



Faculty of Medicine

University of Dhaka

**EXERCISE & LIFE SATISFACTION OF INCOMPLETE SPINAL
CORD INJURY PATIENTS IN COMMUNITY LEVEL**

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DU Roll No: 906

DU Registration No: 3609

Session: 2015-2016

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Bangladesh

August, 2020

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

**“EXERCISE & LIFE SATISFACTION OF INCOMPLETE
SPINAL CORD INJURY PATIENTS IN COMMUNITY LEVEL”**

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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 of my supervisor & Head of Physiotherapy Department of Bangladesh Health Professions Institute (BHPI).

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Acknowledgement

All the praise must go to Almighty Allah. When I started the study I didn't know whether I could complete it or not, but I believed, 'Fortune favors the brave'. So I was determined to try my best to make it a success and I am most grateful to Almighty Allah. The second acknowledgement must go to my family members for always inspiration and provided necessary financial support.

I would like to pay my highest gratitude to my research supervisor Mst. Fatema Akter, Assistant Professor, Department of Physiotherapy, BHPI, for her keen supervision and tireless effort with excellent guidance and support without which I could not able to complete this project. I would like to give special thanks to my honorable teachers Prof. Md. Obaidul Haque, Vice-Principal, BHPI, Mohammad Anwar Hossain, Associate Professor, Physiotherapy, BHPI, Senior Consultant & Head of Physiotherapy Department, CRP, Md. Shofiqul Islam, Associate Professor & Head Department of Physiotherapy, BHPI, Ehsanur Rahman, Associate Professor, Department of Physiotherapy, BHPI, Fabiha Alam, Lecturer, Department of Physiotherapy, BHPI.

I must be thankful to all respectable Physiotherapy staff working at SCI Unit, CRP, Savar, Dhaka for helping me in collection of my data. I would like to pay my highest gratitude to my honorable seniors specially Nirupom Bardhan for their cooperation and response which was beyond my expectation. I would also like to give thanks to BHPI librarian Mrs. Mohosina for her heartily help and library assistant Mr. Anis for their help, kind support to find out related books, journals and also access to internet during the project study. I would like to state my grateful feelings towards some of my friends for their continuous inspiration, suggestions and supports.

Finally, I'd like to express my gratitude to those who eagerly took part as study samples during data collection, as well as everyone whom was directly or indirectly involved with this study.

Acronyms

ADL	Activity of Daily Living
BHPI	Bangladesh Health Professions Institute
BMRC	Bangladesh Medical Research Council
CRP	Centre for the Rehabilitation of the Paralysed
ICU	Intensive Care Units
IRB	Institutional Review Board
LiSAT-9	Life Satisfaction Questionnaire-9
LS	Life Satisfaction
QoL	Quality of Life
SCI	Spinal Cord Injury
SPEF	Self- Perception in Exercise fitness
SPEM	Self- Perception in Exercise mastery
SPEQ	Self- Perception in Exercise Questionnaire
SPSS	Statistical Package for the Social Sciences
TSCI	Traumatic Spinal Cord Injury
WHO	World Health Organization

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Abstract

Purpose: The purpose of the study was to identify the perception about exercise and life satisfaction of incomplete spinal cord injury patients in the community.

Objectives: The study objective was to demonstrate the socio-demographic characteristics related to finding out the perception about of exercise and the association between residential area, cause of injury, family life and the contact with friends and acquaintances, and life satisfaction.

Methodology: The study design was a cross-sectional survey. Total 105 samples were selected conveniently for this study from the community those who have completed rehabilitation services from the Centre for the Rehabilitation of Paralyzed (CRP), Savar, Dhaka. All data were collected via telephone interviews from July to September 2021. Data were collected by using the questionnaire (LiSAT-9), Modified TNO Arbeid Questionnaire, and Self-Perception in Exercise Questionnaire. Descriptive statistic was used for data analysis which focused on different bar diagrams, pie charts, and tables. Inferential statistics has been performed by Chi-square test. Here Alpha (α) value has been set as <0.05 .

Results: In the study, the total number of participants was 105. The minimum age was 20 years old and the maximum age was 60. According to the findings of this study, the male was 96% (n=101) of participants scored higher than 3.8% (n=4) was female. In this study, a strong significance was found between residential area ($P>0.039$), cause of injury ($P>0.01$), family life ($P>0.023$), and contact with friends and acquaintances ($P>0.042$) with life satisfaction. **Conclusion:** The conclusion from this study that increase life satisfaction and community participation were in person with SCI in the long run. The residential area, the cause of the injury, family life and contact with friends and acquaintances, and a high level of life satisfaction are all factors.

Keywords : Incomplete SCI, Life Satisfaction(LS), Self-Perception Exercise(SPE), Community participation

1.1 Background

Bangladesh is a developing country in the South Asian region. (Haider, Country Report: Bangladesh). There are many people in Bangladesh who are disabled, and they play an important role in the global human condition. Nobody is immune to disability (Haider Country Report: Bangladesh). There are 16 million people living with disabilities in Bangladesh (Disability in Bangladesh, 2016). Spinal cord injury (SCI) is a serious physical disability in the medical field (Ramakrishnan et al., 2011). Because of a lack of information about SCI, more than 80% of SCI patients live in more than 100 developing countries (Rathore, 2010). The unexpected occurrence of a spinal cord injury can have a significant impact on the individual's work, family, and daily life (Kang et al., 2014) and it necessitates a wide range of health-related issues such as long-term disability, morbidity, and mortality, and patients with spinal cord injury face a wide range of medical, social, psychological, and economic issues (Razzak et al., 2011). It is one of the leading causes of locomotor disabilities in both developing and developed countries, and it has a negative impact on the person's society and social structure (New et al., 2013). Spinal cord injury can result in a temporary or permanent change in the spinal cord's normal motor, sensory, or autonomic function (Segun, 2011). In a spinal cord injury caused by trauma, inflammation, tumors, or other causes, the structures and functions of the spinal cord are damaged, and dysfunction occurs in movement, feeling, sphincters, and autonomic nerves below the damaged level (Yang et al., 2014).

Spinal cord injury (SCI) can result in multiple impairments that interact with a person's environment, limiting activity and participation, such as employment (Middleton et al., 2015). Employment is an essential function for social participation and societal contribution (Piccenna et al., 2015). It also helps a person in many other areas, such as economic independence, the ability to communicate with other people, optimal reintegration into society, the ability to do one's daily activities routinely, the development of one's own identity, and the provision of life satisfaction and improved well-being (Piccenna et al., 2015). Individuals with SCI have a lower quality of life than their able-bodied peers (Pershouse et al., 2012). The degree to which people with

SCI participate in their communities is an important factor in determining their quality of life (Barker et al., 2008). As a result, rehabilitation services are under pressure to focus on the reintegration of people with SCI into the community (Gomara-Toldra et al., 2014). Life satisfaction is an important aspect of a person's well-being (Erdogan et al., 2012). Life satisfaction (LS) is a major issue in the reintegration of patients with SCI. Life satisfaction refers to the state of being well, happy, and having a desire or willingness to do something in one's life (Volkan & GENC, 2017). Life satisfaction has a significant impact on health status in both physiological and psychological conditions (Siahpush et al., 2008). A low level of life satisfaction is targeted as a general health risk indicator; it is also used as a predictor of death (Koivumaa-Honkanen et al., 2000).

Spinal cord injury is one of the more serious disasters that can happen to a person, and it can cause severe physical impairments as well as psychological distress. An integrated model of physical (functional independence and pain) and psychological (social support and self-efficacy) factors explained 66% of the difference between life satisfaction and happiness. Improved functional independence, low pain, improved everyday social support, and improved self-efficacy were significant predictors of a positive pathway of life satisfaction after discharge from the Rehabilitation Center (Christel et al., 2012).

Life satisfaction is a major issue in the reintegration of patients with spinal cord injuries. Life satisfaction is commonly defined as a quantitative assessment of happiness or satisfaction with those aspects of life that are important to a specific person. Furthermore, the value is viewed as consistent with the satisfaction, and life satisfaction is viewed as an assessment of one's entire life based on how well special goals match with personal achievements (Budh & Osteraker, 2007). Life satisfaction is used as a measure of happiness in worldwide research on happiness levels (Tsai, 2009).

Life satisfaction is a personal and broad assessment of the physical, social, and psychological aspects of one's current life situation. As a social indicator, life satisfaction is used to assess the effectiveness of medical interventions (Chen et al., 2013).

Various instruments or reports for assessing life satisfaction have been described. Some instruments, such as a visual analogue scale, are comprised of a single item, whereas others are comprised of multiple item inventories, with the application of a combined score to identify the level of life satisfaction as realized by the reactionary, but not necessarily mentioning satisfaction in the items. Instead of explaining these types of instruments, it clearly demonstrates what the authors mean by "life satisfaction" (Lucke et al., 2004).

Understanding what makes people happy requires a thorough understanding of life satisfaction (Erdogan et al., 2012). The first goal of this study is to describe life satisfaction after a year of rehabilitation. The second goal of the study is to determine whether any type of spinal cord injury, physical or psychosocial characteristics, are determinants of life satisfaction after rehabilitation, and which of these determinants are associated with changes in life satisfaction (Christel et al., 2012).

Participation in the community is regarded as one of the most important goals in the rehabilitation of people living with spinal cord injury (SCI) and Evidence indicates that participation in physiological and mental health is important in both areas of disability and powerful population (Lucas et al., 2004; Ostir et al., 2007).

Overall levels of satisfaction, including life and emotional well-being, have been found to be related to community engagement and participation in society by people with spinal cord injury living in the community. Participation in the community is critical to the success of rehabilitation (Christel et al., 2012).

Spinal cord injury is still a major cause of disability throughout Asia, including Bangladesh (Islam et al., 2011). These injuries can also lead to a life-altering condition with significant financial, social, and personal costs (Rahimi-Movaghar et al., 2013).

The establishment of the Spinalis spinal cord injury (SCI)- Rehabilitation Centre at the Princess Marina Hospital in Gaborone in 2013 as a national referral center contributed to positive outcomes for newly injured individuals with a SCI in Botswana (Lofvenmark et al., 2015). These positive outcomes were largely attributed to an improved level of care, increased knowledge among SCI-related health care professionals, the successful implementation of evidence-informed rehabilitation (e.g., bowel and bladder management strategies), the establishment of a service

delivery system for assistive equipment, and the high attendance rates of yearly follow-up visits (Lofvenmark et al., 2017).

