্যক্তিদের জীবনমানের উপর ব্যথা ও খিচুনির প্রভাব নির্ধারণ করা। নিচের প্রশ্নপত্রে মেরু রজ্জুতে আঘাতপ্রাপ্ত ব্যক্তিদের কাছ থেকে তথ্য সংগ্রহের জন্য তৈরি করা হয়েছে।

প্রত্যেকটি অংশের উত্তর দিন এবং প্রতিটি প্রশ্নের জন্য প্রাসঙ্গিক একটি অপশন নির্বাচন করুন।

অংশ-I: রোগীর পরিচিতিঃ

তারিখ:

রোগীর নাম: রোগীর আইডি:
মোবাইল নম্বর:

ঠিকানা:

অংশ-II: সামাজিক-জনতাত্ত্বিক তথ্যঃ

নং	প্রশ্ন	উত্তর
১	বয়স	……বছর
২	লিঙ্গ	১.পুরুষ ২.মহিলা
৩	বৈবাহিক অবস্থা	১।বিবাহিত ২।অবিবাহিত ৩।বিধবা ৪।আলাদা ৫।তালাকপ্রাপ্ত
৪	বসবাসের স্থান	১।গ্রামীণ ২।শহুরে ৩।উপশহর

৫	শিক্ষাগত যোগ্যতা	১। কোন আনুষ্ঠানিক শিক্ষা নেই ২।প্রাথমিক ৩।মাধ্যমিক ৪।উচ্চ মাধ্যমিক ৫।স্নাতক ৬।মাস্টার্স ৭। অন্যান্য
৬	পেশা	১।বেকার ২।চাকরিজীবী ৩।ব্যবসায়ী ৪।গৃহিণী ৫।শিক্ষার্থী ৬। দিনমজুর ৭। পোশাক শ্রমিক ৮। কৃষক

অংশ-III: স্পাইনাল কর্ড ইনজুরি সম্পর্কিত তথ্যঃ

নং	প্রশ্ন	উত্তর
৭	আঘাতের তারিখ	.....
৮	হাসপাতালে ভর্তি হওয়ার তারিখ	
৯	আঘাতের স্কেলেটাল লেভেল	১। সার্ভিকাল ২।থোরাসিক ৩।লাম্বার
১০	আঘাতের এশিয়া লেভেল	১।ASIA-স্কেল: A ২।ASIA-স্কেল: B ৩।ASIA-স্কেল: C ৪।ASIA-স্কেল: D ৫।ASIA-স্কেল: E

১১	পক্ষাঘাতের ধরণ	১।সম্পূর্ণ প্যারাপ্লেজিয়া

		২।অসম্পূর্ণ প্যারাপ্লেজিয়া ৩।সম্পূর্ণ টেট্রাপ্লেজিয়া ৪।অসম্পূর্ণ টেট্রাপ্লেজিয়া
১২	আঘাতের কারণ	১।সড়ক দুর্ঘটনা ২।উচ্চতা থেকে পড়ে যাওয়া ৩।ভারী বস্তু মাথায় নিয়ে পড়ে যাওয়া ৪।পানিতে ঝাঁপ দেওয়া ৫।গুলি ৬।ওড়না জড়িয়ে আঘাত পাওয়া ৭।অন্যান্য
১৩	সহ-রোগসমূহ	১।উচ্চ রক্তচাপ ২।ডায়াবেটিস ৩।হৃদরোগ ৪।আর্থ্রাইটিস ৫।অন্যান্য ৬।নাই
১৪	বর্তমানে নিয়মিত ব্যবহার করছেন এমন কোন ঔষধ	.....

অংশ-IV: ব্যথা সম্পর্কিত তথ্য:

নং	প্রশ্ন	উত্তর
১৫	আপনি কি বর্তমানে SCI এর কারণে ব্যথা অনুভব করছেন?	১।হ্যাঁ ২।না
১৬	আঘাতের আগে কি ব্যথা ছিল?	১।হ্যাঁ ২।না
১৭	SCI এর কারণে কোনো অপারেশন হয়েছে কি?	১।হ্যাঁ ২।না
১৮	যদি হয়ে থাকে, কোন ধরণের অপারেশন করেছেন?	১।স্পাইনাল ফিক্সেশন ২।প্রেশার সোর ৩।আঘাত সংশোধন ৪।অ্যামপুটেশন ৫।অপারেশন হয়নি