Physical exercise research in people with SCI has primarily focused on physiological benefits. However, there are reports on the outcomes of a physically active lifestyle in terms of quality of life and well-being (Fernhall et al., 2008). Few studies have focused specifically on incomplete lesions. As a result, we investigated life satisfaction in people with incomplete SCI in relation to physical exercise (Lannem et al., 2009). Regular exercisers reported significantly higher life satisfaction and perceived physical fitness than non-regular exercisers.

Qualitative research indicates that community peer-based programmes are beneficial and important for individuals with SCI (Divanoglou and Georgiou, 2017). In particular, individuals with SCI describe these peer-led programmes as a life changing experience that have helped them realise what is possible to achieve, develop important skills, become more independent and improve their self-management skills.

1.2 Rationale

Nowadays Spinal cord Injury is the most commonly occurring disabling condition in all developing and developed countries in the world. It is also increasing day by day for different reasons in Bangladesh. Injuries that affect the spinal cord and associated physical and psychological damage are important health problems in Bangladesh as they carry high morbidity and mortality rates.

Life satisfaction of spinal cord-injured persons living in the community is compared to the life satisfaction of a population group. Life satisfaction is thought to be the subjective part of the quality of life. At the community level, exercise and life satisfaction after rehabilitation are considered important factors for incomplete spinal cord injury patients.

The rehabilitation program will be unfulfilled without raising awareness among the family and community people about the ability of the person with SCI. From my study, it will help rehabilitation professionals to improve the rehabilitation procedure. I chose only patients with incomplete spinal cord injuries because the outcome will be more fruitful as a result. There is a limited amount of study in the community level incomplete spinal cord injury patients. This study is to investigate the role of exercise and perceived exercise mastery and perceived fitness on the life satisfaction of persons with incomplete SCI patients.

The research will therefore allow the physiotherapist to learn how the patient obtained such treatments, including system weakness, efficiency, and management. Research makes a profession strongest. So there is no alternative option to research a professional to develop the profession. In our country, there is no such study about the life satisfaction of people with spinal cord injury in the community.

1.3 Research question

What are the perceptions about exercise & life satisfaction of incomplete spinal cord injury patients at the community level?

1.4 Aim of the study

The study aimed to find out the perception about exercise and life satisfaction of incomplete spinal cord injury patients at the community level.

1.5 Objectives of the study

1.5.1 General objectives

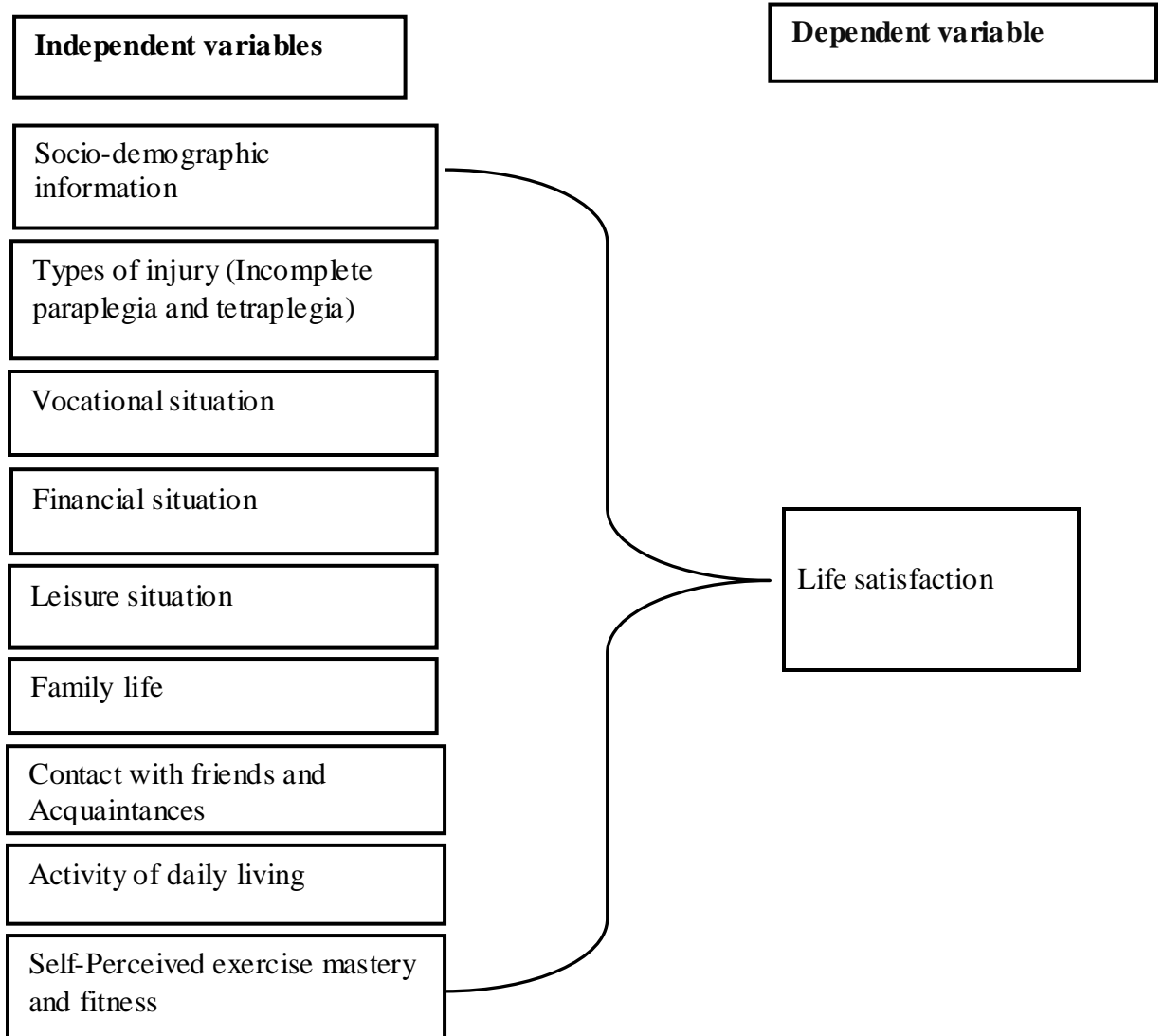
To determine the perception about exercise & life satisfaction of incomplete spinal cord injury patients at the community level.

1.5.2 Specific objectives

- i. To explore the Socio-demographic information.
- ii. To find out the vocational situation of participants at the community level.
- iii. To identify the leisure situation of people in the community area.
- iv. To distinguish the ability to manage self-care activity of participants at the community level.
- v. To know about the contact with friends and familiarity of participants at the community level.
- vi. To find out the family life of people in the community area.
- vii. To describe the self-perceived exercise mastery and fitness on life satisfaction of participants at the community level.

1.6 List of Variable

Conceptual frame work



1.7 Operational definition

1.7.1 Spinal cord

The spinal cord is the primary route for motor and sensory information to travel between the brain and the body. The spinal cord is made up of longitudinally oriented spinal tracts (white matter) that surround central areas (gray matter) that contain the majority of spinal neuronal cell bodies (Kirshblum et al., 2011).

1.7.2 Spinal cord injury

Spinal cord injury is damage to the spinal cord. When the spinal cord is damaged by any causes like trauma or disease that result in sensory and motor loss is called spinal cord injury. It may result from direct injury to the cord itself or indirectly from damage to surrounding bones, tissues, or blood vessels.

1.7.3 Paraplegia

Paralysis of the lower portion of the body and of both legs.

1.7.4 Tetraplegia

Injury to the spinal cord in the cervical region, with associated loss of muscle strength in all 4 extremities

1.7.5 Complete SCI

Absence of sensory and motor functions in the lowest sacral segments.

1.7.6 Incomplete SCI

Preservation of sensory or motor function below the level of injury, including the lowest sacral segments.

1.7.7 Life Satisfaction

Life satisfaction is defined as a perception of being happy with one's own life and a belief that one's life is on the right track. Life satisfaction is a more specific concept defined as an individual's personal evaluation of his or her life.

1.7.8 Community

A common definition of a community is, a group of people with various characteristics who are linked by social bonds, share common perspectives, and or involved in joint actions in geographical locations or settings.

SCI has devastating consequences for the individual, their family, and their community. Nonetheless, the vast majority of SCI patients around the world are still managed in non-systematic and fragmented ways. Only a few high-income countries have comprehensive systems of coordinated care that extend from the acute phase to life-long follow-up. Individuals with SCI frequently experience isolation, depression, and low levels of physical and psychosocial functioning after returning home. A lack of self-efficacy was discovered to have a negative impact on adjustment six months after discharge. Simultaneously, social support, particularly peer support, has been reported to be critical in adjusting to life after discharge (Divanoglou & Georgiou, 2017).

A spinal cord injury (SCI) is a devastating event that, depending on the level and severity, can be fatal. The affected area mark for rehabilitative interventions is the regaining of independence and thus a good quality of life. It is now widely accepted that the central nervous system can recover from incomplete SCI with functional training (Hubli & Dietz, 2013).

The spinal cord injury causes serious injuries and permanent impairments due to incomplete documentation and transfers to tertiary institutions and creates a life threatening situation (Phalkey et al., 2017).

Spinal cord injury is two types such as complete and incomplete. A person loses all ability to feel and voluntarily move below the neurological level of the injury which occurs in a complete injury, on the other hand there is some functioning below the level of the injury which occurs in an incomplete injury (WebMD, 2011). Complete loss of function below the level of injury when complete spinal cord injuries occur, while incomplete spinal cord injuries are those that result in some sensation and feeling below the level of injury. The way in which the spinal cord has been damaged it dependent upon the level and degree of function (Brain and Spinal Cord, 2017).

A person with traumatic or non-traumatic SCI the potential changes are similar regarding their ability to feel, move, control their bladder and bowel and other possible problems. Traumatic SCI are at higher risk than those with non-traumatic SCI. Non-traumatic SCI patients have a better recovery in affected areas and stay for shorter periods in hospital compared with those with a traumatic SCI who have worse

prognosis and long durations. A specialized team of health care professionals are best to have periodic reviews for anyone with SCI. Prevent and treat SCI complications help to achieve the best possible outcomes for health and well-being (Spinal Hub, 2017).

Acquiring a SCI typically results in a level of physical inactivity and deconditioning that starkly contrasts with the pre-injury state, making SCI a disability that may be most in need of effective behavioral health and rehabilitation counselling interventions. Even among young and healthy persons with SCI, many are physically unable to perform essential activities of daily living, which leads to an increased risk for secondary complications as well as lower participation in the community and workforce (Krause & Saunders, 2011). When individuals with SCI are capable of engaging in work, education and leisure pursuits, a higher level of life satisfaction is noted. Therefore, physical activity and exercise has been continuously recognized as a fundamental aspect of rehabilitation strategies for individuals with SCI. Empirical studies indicate that participation in physical activity can also provide significant health benefits to injured persons, such as reducing spasticity and pain as well as improving bone mineral density, muscle endurance, subjective well-being, and physical health-related quality of life (Arbour-Nicitopoulos et al., 2013). Despite the far-extending benefits of physical activity and exercise for individuals with SCI, participation in exercise activities is frequently hampered by perceived barriers, which can arise as a function of external and internal factors. External obstacles include public attitudes, policies, procedures, inaccessible facilities or insufficient resources. Whereas, internal obstacles, which are subjectively experienced as impediments, involve limited motivation, health concerns and psychological barriers (Rimmer et al., 2017). This is confirmed by research conducted in the United States, Canada and Europe, which indicates that individuals with SCI experience numerous external and internal barriers to exercise participation (Anneken et al., 2010).

However, few studies have investigated the relationship between perceived barriers and SCI severity. One study by Vissers et al. (2008) indicated that individuals with paraplegia and tetraplegia encountered more external over internal barriers to physical activity, such as limited information on community resources. Similarly, Scelza et al. (2016) reported that injury severity was a predictor of participation in exercise behaviors and that individuals with tetraplegia experienced significantly more perceived barriers than individuals with paraplegia. These findings suggest that

increased sensorimotor function and mobility associated with paraplegia (relative to tetraplegia) may facilitate greater independence and a wider range of choices for physical activity, thus reducing perceived barriers (Keegan et al., 2014).

Many rehabilitation professionals only encounter individuals with SCI in the clinical setting, limiting their insight into the social context of disability. The shortened, post injury inpatient rehabilitation stay makes it especially difficult to develop an understanding of the environments to which people return after discharge from acute rehabilitation. A holistic view of rehabilitation seeks to look beyond the physical impairments of the individual and address the social and environmental factors that create disabling situations. The best people to identify these factors are individuals with disabilities who encounter these barriers or supports daily. SCI is a life-altering event that can result in varying degrees of paralysis depending on the level and completeness of injury. Statistics relative to the epidemiology of SCI demonstrate a consistent trend showing that SCI typically occurs in the potentially most productive years of one's life, making the need for the implementation of programs facilitating community participation for survivors of SCI even more compelling. Presently, 87.9% of all people with SCI who are discharged return to private non-institutional residences in the community (Newman, 2017).

Barriers other than the physical also exist. Health professionals often focus on a person's disability vs. the individual as one who needs counseling on appropriate benefits of a healthy lifestyle. Many may think that because their doctors are not encouraging them to participate in fitness programs that they may not be benefited. This may also affect the emotional well-being of the individual. Physical activity is a crucial component to the overall well-being and that barriers to physical fitness affect the mental and physical states of those with disabilities (Scelza et al., 2016). Specifically, depression and reduced quality of life have been associated with difficulties returning to work or school, adapting to new social roles, and gaining general individual independence (Silver et al., 2012).

The incidence of spinal cord injury (SCI) in low-income countries is four times that in high-income countries. In most low-income countries, people who sustain a SCI are discharged home with little access to support services. Many die within a few years of discharge. We have recently shown that 19% of wheelchair-dependent patients discharged from a large SCI unit in Bangladesh die within 2 years of discharge. The median (interquartile) age in this sample was 32 years (25–44) and the most common

cause of death was sepsis due to pressure ulcers. There are no directly comparable data from high-income countries but death in the first 2 years following discharge in those <40 years of age is unusual (Hossain et al., 2016).

There are more than 250,000 people in the U.S. currently living with spinal cord injury and approximately 12,000 new cases are reported each year discharged from acute rehabilitation without the optimal functional skills necessary to successfully return home and to the community (Silver et al., 2012).

People with spinal cord injury (SCI) face many environmental barriers to community participation. Approximately 255,000 people in the United States have a spinal cord injury. Research goals outlined by the National Institute of Disability and Rehabilitation Research, as well as Healthy People 2015, encourage the identification, evaluation, and elimination of barriers in the environment that inhibit participation in community activities by people with disabilities (Newman, 2017).

In Australia a study showed that most devastating medical conditions are Spinal cord injury (SCI) or damage. In all facets of human functioning and existence it causes life changing consequences. The incidence of Traumatic SCI a recent review reported worldwide varied between 10-4 and 83 per million per year. About 15–17 cases per million per year over the past decade the age-adjusted incidence rate of TSCI in adults aged, 15 years has remained at and older surviving to reach hospital. In currently 11.9 cases per million adults per year is the incidence in Victoria in Australia (New & Sundararajan, 2008).

The retrospective study of Japan showed that the annual incidence of spinal column injuries ranges from 19-88/100,000. 15-50 per million per year is the incidence of spinal cord injury. 480-813 per million is the prevalence of SCI. In Pakistan exact incidence of these injuries in this region is not known though there are few reports on demographics of spinal injuries (Qureshi et al., 2010). Patients who have been suffering from spinal cord injury often face life threatening complications so they need appropriate management and specialized rehabilitation. The patients of SCI are going into the different hospital for the treatment but they do not have enough facilities for their treatment. In Bangladesh there is only one non-government organization is Centre for the Rehabilitation of the Paralyzed, which has conducting a rehabilitation program for the last 32 years through which the patients can improve their life style (Islam et al., 2011).

The nongovernmental special organization, CRP managed the patients with multi and inters disciplinary approach which emphasis on the development of community based 3 rehabilitation programs. There are sufficient staff that work there sincerely and supported by short term volunteers from home to abroad (Hoque et al., 1999). For developing effective program and polices the study will help to further enhancing our knowledge about SCI in Bangladesh. In developing countries, advance care ICU and proper, accurate and long term management and rehabilitation have the survival rate and life expectancy which is available only in the non-government organization (Islam et al., 2011).

Beginning immediately after injury, individuals are immersed with a series of physical, emotional, and social challenges. Rehabilitation offers those newly injured persons the benefit of individualized functional training before return to the community, as well as continued consultation and education after post-discharge. The seven major categories of barriers included mobility and equipment issues; environmental and home assistance; insurance coverage; transportation; the need for knowledge; activities of daily living (ADL) and other (Silver et al., 2012).

Physical activity can have a positive impact on upon health and well-being for people with spinal cord injury (SCI). Despite these benefits, people with SCI are within the most physically inactive segment of society that comprises disabled people. Being physically active can not only prevent secondary health conditions among people with SCI, but has the capability to improve overall health, well-being, and quality of life (QOL) (Martin Ginis et al., 2015). Despite the benefits of physical activity (PA), people with SCI are within the most inactive segment of society that comprises disabled people (Letts et al., 2011). Therefore health and PA promotion need to be taken seriously within this population (Williams et al., 2014).

As both the number of people and life expectancy increase for people with spinal cord injuries (SCIs), many health concerns related to aging start to play a significant role in their overall health. Estimates for the incidence of new SCI remain approximately 11,000/yr., and the prevalence is approximately 230,000 and growing. Although still below that of the general population, improved emergent and long-term management techniques have increased life expectancies after SCI. Accordingly, mitigating the effects of aging with lifestyle changes has become more prominent.

Health promotion for those with disabilities, including those with SCI, has historically been directed at primary prevention of disability rather than prevention of secondary

conditions; however, the benefits of exercise in improving outcomes after SCI are increasingly recognized. Exercise has been shown to improve functional capacity, bone density in upper limbs, endurance, muscle strength, pain and psychological well-being and to reduce stress. Despite these numerous benefits, there are physiological, psychological, and environmental barriers to exercise that can impede participation in exercise after SCI, thereby increasing health risks associated with inactivity and a sedentary lifestyle (Scelza et al., 2016). The fact that people with SCI face environmental barriers to community participation is well established. The existence of barriers in the environment promotes discrimination, prevents participation, restricts choice, and frustrates attempts at the independence of those with SCI. The increased emotional distress often associated with SCI may not necessarily stem from the individual's limitations, but rather from encounters with barriers in the environment that inhibit participation in life activities and access to necessary services. Commonly cited reasons for lack of community participation by those with SCI are physical environmental barriers such as the presence of stairs and lack of curb cuts in sidewalks. Decreased mobility significantly impairs one's ability to participate fully in social settings. Social barriers to community participation after SCI include public attitudes related to those with disability and the associated discrimination that often occurs (Newman, 2017).

The focus of rehabilitation research in developed countries has recently shifted to community participation of individuals returning home after being discharged from inpatient rehabilitation facilities. To work with a person who has acquired a spinal cord injury, rehabilitation professionals must demonstrate that their practice is client-centered and meets the needs of people with spinal cord injuries. A critical review of literature on the barriers and benefits to social and community participation of people with spinal cord injuries is required for this assistance (Barclay et al., 2015).

Community participation is an important component of a comprehensive rehabilitation process, particularly for traumatic spinal cord injury patients, who are mostly active in healthy functioning adults with an active family and social life (Sekaran et al., 2010). Many factors influence the quality of life and economic productivity of people who have suffered a spinal cord injury and have returned to their communities.

Participation can be viewed as a means of gaining active participation in community level and social experience, as well as attachment to other people and communities

(Hammel et al., 2008). The definition of community participation is "a single person involved in interacting with others in society or the community" (Levasseur et al., 2010). Chang et al. (2013) Community participation is defined as "active participation in activities that occur outside the home or are part of a nondomestic role."

Life satisfaction refers to how a person assesses his or her own life and how he or she feels about where it is going in the future. It is a measure of well-being that can be evaluated in terms of mood, satisfaction with interpersonal relationships and achievement of goals, self-concepts, and self-perceived ability to cope with daily life (Mediline Plus, 2014).

People with spinal cord injuries were content with their lives until they took the survey, but they knew the end was near and were pessimistic about the future. Intelligence was a major factor when it came to life satisfaction. The experiments discuss how life satisfaction increases as people age because they become wiser and more knowledgeable, so they begin to see that life will be better as they age and understand the important things in life more (Mediline Plus, 2014).