১৯	SCI এর আগে কোনো অপারেশন হয়েছে কি?	১।হ্যাঁ ২।না
২০	যদি হ্যাঁ হয়, কোন ধরণের অপারেশন?	
২১	অপারেশনের জায়গায় ব্যথা অনুভূত হচ্ছে কি?	১।হ্যাঁ ২।না
২২	ব্যথার অবস্থান কোথায়?	১।স্বাভাবিক অনুভূতি আছে এমন অঞ্চলে ২।আঘাতের স্তরের উপরে ৩।আঘাতের স্তরে ৪।আঘাতের স্তরের নিচে ৫।ব্যথা নেই
২৩	আপনি কীভাবে আপনার ব্যথা বর্ণনা করবেন?	১।বার্নিং ২।স্ট্যাবিং ৩।প্রিকিং ৪। চাপা ৫।তীক্ষ্ণ ৬।শুটিং ৭।পাল সেটিং ৮।রেডিয়েটিং ৯।থ্রবিং ১০।ডাল ১১।ক্র্যাম্পিং ১২।অন্যান্য

২৪. যদি আপনার ব্যাথা ০ থেকে ১০ এর মধ্যে বলতে বলা হয় যেখানে ০ মানে কোন ব্যাথা নেই এবং ১০ মানে তিব্র ব্যাথা তবে আপনি আপনার ব্যাথাকে কতো দিবেন? (ব্যাথার তিব্রতা নির্ণয়ক স্কেল VAS স্কেল ব্যাবহৃত)

০০……..১০

২৫	ব্যথার ধরণ?	১।সব সময় থাকে ২।মাঝে মাঝে
২৬	কী কী কারণে ব্যথা বাড়ে?	১।ব্যক্তিগত যত্ন ২।চলাচল ৩।অস্বাভাবিক অবস্থান ৪।চাপ ৫।মানসিক চাপ ৬।আবহাওয়া পরিবর্তন ৭।খিচুনি ৮।অন্যান্য
২৭	ব্যথার সময় আপনি কি করলে আরাম বোধ করেন?	১। বিশ্রাম ২।ঔষধ ৩।অবস্থান/ভঙ্গি পরিবর্তন ৪।ডিস্ট্রাকশন ৫।কাজ করলে ৬।ব্যায়াম ৭।অন্যান্য
২৮	আপনি কি ব্যাথার জন্য কোনো চিকিৎসা নিয়েছেন?	১।হ্যাঁ ২।না

অংশ-V: খিঁচুনি সম্পর্কিত তথ্য (Modified Ashworth Scale অনুসারে)

নং	বর্ণনা	গ্রেড
১	পেশীর টোনে কোনো বৃদ্ধি নেই	০
২	সামান্য টোন বৃদ্ধি (শেষ প্রান্তে হালকা প্রতিরোধ অনুভূত)।	১
৩	সামান্য টোন বৃদ্ধি (পুরো নড়াচড়ায় হালকা প্রতিরোধ অনুভূত)।	১+
৪	টোন বৃদ্ধি, তবে পেশী সহজে নড়াচড়া করতে পারে।	২
৫	টোন বৃদ্ধি অনেক বেশি, নড়াচড়া কঠিন।	৩

৬	পেশী শক্ত হয়ে যায় এবং নড়াচড়া প্রায় অসম্ভব।	৪

অংশ-VI: জীবন মান সংক্রান্ত তথ্যঃ

সাধারণ স্বাস্থ্য

নং	প্রশ্ন	উত্তর
১	সাধারণভাবে বলতে, আপনার মতে আপনার স্বাস্থ্য কেমন?	১।চমৎকার ২।খুব ভালো ৩।ভালো ৪।মোটামুটি ৫।খারাপ
২	গত এক বছরের সাথে তুলনা করলে আপনার স্বাস্থ্য কেমন?	১।গত এক বছরের তুলনায় এখন অনেক ভালো ২।গত এক বছরের তুলনায় এখন খানিকটা ভালো ৩।প্রায় গত এক বছরের মতই ৪।গত এক বছরের তুলনায় এখন কিছুটা খারাপ ৫।গত এক বছরের তুলনায় এখন অনেক খারাপ

কার্যকলাপের সীমাবদ্ধতা:

নং	প্রশ্ন	উত্তর
৩	খুব পরিশ্রমসাধ্য কাজগুলি, যেমন সৌজন্যে, ভারী জিনিস তোলা, শ্রমসাধ্য খেলাধুলা করা	১।হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে ২।হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে ৩।না, একেবারেই বাঁধা হয়নি