In rehabilitation medicine, life satisfaction as an outcome measure of individuals with spinal cord injury has largely gone unnoticed. Despite being considered important rehabilitation measures, community integration and life satisfaction have rarely been studied in Bangladesh, despite being the seventh-largest country in the world in terms of population size (Ahmed et al., 2017). There is a widespread and strange belief that people with spinal cord injuries have lower life satisfaction in developing countries (Ahmed et al., 2017). The life expectancy of spinal cord injured people in developing countries, such as Bangladesh, is much lower than in developed countries (Razzak et al., 2011). The life expectancy of people living with a spinal cord injury has increased in the last 50 to 60 years (Devivo, 2012). However, according to Wyndaele (2010), "life expectancy of the injured today is nearly the same as in the able-bodied population, if the SCI patient is correctly treated." The World Health Organization (WHO) defines quality of life as "individuals' perception of their position in life, in relation to their goals, expectations, standards, and concerns, in the context of the culture and value systems in which they live" (Kawanishi and Greguol, 2013).

Quality of life (QoL) measurement can provide information about life measurement, disease diagnosis, and health status in addition to managing various domains of life (Geyh et al, 2010). Life satisfaction determines in urban China is age, unemployment, income, marriage, and sex (Appleton & Song, 2008).

3.1 Study design

A cross-sectional study was analyzed that present situation and carried out at a one-time point or over a short period. The descriptive study design was chosen because the aims of the study were to know Exercise & life satisfaction of incomplete spinal cord injury patients in community-level". A question formed in the combination of Life Satisfaction Questionnaire-9 (LISAT-9), Modified TNO Arbeid Questionnaire, and Self Perception in Exercise Questionnaire was a cross-sectional survey. From July to September 2021, all data was collected via telephone interviews. Given the study participants' limited mobility, a telephone interview was considered the best method of data collection.

3.2.1 Study site

Data was collected from SCI patients after the rehabilitation process at the community level attending at Center for the Rehabilitation of the Paralyzed, Savar, Dhaka. CRP is the biggest hospital and renowned rehabilitation centre for Spinal Cord Injury (SCI) in South Asia.

3.2.2 Study area

Incomplete spinal cord injury (SCI) from community participants.

3.3 Study population

A population is a total group or set of events or totality of the observation on which a research is carried out. It is the group of interest to the researcher, the group whom the researcher would like to generalize the result of the study. Incomplete spinal cord injury (SCI) patient in the community level who complete rehabilitation from CRP.

3.4 Sampling technique

The equation of sample size calculation is given below-

$$\begin{aligned}n &= \frac{z^2 p q}{d^2} \\&= \frac{(1.96)^2 \times 0.5 \times (1-0.5)}{(0.05)^2} \\&= \frac{3.8416 \times 0.5 \times 0.5}{0.0025} \\&= \frac{0.9406}{0.0025} \\&= 384 \text{ (Hannan, 2016)}\end{aligned}$$

Here,

$$Z(\text{confidence interval}) = 1.96$$

$$P(\text{prevalence}) = 0.5 \text{ (Geyh et al., 2010)}$$

$$q = (1-p)$$

$$= (1-0.5)$$

$$= 0.5$$

$$d = 0.05$$

Where,

n = Sample size

Z = 95% confidence interval (use 1.96)

p = expected prevalence (as fraction of 1)

q = 1 - p (expected non-prevalence)

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

The actual sample size was, $n = 384$. The study population was the persons with incomplete spinal cord injury who had completed the rehabilitation process from the Centre for the Rehabilitation of the paralyzed (CRP). Researcher was selected 105 persons conveniently to conduct this study. Here researcher used the formulation of sample size determination: (n) . The researcher used 95% confidence interval for this study. So the confidence interval $(z) = 1.96$. The researcher used 5% sampling error for this study. So sampling error is $(d) = 0.05$. The researcher did not know the total number of persons with SCI in Bangladesh. So, the prevalence of SCI is $(p) = 0.5$ & $(q) = 0.5$. The researcher was selected 105 numbers of persons (male & female) with incomplete spinal cord injury who were receiving treatment from Centre for the Rehabilitation of the Paralyzed (CRP) conveniently to conduct this study due to limited time and COVID-19 fact for this study. The participants were selected based on inclusion criteria & exclusion.

3.5 Sampling procedure

The convenience sampling method was used in this study. Convenient sampling was a process in which a sample was drawn from the subjects conveniently available. The procedure was including all of the people with incomplete spinal cord injury actually who met the inclusion and exclusion criteria.

3.6 Inclusion criteria

- Persons with incomplete spinal cord injury (Lannemet al., 2009).
- Persons who complete rehabilitation process training from community participants (Franca et al., 2011).
- Living in the community.
- Age range 20-60 years (Lannem et al., 2009).
- Both male and female were included.

3.7 Exclusion criteria

- Undiagnosed injury.
- Patients who didn't take complete rehabilitation (Franca et al., 2011).
- Spinal cord injury patient with a psychological problem.
- Loss of vision or hearing.

3.8 Data collection

3.8.1 Data collection tools

Socio-demographic profile sheet: This questionnaire was developed by the researcher included items related to personal characteristics for collecting socio-demographic details of the persons such as name, age, gender, marital status, education, occupation, duration of illness, etc.

The Life Satisfaction Questionnaire-9 (LiSat-9):

In this study, the Life Satisfaction instrument LiSat-9 has used. LiSat-9 was a self-rating life satisfaction instrument consisting of the global item 'life as a whole and the eight domain-specific items vocational situation, financial situation, leisure situation, contacts with friends, sexual life, activities of daily living (ADL), family life, and partnership relationship. These nine different variables were rated on an ordinal scale from 1 to 6 where 1 represents 'very dissatisfying' and 6 'very satisfying'. The instrument is not recommended for use as a sum-score instrument.

The Modified TNO Arbeid Questionnaire:

In this study, the Community Participation instrument was the Modified TNO Arbeid Questionnaire. This questionnaire largely consisted of selected items of a questionnaire developed as part of the Vocational Handicap Research Programme of TNO Arbeid (Dutch Organisation for Applied Scientific Research). This community Participation instrument consists of the disease-specific items, main earning member, monthly income, educational level, pre injury and current employment situation- job type, job contract, opinions about the current working conditions, and social atmosphere. The TNO assessment also included health, the situation of those who stopped working, but these were not analyzed in this study.

Self-Perception in Exercise Questionnaire (SPEQ):

The purpose of this study was to compare exercise-related self-perceptions between persons with incomplete SCI and to identify factors that might explain the possible variance in perceived exercise mastery and fitness in the populations. A questionnaire measuring self-rated physical exercise habits and self-perceptions in exercise.

Paper, pen, pencil, eraser, sharpener, writing board, information sheet, and consent form.

3.8.2 Procedure of data collection

The study had been mobile recorded interviews about the level of life satisfaction through a structured questionnaire (LiSAT-9) and community participation through Modified TNO Arbeid Questionnaire to collect data from the participants. A mobile record interview was needed to develop an understanding with the participants for collect accurate data because of time limitations and COVID-19. Firstly, permission was taken from the Head of the Physiotherapy Department to collect data. Then a date and time were fixed with the participant, according to his available time. The study aim procedures were explained to participants before collecting data. Participants had the opportunity to ask questions and they signed message send to my mobile phone after being satisfied.

3.9 Data Analysis

By using the descriptive statistic method, data was analyzed through data entry and analysis performed using the Statistical Package for Social Science (SPSS), Inc. version 20, and Microsoft Excel spreadsheet, at a descriptive level. TNO Arbeid Questionnaire LiSAT-9 questionnaire, Self-Perception Exercise Questionnaire and Demographic questionnaire was analyzed. Demographic factors were discussed such as sex, age, occupation, marital status and duration of the injury. The Statistical Package for Social Sciences (SPSS) was used to calculate all statistical data. Here researcher use different bar diagrams, pie chart, tables.

Chi square (χ^2) Test

The Chi-Square (χ^2) test is the most commonly used discrete data hypothesis testing method. It is a nonparametric statistical significance test for bivariate tabular analysis with a contingency table. The Chi-Square test is used to analyze data in the form of counts. This test can be used on nominal or categorical data that cannot be analyzed using the ranking technique.

Calculation of Chi-Square

Different and Independent variable

Variables were quantitative

Normal Distribution of the variable

Formula: the test statistics follow-

$$\chi^2 = \sum (O - E)^2 / E$$

Here,

χ^2 = Chi square value

Σ = The sum of

O = Observed count

E = Expected count

Chi-square is the sum of the squared differences between observed (O) and the expected (E) data divided by expected (E) data in all possible categories.

3.10 Ethical consideration

The research proposal was submitted to the BHPI Institutional Review Board (IRB) for oral presentation, and the defense was performed in front of the IRB. After that, the proposal was approved by the IRB. The researcher followed the Bangladesh Medical Research Council (BMRC) and WHO research guidelines. This protocol presentation was first submitted to BHPI's Institutional Review Board (IRB) for approval. Before data collection, permission was obtained from the Head of the Department of Physiotherapy, BHPI, and the Head of the Department of Physiotherapy, CRP. Permission was obtained from the In-Charge of the SCI Unit, CRP, to collect data from patients. The researcher maintained the confidentiality of the information gathered from the individuals. The researcher ensured participant confidentiality and only shared information with the research supervisor. All participants' rights were reserved, and the researcher was responsible to the participants for answering any type of study-related question.

3.11 Informed Consent

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

Data were analyzed by descriptive statistics and calculated as percentages and presented by using bar graphs, pie charts and tables.

4.1 Socio-demographic information

Table-1: Socio-demographic characteristics of incomplete spinal cord injury patients.

Variables	n(%)	Variables	n(%)
Age in category:	Mean±SD(35.63±11.38)	Secondary	20(19%)
20-30 years	41(39%)	Higher secondary	1(1%)
31-40 years	32(30.5%)	Graduate	5(4.8%)
41-50 years	17(16.2%)	Masters	8(7.6%)
51-60 years	15(14.3%)	Occupation:	
Gender:		Farmer	8(7.6%)
Male	101(96.2%)	Govt. service holder	6(5.7%)
Female	4(3.8%)	Non govt. service holder	3(2.9%)
Residential area:		Businessman	41(39%)
Rural	87(82.9%)	Jobless	36(34.3%)
Urban	10(9.6%)	Other	11(10.5%)
Semi urban	8(7.6%)	Family type:	
Marital status:		Nuclear	22(21%)
Married	74(70.2%)	Joint	83(79%)
Single	28(27%)	Cause of injury:	
Divorced	3(2.8%)	Traumatic	101(96.2%)
Religion:		Non- traumatic	4(3.8%)
Islam	103(98.1%)	Duration of injury:	
Hinduism	2(1.9%)	Within 1-2 year	65(61.9%)
Level of education:		Within 3-4 year	40(38%)
Illiterate	22(21%)		
Primary	49(46.7%)		

Age range

The study was conducted with 105 participants. Among them 20-30 years were 39% (n=41), 31-40 years were 30.5% (n=32), 41-50 years were 16.2% (n=17), 51-60 years were 14.3% (n=15), Most of them were 20-30 years 39% (n=41) and 31-40 years 30.5% (n=32) and were mean 35.65. The maximum participant were 60 years and minimum participants were 20 years.

Residential area

In this study total, 105 participants among them 83% (n=87) were living in the rural area, 9% (n=10) were living in the urban area and 8% (n=8) were living in the semi urban area. According to data view, the investigator could say that the frequency of residential area among the participants was highest in rural area than urban area.

Marital status

Among the 105 participants researcher found married person 70% (n=74), single 27% (n=28), divorced person 3% (n=3). Most frequent status in married that was higher than single and divorced.

Level of education

Total participants 105 (n=105), among them were 21% (n=22) illiterate, 47% (n=49) primary passed, 19% (n=20) secondary passed, 1% (n=1) higher secondary level, 5% (n=5) graduated and 7% (n=8) participants were completed masters.

Cause of injury

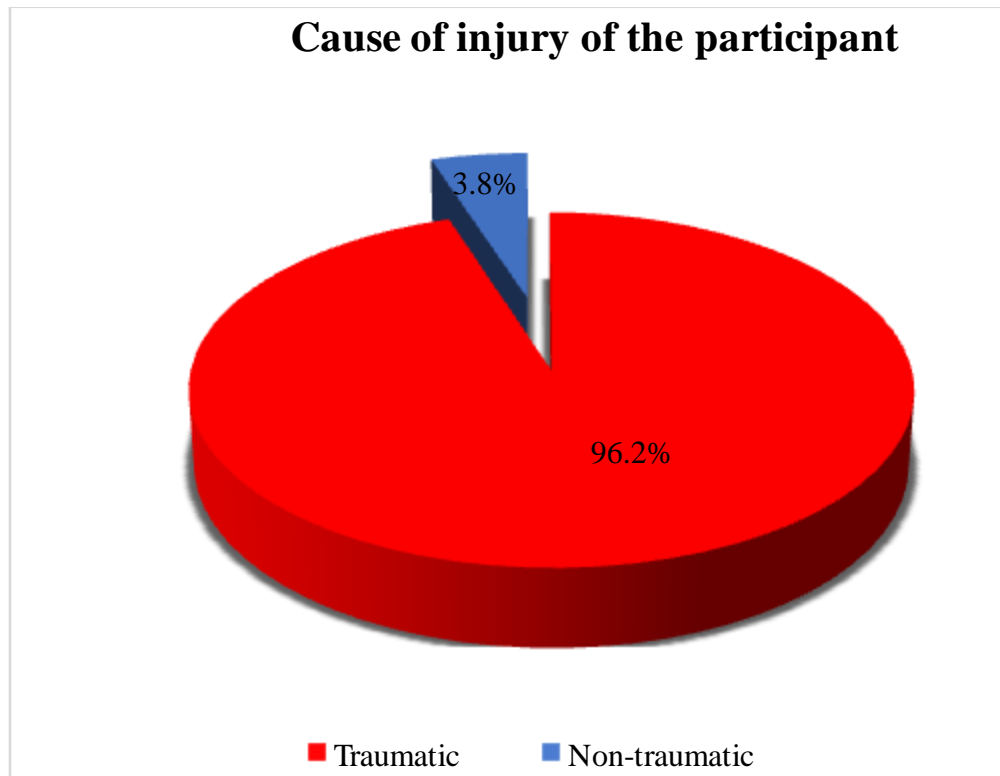


Figure-1: Cause of injury of the participant

In this study researcher found the major cause of Spinal Cord Injury (SCI) was traumatic 96.2% (n=101) and non-traumatic cause of injury was 3.8% (n=4).

Duration of injury

Among the 105 Participants duration of injury were n=65 (62%) in 1-2 years, n=40 (38%) were in 3-4 years.

Type of injury

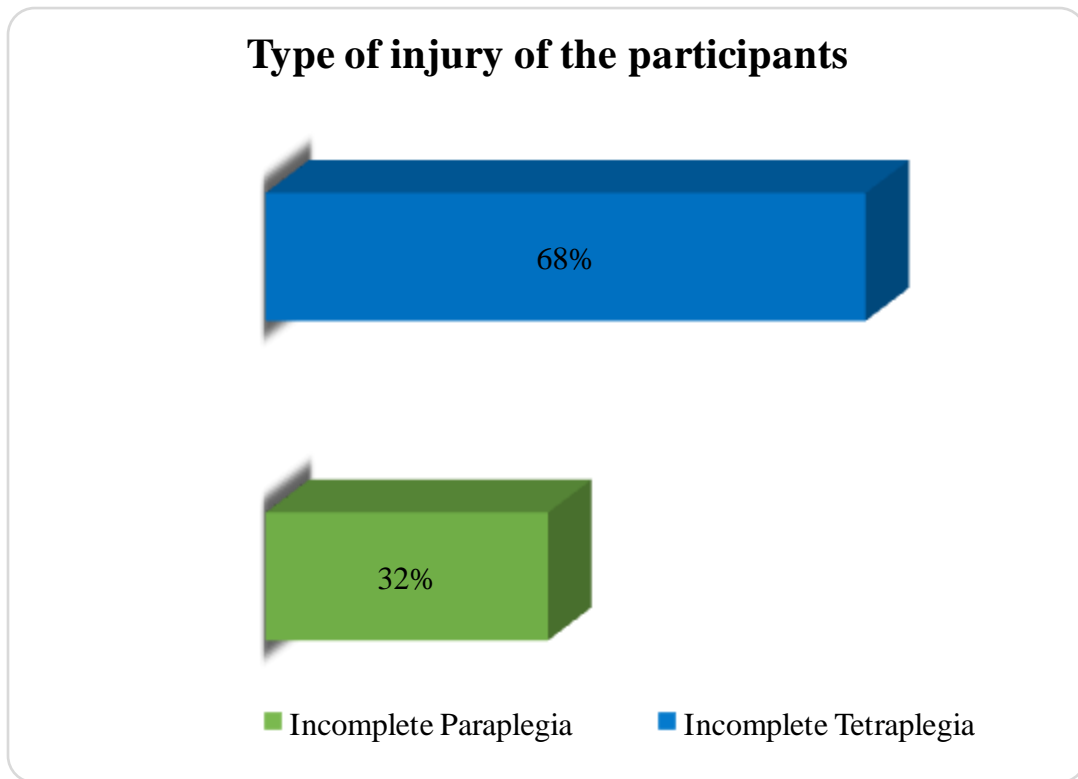


Figure-2: Type of injury of the participants

Total participants 105 (n=105), among them incomplete paraplegia patients were 32% (n=34), and incomplete tetraplegia were 68% (n=71).

4.2 Main earning member

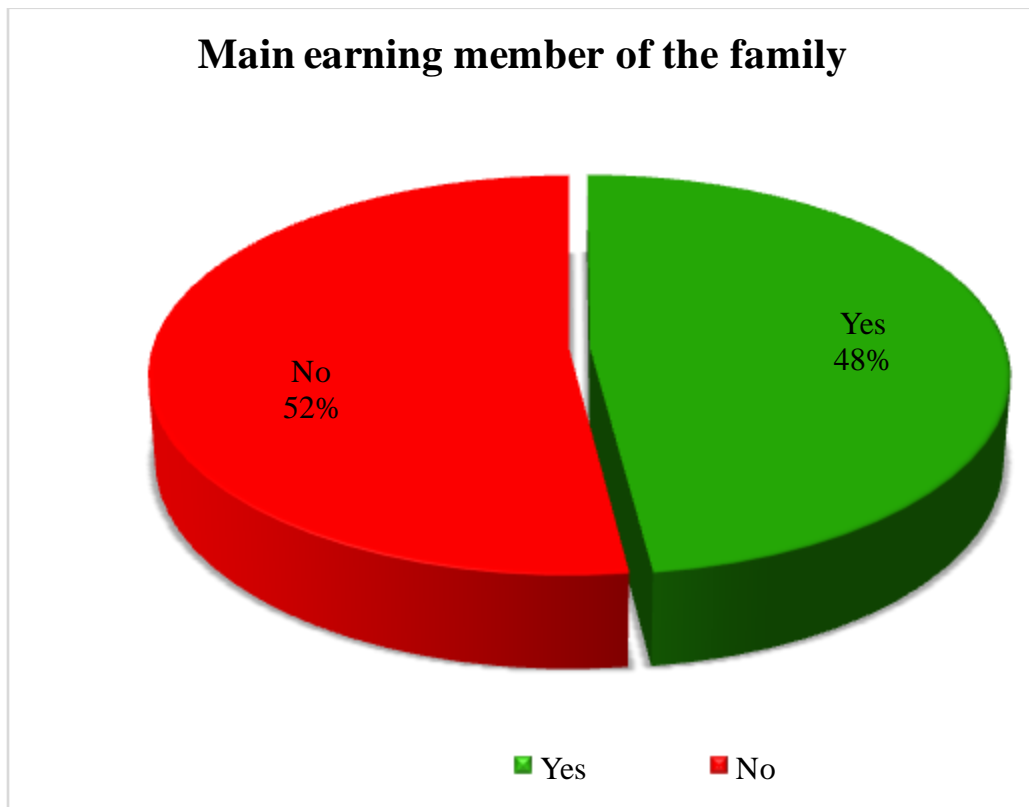


Figure-3: Main earning member of the family

Among the main earning member 48% (n=50) were yes and 52% (n=55) were no.