৪	অপেক্ষাকৃত কম পরিশ্রমসাধ্য কাজগুলি, যেমন, টেবিল সরানো, ঘর ঝাড় দেওয়া, বাজার কাজ করা অথবা সাইকেল চালানো	১।হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে ২।হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে ৩।না, একেবারেই বাঁধা হয়নি
৫	মুদিখানা পণ্যদ্রব্য তোলা বহন করা	১।হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে ২।হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে ৩।না, একেবারেই বাঁধা হয়নি
৬	কয়েক তলা সিঁড়ি বেয়ে ওঠা	১।হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে ২।হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে ৩।না, একেবারেই বাঁধা হয়নি
৭	এক তলা সিঁড়ি বেয়ে ওঠা	১।হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে ২।হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে ৩।না, একেবারেই বাঁধা হয়নি
৮	ঝুঁকে কিছু করা, হাঁটু গেঁড়ে বসা, নিচু হয়ে কাজ করা	১।হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে ২।হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে ৩।না, একেবারেই বাঁধা হয়নি
৯	এক মাইলের বেশি হাঁটা	১।হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে ২।হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে ৩।না, একেবারেই বাঁধা হয়নি

১০	কয়েকশো মিটার হাঁটা	১।হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে ২।হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে ৩।না, একেবারেই বাঁধা হয়নি
১১	একশো মিটার হাঁটা	১।হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে ২।হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে ৩।না, একেবারেই বাঁধা হয়নি
১২	নিজের জন্য গোসল করা বা জামাকাপড় পরা	১।হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে ২।হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে ৩।না, একেবারেই বাঁধা হয়নি

শারীরিক স্বাস্থ্যজনিত সমস্যা:

নং	প্রশ্ন	উত্তর
১৩	আপনার কাজগুলো এবং অন্যান্য কার্যকলাপে আপনি কম সময় দিয়েছেন।	১।হ্যাঁ ২।না
১৪	আপনি যতটুকু চেয়েছিলেন তার চেয়ে কম কাজ করেছেন।	১।হ্যাঁ ২।না
১৫	আপনার নিজের কাজ বা অন্যান্য কাজের সীমাবদ্ধতা ছিল।	১।হ্যাঁ ২।না
১৬	আপনার নিজের কাজ বা অন্যান্য কাজ করতে গিয়ে অসুবিধা বোধ করেছেন।	১।হ্যাঁ ২।না

মানসিক স্বাস্থ্যজনিত সমস্যা:

নং	প্রশ্ন	উত্তর
১৭	আপনার কাজগুলো এবং অন্যান্য কার্যকলাপে আপনি কম সময় দিয়েছেন।	১।হ্যাঁ ২।না

১৮	আপনি যতটুকু চেয়েছিলেন তার চেয়ে কম কাজ করেছেন।	১।হ্যাঁ ২।না
১৯	অন্যান্য সময়ের চেয়ে কাজের কম মনোযোগ দিয়েছেন।	১।হ্যাঁ ২।না

সামাজিক কার্যকলাপ:

নং	প্রশ্ন	উত্তর
২০	শেষ ৪ সপ্তাহে আপনার শারীরিক বা মানসিক সমস্যাগুলি আপনার পরিবার, বন্ধুবান্ধব, প্রতিবেশী বা গোষ্ঠীর সঙ্গে সামাজিক কার্যক্রমে কতটুকু বাঁধা সৃষ্টি করেছে?	১।একেবারে না ২।সামান্য রকম ৩।মাঝামাঝি রকম ৪।অনেকখানি ৫।অত্যন্ত বেশি

ব্যথা:

নং	প্রশ্ন	উত্তর
২১	গত ৪ সপ্তাহে, আপনি কতখানি শারীরিক ব্যথা অনুভব করেছেন?	১।একদমই না ২।খুব অল্প ৩।অল্প ৪।সহনীয় ৫।বেশি ৬।খুব বেশি
২২	গত ৪ সপ্তাহে, আপনি কতখানি শারীরিক ব্যথা আপনার প্রাত্যহিক কাজের বা সামাজিক কার্যক্রমে বাঁধা সৃষ্টি করেছে (ঘরে বা বাইরে)?	১।একদমই না ২।অল্প ৩।সহনীয় ৪।বেশি ৫।খুব বেশি

শক্তি এবং আবেগ:

নং	প্রশ্ন	উত্তর
২৩	আপনি কি খুব সন্তুষ্টবোধ করেছেন?	১।সর্বসময় ২।অধিকাংশ সময় ৩।অনেকটা সময় ৪।কিছুটা সময়

		৫।সামান্য কিছু সময় ৬।একেবারেই না
২৪	আপনি কি খুব বিচলিত ছিলেন?	১।সর্বসময় ২।অধিকাংশ সময় ৩।অনেকটা সময় ৪।কিছুটা সময় ৫।সামান্য কিছু সময় ৬।একেবারেই না
২৫	আপনি কি এমনই হতাশাগ্রস্থ হয়ে পড়েছিলেন যে কোনকিছুই আপনাকে উত্তোলিত করতে পারেনি?	১।সর্বসময় ২।অধিকাংশ সময় ৩।অনেকটা সময় ৪।কিছুটা সময় ৫।সামান্য কিছু সময় ৬।একেবারেই না
২৬	আপনি কি খুব স্থির এবং শান্ত ছিলেন?	১।সর্বসময় ২।অধিকাংশ সময় ৩।অনেকটা সময় ৪।কিছুটা সময় ৫।সামান্য কিছু সময় ৬।একেবারেই না
২৭	আপনার কি প্রাণশক্তি ছিল?	১।সর্বসময় ২।অধিকাংশ সময় ৩।অনেকটা সময় ৪।কিছুটা সময় ৫।সামান্য কিছু সময় ৬।একেবারেই না
২৮	আপনি কি মানসিক হতাশা ও মনমরা হয়ে পড়েছিলেন?	১।সর্বসময় ২।অধিকাংশ সময় ৩।অনেকটা সময় ৪।কিছুটা সময় ৫।সামান্য কিছু সময়

		৬।একেবারেই না
২৯	আপনি কি বিপর্যস্তবোধ করেছেন?	১।সর্বসময় ২।অধিকাংশ সময় ৩।অনেকটা সময় ৪।কিছুটা সময় ৫।সামান্য কিছু সময় ৬।একেবারেই না
৩০	আপনি কি আনন্দে ছিলেন?	১।সর্বসময় ২।অধিকাংশ সময় ৩।অনেকটা সময় ৪।কিছুটা সময় ৫।সামান্য কিছু সময় ৬।একেবারেই না
৩১	আপনি কি ক্লান্ত ছিলেন?	১।সর্বসময় ২।অধিকাংশ সময় ৩।অনেকটা সময় ৪।কিছুটা সময় ৫।সামান্য কিছু সময় ৬।একেবারেই না

সামাজিক কার্যক্রমের অংশগ্রহণ:

নং	প্রশ্ন	উত্তর
৩২	শেষ ৪ সপ্তাহে, আপনার শারীরিক এবং মানসিক সমস্যাগুলো আপনার সামাজিক কার্যক্রমে কী পরিমাণ বাঁধা সৃষ্টি করেছে (যেমন - বন্ধু-বান্ধব এবং আত্মীয়-স্বজনদের সঙ্গে দেখা করতে যাওয়া)?	১।সর্বসময় ২।অধিকাংশ সময় ৩।অনেকটা সময় ৪।কিছুটা সময় ৫।একেবারেই না

সাধারণ স্বাস্থ্য:

নং	প্রশ্ন	উত্তর
৩৩	আমার মনে হয় অন্যান্য মানুষের চেয়ে আমি বেশি অসুস্থ হয়ে পড়ি।	১।সম্পূর্ণ সত্য ২।অধিকাংশ সত্য ৩।জানি না ৪।অধিকাংশ মিথ্যা ৫।সম্পূর্ণ মিথ্যা
৩৪	আমি আমার পরিচিত মানুষের তুলনায় বেশ সুস্থ।	১।সম্পূর্ণ সত্য ২।অধিকাংশ সত্য ৩।জানি না ৪।অধিকাংশ মিথ্যা ৫।সম্পূর্ণ মিথ্যা
৩৫	আমার স্বাস্থ্য খারাপ হওয়ার আশঙ্কা করি।	১।সম্পূর্ণ সত্য ২।অধিকাংশ সত্য ৩।জানি না ৪।অধিকাংশ মিথ্যা ৫।সম্পূর্ণ মিথ্যা
৩৬	আমার স্বাস্থ্য অনেক ভালো।	১।সম্পূর্ণ সত্য ২।অধিকাংশ সত্য ৩।জানি না .৪।অধিকাংশ মিথ্যা .৫।সম্পূর্ণ মিথ্যা