4.3 Monthly income

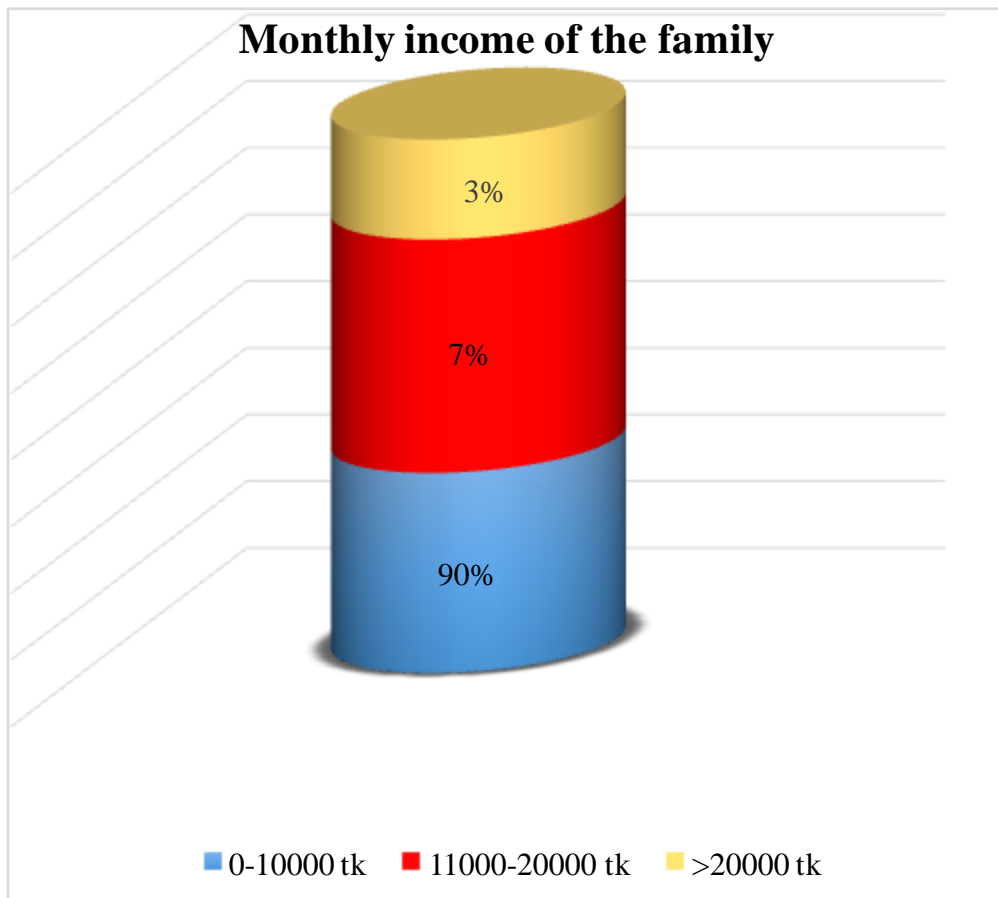


Figure-4: Monthly income of the family

The researcher found average family income of the participants was 0-10000 tk90% (n=95), 11000- 20000 tk7% (n=7) and more than 20000 tk3% (n=3).

4.4 Pre-injury employment

Table-2: Pre-injury employment: Job type and job contract of the participants

Job type	Frequency (n)	Percentage (%)
Farmer	13	12.4%
Day laborer	18	17.1%
Service holder	3	2.9%
Business	16	15.2%
Other	55	52.4%
Job contract		
Permanent employed	11	10.5%
Temporary employed	53	50.5%
Self-employed	29	27.6%
Other	12	11.4%
Total	105	100.0

Among total 105 (n=105) participants job type were 12.4% (n=13) farmer, 17.1% (n=18) day laborer, 2.9% (n=3) service holder, 15.2% (n=16) business, and 52.4% (n=55) other work and among job contract of the participants were n=10.5% (n=11) permanent employed, 50.5% (n=53) temporary employed, 27.6% (n=29) self-employed and 11.4% (n=12) job contract was other.

4.5 Current-injury employment

Table-3: Current-injury employment: Job type and job contract of the participants

Job type	Frequency (n)	Percentage (%)
Farmer	7	6.7%
Service holder	2	1.9%
Business	44	41.9%
Other	52	49.5%
Job contract		
Permanent employed	10	9.5%
Temporary employed	22	21%
Self-employed	35	33.3%
Other	38	36.2%
Total	105	100.0

In this study total participants 105 (n=105), among the Job type were 6.7% (n=7) farmer, 1.9% (n=2) service holder, 41.9% (n=44) business and 49% (n=52) other and job contract of the participants were 9.5% (n=10) permanent employed, 21% (n=22) temporary employed, 33.3% (n=35) self-employed and 36.2% (n=38) participants were other.

4.6 Current working conditions and social atmosphere

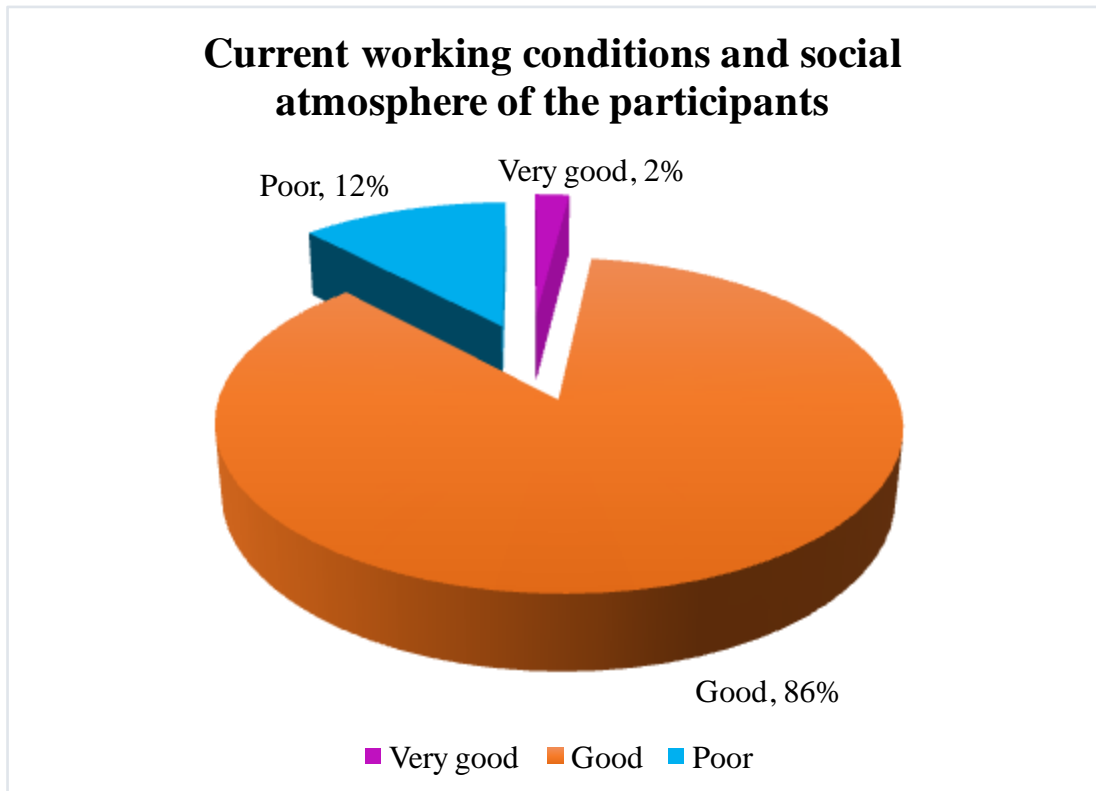


Figure-5: Current working conditions and social atmosphere of the participants

Among the 105 participants were said that their current working conditions and social atmosphere 86% (n=90) good, 2% (n=2) very good and 12% (n=13) poor.

4.7 Life satisfaction

Table-4: Life satisfaction of component, number, percentage.

Component (LiSAT)	n(%)	Component (LiSAT)	n(%)
Life as a whole		Sexual life	
Dissatisfying	13(12.4%)	Very dissatisfying	5(4.8%)
Rather dissatisfying	7(6.7%)	Dissatisfying	60(57%)
Rather satisfying	26(24.8%)	Rather dissatisfying	24(22.9%)
Satisfying	59(56.2%)	Rather satisfying	4(3.8%)
Vocational situation		Satisfying	12(11.4%)
Dissatisfying	28(26.7%)	Ability to maintain my self-care	
Rather dissatisfying	19(18.1%)	Dissatisfying	13(12.4%)
Rather satisfying	37(35.2%)	Rather dissatisfying	26(24.8%)
Satisfying	20(19%)	Rather satisfying	34(32.4%)
Very satisfying	1(1%)	Satisfying	32(30.5%)
Financial situation		Family life	
Very dissatisfying	1(1%)	Dissatisfying	14(13.3%)
Dissatisfying	39(37.1%)	Rather dissatisfying	19(18%)
Rather dissatisfying	31(29.5%)	Rather satisfying	22(21%)
Rather satisfying	24(22.9%)	Satisfying	49(46.7%)
Satisfying	10(9.5%)	Very satisfying	1(1%)
Leisure situation		Partner relationship	
Very dissatisfying	6(5.7%)	Very dissatisfying	1(1%)
Dissatisfying	37(35.2%)	Dissatisfying	17(16.2%)
Rather dissatisfying	35(33.3%)	Rather dissatisfying	12(11.4%)
Rather satisfying	12(21%)	Rather satisfying	21(20%)
Satisfying	5(4.8%)	Satisfying	54(51.4%)
Contact with friends and acquaintances			
Dissatisfying	8(7.6%)		
Rather dissatisfying	9(8.6%)		
Rather satisfying	39(37.1%)		
Satisfying	49(46.7%)		

In this study total participants 105(n=105), among whole life, the satisfactory percentage to the life of people with SCI about 56.2% (n=59) had highest score satisfying, whereas lowest score rather dissatisfying 6.7% (n=7), vocational situation highest rather satisfying 35.2% (n=37) and lowest very satisfying 1% (n=1), financial situation highest score dissatisfying 37.1% (n=39) and lowest score very dissatisfying 1% (n=1), leisure situation highest score dissatisfying 35.2% (n=37) and lowest score very dissatisfying 5.7% (n=6), contact with friends and acquaintances highest score satisfying 46.7% (n=49) and lowest score dissatisfying 7.6% (n=8), ability to maintain self-care highest score rather satisfying 32.4% (n=34) and dissatisfying 12.4% (n=13) lowest score, family life highest score 46.7% (n=49) satisfying and lowest score 1% (n=1) very satisfying and partner relationship an average had satisfying 51.4% (n=54).

4.8 Satisfaction level of incomplete spinal cord injury patients in the community.

Table-5: Satisfaction level of incomplete spinal cord injury patients

LiSAT total score	Frequency (n)	Percentage (%)
Very dissatisfying	49	46.7%
Satisfying	36	34.3%
Rather satisfying	17	16.2%
Rather dissatisfying	3	2.9%

Among 105 participants it was found that 46.7% (n= 49) of the participants were very dissatisfied, 34.3% (n= 36) of the participants were satisfied, 16.2% (n= 17) of the participants were rather satisfied and 2.9% (n= 03) of the participants were rather dissatisfied.

4.9 Self-Perception in Exercise

Table-6: Self- Perception in Exercise of the participants

SPEQ mastery:	Totally agree	Agree to some extent	Disagree to some extent	Totally disagree
Somehow, I show what I am good for when I participate in physical activities	77(73.3%)	23(21.9%)	4(3.8%)	1(1%)
Physical activity gives me, among other things, a positive feeling of attaining something	26(24.8%)	64(61%)	12(11.4%)	3(2.9%)
Physical activity is important to me because it makes me feel I am incontrol of something	59(56.2%)	31(29.5%)	11(10.5%)	4(3.8%)
I think I am good at more types of physical activities than others	44(41.9%)	27(25.7%)	16(15.2%)	18(17%)
I think I can get away from daily stress of life by doing physical activity	26(24.8%)	41(39%)	25(23.8%)	13(12.4%)
SPEQ fitness:				
Generally, I am not in good shape	26(24.8%)	30(28.6%)	28(26.7%)	21(20%)
It worries me somewhat that I do not manage to keep in good shape	34(32.4%)	39(37%)	17(16.2%)	15(14.3%)
I wish I was in far better shape than I am	89(84.8%)	16(15.2%)	0	0

4.10 Association

Table-7: Association between life satisfaction and socio-demographic information.

Independent variables	Dependent variable	Chi-square value (χ^2)	df	P-value
Age in category: 20-30 years 31-40 years 41-50 years 51-60 years	Life satisfaction	68.70	75	0.682
Gender: Male Female		16.57	25	0.897
Residential area: Rural Urban Semi urban		68.964	50	0.039*
Cause of injury: Traumatic Non- traumatic		44.508	25	0.01*
Duration of injury: Within 1-2 year Within 3-4 year		21.64	25	0.656
Type of injury: Incomplete paraplegia Incomplete tetraplegia		16.45	25	0.913
Monthly income: 0-10000tk 11000-20000tk >20000tk		67.44	50	0.51

Alpha value: *= $<.05$, **= $<.01$, ***= $<.001$

Above table shows the total participants 105 (n=105), among them 20-30 years were 39% (n=41), 31-40 years were 30.5% (n=32), 41-50 years were 16.2% (n=17), 51-60 years were 14.3% (n=15), Most of them were 20-30 years 39% (n=41) and 31-40 years 30.5% (n=32) and were mean 35.65. The maximum participant were 60 years and minimum participants were 20 years.

The Chi-square value between age range of the participants and life satisfaction (LiSAT) observed was 68.70, degree of freedom 75 and P value was 0.682 (>0.05), that means the result was not significant indicate there didn't have strong association of age range of the participants and life satisfaction.

No association found between the gender of the participants and life satisfaction (LiSAT) which was not statistically significant ($P < 0.897$) this observed Chi-square value was 16.57 and degree of freedom 25. So the result was not significant that indicate there didn't have strong association between gender of the participants and life satisfaction.

The Chi-square value between the residential area of the participants and life satisfaction observed was 68.964, degree of freedom 50 and P value was 0.039 (< 0.05), that means the result was significant indicate there have strong association between the residential area of the participants and life satisfaction.

Association found between cause of injury of the participants and life satisfaction which was statistically significant ($P > 0.01$) this observed Chi-square value was 44.508 and degree of freedom 25. So the result was that indicate there was strong association between cause of injury of the participants and life satisfaction.

No association found between duration of injury of the participants and life satisfaction which was not statistically significant ($P < 0.66$) this observed Chi-square value was 21.64 and degree of freedom 25. So the result was not significant that indicate there didn't have association between duration of injury of the participants and life satisfaction.

The Chi-square value between types of injury of the participants and life satisfaction observed was 16.45, degree of freedom 25 and P value was 0.913 (> 0.05), that means the result was not significant indicate there didn't have association types of injury of the participants and life satisfaction.

No association found between family income of the participants and life satisfaction which was not statistically significant ($P < 0.51$) this observed Chi-square value was 67.44 and degree of freedom 50. So the result was not significant that indicate there didn't have strong association between family income of the participants and life satisfaction.

Table-8: Linear regression of Socio-demographic with life satisfaction

Predictor Variable (socio-demographic)	Dependent variable: Life satisfaction			
	β	P-Value	95% CI (confidence interval)	
			Lower	Upper
Residential area	-.057	0.565	-2.587	1.420
Cause of injury	0.125	0.203	-2.145	9.962

P-value *= $<.05$, **= $<.01$

According to linear regression, was not associated residential areas with life satisfaction. A negative association ($\beta=-.057$) had found between residential areas with life satisfaction which was not significant ($P=0.565$, 95% confidence interval (CI): -2.587, 1.420). This indicated that the residential area, not match with life satisfaction.

The cause of injury was not associated with life satisfaction. A positive association ($\beta=0.125$) had not found between the cause of injury with life satisfaction which was not significant ($P=0.203$, 95% confidence interval (CI): -2.145, 9.962). This indicated that the cause of injury, not match with life satisfaction.

Table-9: Association between life satisfaction with LiSAT (Vocational situation, financial situation, leisure situation, family life, contact with friends and acquaintances, ADL's).

Component of LiSAT	Dependent variable	Chi-square value (χ^2)	df	P-value
Vocational situation	Life satisfaction	109.20	100	0.249
Financial situation		117.20	100	0.115
Leisure situation		117.37	125	0.674
Family life		130.25	100	0.023*
Contact with friends and acquaintances		97.466	75	0.042*
ADL's		80.88	75	0.301

Alpha value: *= $<.05$, **= $<.01$, *= $<.001$**

No association was found between the vocational situation of the participants and life satisfaction which was not statistically significant ($P<0.25$) this observed Chi-square value was 109.20 and the degree of freedom 100. So the result indicated there was no association between the vocational situation of the participants and life satisfaction.

No association was found between the financial situation of the participants and life satisfaction which was not statistically significant ($P<0.12$) this observed Chi-square value was 117.20 and the degree of freedom 100. So the result indicated there was no association between the financial situation of the participants and life satisfaction.

The Chi-square value between leisure situation of the participants and life satisfaction observed was 117.37, degree of freedom 125 and P value was 0.674 (>0.05), that means the result was not significant to indicate there didn't have strong association between leisure situation of the participants and life satisfaction.

Association found between family life of the participants and life satisfaction which was statistically significant ($P>0.023$) this observed Chi-square value was 130.25 and degree of freedom 100. So the result was that indicate there was a strong association between the family life of the participants and life satisfaction.

Association found between contact with friends and acquaintances of the participants with life satisfaction which was statistically significant ($P > 0.042$) this observed Chi-square value was 97.466 and degree of freedom 75. So the result was that indicate there was association between contact with friends and acquaintances of the participants and life satisfaction.

The Chi-square value between the activity of daily living of the participants and life satisfaction observed was 80.88, degree of freedom 75 and P value was 0.301 (> 0.05), that means the result was not significant to indicate there didn't have association between ADL's of the participants and life satisfaction.

Table-10: Linear regression of life satisfaction with component LiSat total score

Predictor Variable (component LiSat)	Dependent variable: Life satisfaction			
	β	P-Value	95% CI (confidence interval)	
			Lower	Upper
Family life	0.465	0.000**	1.582	3.456
Contact with friends and acquaintances	0.309	0.001*	0.824	3.300

P-value *= $< .05$, **= $< .01$

The life satisfaction measure was associated ($P < 0.01$) with family life. A positive association ($\beta = 0.465$) had found between family life with life satisfaction which was highly significant ($P = 0.000$, 95% confidence interval (CI): 1.582, 3.456). This indicated that respondents had more effective family life with life satisfaction.

According to linear regression, was associated ($P < 0.01$) contact with friends and acquaintances with life satisfaction. A positive association ($\beta = 0.309$) had found between contact with friends and acquaintances with life satisfaction which was highly significant ($P = 0.001$, 95% confidence interval (CI): 0.824, 3.300). This indicated that respondents had contact with friends and acquaintances with life satisfaction.

Table-11: Association between life satisfaction with Self-Perception in exercise mastery and fitness.

Variable-1 (SPEQ total score)	Variable-2 (LiSat total score)	Pearson correlation	P-value
Self-Perceived exercise mastery	Life satisfaction	-.350	0.000**
Self-Perceived exercise fitness		0.271	0.005*

P-value *= $<.05$, **= $<.01$

A inversly association (Pearson correlation= $-.350$)was found between Self-Perception in exercise mastery (SPEM) with life satisfaction which was strongly statistically significant ($P<0.000$). So the result was strongly negative significant that indicate there have strong association between Self-Perception in exercise mastery (SPEM) and life satisfaction.

There was a positive association (Pearson correlation= 0.271) found between Self-Perception in exercise fitness (SPEF) with life satisfaction which was strongly statistically significant ($P<0.005$). So the result was significant that indicate there have a strong association between Self-Perception in exercise fitness (SPEF) and life satisfaction.

Table-12: Linear regression of self-perception exercise (total score) with life satisfaction

Predictor Variable	Dependent variable: Life satisfaction			
	β	P-Value	95% CI (confidence interval)	
			Lower	Upper
Self-Perceived exercise mastery	-0.350	0.000**	-1.475	-.462
Self-Perceived exercise fitness	0.271	0.005*	0.284	1.590

P-value *= $<.05$, **= $<.01$

The life satisfaction measure was associated ($P<0.01$) with Self-Perceived exercise mastery. A negative association ($\beta=-.350$) had found between life satisfaction with Self-Perceived exercise mastery which was highly significant ($P=0.000$, 95% confidence interval (CI): -1.475, -.462). This indicated that respondents had Self-Perceived exercise mastery with life satisfaction.

The life satisfaction measure was associated ($P<0.01$) with Self-Perceived exercise fitness. A positive association ($\beta=0.271$) had found between life satisfaction with Self-Perceived exercise fitness which was highly significant ($P=0.005$, 95% confidence interval (CI): 0.284, 1.590). This indicated that respondents had Self-Perceived exercise fitness with life satisfaction.

The purpose of the analysis and discussion is to identify previously published papers and determine their relevance to the collected data. The study's findings are discussed in this chapter in relation to the study's research questions and objectives. A cross sectional survey was used to find out the level of exercise and life satisfaction of incomplete spinal cord injury patients in community. The aim of the study was to assess the level of exercise and life satisfaction of the spinal cord injury persons those who completed rehabilitation process training from the CRP and living in the community. The study was based on information gathered from the spinal cord injury unit, the rehabilitation wing unit, and the community level. In my study total participants 105 were selected among age range of the participants was 20-60 years and their mean age was 35.63. The highest number (39%) of the participants were age between 20-30 years. According to Nwankwo and Uche (2013) found in their study that was very similar to this study that the 85 Participant among the age group (31–45 years) had the highest frequency among 85 participants (37.7%) and mean 34.8 in their study in Nigeria. Another prospective study was conducted in Brazil, participants ranged in age from 13 to 30 years old and had suffered a spinal cord injury (48.9%) (Franca et al., 2011). The mean lifespan at injury (33.85 years) was similar to previous studies on SCI (Strauss et al., 2006).

At about 75% of the participants were under the age of 40 years with half of them going to fall into the 20-30 age range. Participants over the age of 50 years who were injured earlier reported higher levels of participation and life satisfaction than those who were injured later. The onset of spinal cord injury before the age of 50 years was a factor in the high life satisfaction but not of participation in the multiple various analysis (Post & Reinhardt, 2015). This indicates that people suffering from spinal cord injuries are usually affected during their working lives (Jahan et al., 2016) which shows both of the study has similarity with my study.

In my study among 105 participants were 96% (n=101) were male and 4% (n=4) were female. According to the findings of this study male participants scored higher than female participants. According to Franca et al., (2011) found that in the study among 56 participants 84% were male and 16.0% were female. Another similarly study Jahan et al., (2016) found that among 45 participants male participants were more than

female and the ratio is 8:1. A prospective study was conducted in South India out of 100 participants 92% men (Kumar et al., 2012). Islam et al. (2011) found that compared to women, the number of men is basically high with a sex ratio of 5: 1 (M / F) which is very much similar to my study.

The Chi-square value between age range of the participants and life satisfaction (LiSAT) observed was 844.90 and P value was 0.972 (>0.05), that means the result was not significant indicate there didn't have strong association of age range of the participants and life satisfaction (LiSAT). This finding is contradictory to that Groah et al., (2012) who found that in increasing age and being older at the onset of SCI are associated significantly with worse outcomes and that a long time after SCI is associated with better adjustment. According to Sakakibara et al., (2012) found that the impact of these health-related changes on participation and life satisfaction of elderly people with SCI is limited, and associations with aging are frequently studied in samples that are well below retirement age.

In this study researcher found the major cause of Spinal Cord Injury (SCI) was traumatic 96.1% (n=101) and non-traumatic cause of injury was 3.8% (n=4). Similarly, study found that in the 158 people, 86.1% had traumatic injuries and 13.9% had non-traumatic injuries, resulting in 79.75% having paraplegia and only 20.25% having tetraplegia (Razzak et al., 2011). According to Mothe & Tator, (2013) found that the study in North America, the most common cause of traumatic spinal cord injury was a car accident followed by a fall from a high level. Another research found that there were three major causes of injury among the 179 trauma patients (72%) and among 68 participants non-traumatic spinal cord lesion was (28%) (Hoque et al., 1999). According to the National Shriners SCI Database (NSCID), over the last 40 years, motor vehicle accidents have consistently been the leading cause of spinal cord injury, accounting for roughly 40% to 50% of all spinal cord injuries (Chen et al., 2010).

Every year, the global incidence of traumatic spinal cord injury ranges from 9.2 to 246.0 cases per million citizens. The approximate phenomenon varies greatly depending on geographic region: The Americas: 20.7 to 83.0 per million citizens per year, Europe: 8.0 to 130.6, Asia and the Middle East: 14.6 to 246 and Oceania: 10.0 to 77.0. According to Razzak (2013), the most common cause of spinal cord injury (43.1 percent (n=44)) was a fall from a height. Other studies conducted in Bangladesh discovered that the most common cause of spinal cord injury among 56 participants

was a fall from a great height. Carrying heavy loads on one's head is one of the most common causes of cervical spinal cord injury in Bangladesh (Hoque et al., 2012) which is very much similar to my study.

The Chi-square value between cause of injury of the participants and life satisfaction (LiSAT) observed was 44.508 and P value was 0.01 (<0.05), that means the result was significant. Indicate there have strong association cause of injury of the participants and life satisfaction (LiSAT).

Total participants 105 (n=105), among them incomplete paraplegia patients were 32% (n=34), and incomplete tetraplegia were 68% (n=71). According to Daverat et al., (1989) it was found that the majority of people were paraplegic rather than tetraplegic (79.75% vs 20.25%), which makes it different from findings in other studies. In France, 52% were found to be tetraplegic, with the remaining 48% paraplegic. In this found similarly study in Pakistan showed that 47.2% were tetraplegic and 52.8% paraplegic (Zubia et al, 2008). This difference in finding may be due to the higher mortality of persons with cervical cord injury as a result of different causes of injury in other countries, improper evacuation from injury sites, careless transportation to hospital, inadequate acute management and lack of pre-hospital care. Chang et al. (2012) similarly mentioned that among 341 participants 42.5% who were complete paraplegia after SCI. Lowest number of participants with incomplete tetraplegia also found at this 55 study 17.9%. The epidemiology of spinal cord injury which reported Paraplegia among participants in 58.6% of developing countries (Rahimi-Movaghar et al., 2013). Among 237 people with spinal cord injury in three Asian Countries- India, Vietnam and Sri Lanka most of the participants were paraplegia (65–76%) as a result of road traffic accident (33–52%) (Tasiemski et al., 2013). In other major causes of spinal cord injury in Nigeria, especially in road accidents, appropriate education and sensitivity can be expanded (Nwankwo & Uche, 2013).

No association found between types of injury of the participants and life satisfaction (LiSAT) which was not statistically significant ($P<0.913$) this observed Chi-square value was 16.45 and degree of freedom 25. So the result was not significant that indicate there didn't have association between types of injury of the participants and life satisfaction.

The researcher found average family income of the participants was 0-10000 tk90% (n=95), 11000- 20000 tk7% (n=7) and more than 20000 tk3% (n=3). Similarly, study

found that a striking finding was how poor families were prior to injury: families had a median (IQR) income of 2569tk (868tk–2190tk) per family per month. As a result, 67% of family members Prior to the injury, they were living in extreme poverty. Because those injured were typically young males, and 74% were the main providers for their families. This income decrease pressured 91% of families into extreme poverty (Hossain et al., 2020).

In this study total participants 105(n=105), among vocational situation had participants highest rather satisfying 35.2% (n=37) and lowest very satisfying 1% (n=1), financial situation participants had highest dissatisfying 37.1% (n=39) and lowest very dissatisfying 1% (n=1), leisure situation had participants highest dissatisfying 35.2% (n=37) and lowest very dissatisfying 5.7% (n=6), contact with friends and acquaintances highest score satisfying 46.1% (n=49) and lowest score dissatisfying 7.6% (n=8) had participants, ability to maintain self-care had participants highest score rather satisfying 32.4% (n=34) and dissatisfying 12.4% (n=13) participants had lowest score, family life 46.7% (n=49) had satisfying highest score and very satisfying 1% (n=1) lowest score. According to Post et al., (1998) found that those with SCI (n = 315) had lower levels than the controls in all nine items except satisfaction with their financial situation and with contacts with friends and acquaintances. According to the LiSat-9, 38 respondents (67%) reported being satisfied with their lives in general. When the subgroups of people who were satisfied and dissatisfied with their lives were compared, the dissatisfied group had significantly lower satisfaction with their work and leisure situation (Schonherr et al., 2005). This could imply that the link between life satisfaction and exercise is not direct. Psychological factors, such as fitness perception, may act as a moderator. More research is required.

No association found between Self-Perception in exercise mastery (SPEM) of the participants with life satisfaction (LiSAT) which was not statistically significant ($P < 0.489$) this observed Chi-square value was 225.44 and degree of freedom 225. So the result was not significant that indicate there didn't have strong association between Self-Perception in exercise mastery (SPEM) of the participants and life satisfaction.

There was no association found between Self-Perception in exercise fitness (SPEF) of the participants with life satisfaction (LiSAT) which was not statistically significant

($P < 0.016$) this observed Chi-square value was 168.90 and degree of freedom 175. So the result was not significant that indicate there didn't have strong association between Self-Perception in exercise fitness (SPEF) of the participants and life satisfaction.

According to the findings of Srensen's study, exercisers with incomplete SCI had a significantly lower perceived exercise mastery score in this study. The high number of younger SCI victims causes significant economic loss to the family, as well as the community and country.

5.1 Limitation:

Regarding this study, there were some situational limitations or barriers to consider the result of the study. The limitations are as below:

The study had a small sample size. Only 105 samples were taken in this study. The samples were collected only from the selected community level and so the result of the study could not be generalized to the whole population in incomplete spinal cord injury in Bangladesh. This study has provided for the first time data on life satisfaction and community participation after rehabilitation training of people with spinal cord injury. No research has been done before on this topic. So there was little evidence to support the result of this project in the context in Bangladesh.

The data was collected through mobile phone interviews due spread out of COVID-19, if data were collected via face-to-face interview than the interview would be more effective. As it was the first research of the researcher so might be there were some mistakes that overlooked by the supervisor and the honorable teacher.

6.1 Conclusion

Spinal cord injury is one of the most devastating conditions in human life. Millions of people every year face spinal cord injury. In Bangladesh, there is lack of information and a proper database about spinal cord injury. Even there is no estimated number of spinal cord lesion people in Bangladesh. Bangladesh is a developing country. Most of them live with low economic levels and poor educational status. In these countries, there is also a lack of awareness about injury especially caused by spinal cord lesions. After spinal cord lesion the sufferers survive their whole life. They become hopeless and helpless. They think they are a burden of their own society because of their disability and functional impairment. There are many events that affect a person's lifestyle, life satisfaction and quality of life; spinal cord injury is one of them. It can hamper a person's full life at any age. The aim of the study was to assess the participants of exercise and life satisfaction of incomplete spinal cord injury (SCI) patients in the community. Among this study total participants were 105 and 96% male and 4% female so male was more vulnerable than female. Bangladesh is a highly populated country and males are mainly involved in outside occupation rather than females. This study provides that increased life satisfaction and community participation were in person with SCI in the long run. The residential area, the cause of the injury, family life and contact with friends and acquaintances, and a high level of life satisfaction are all factors.

6.2 Recommendations

After finishing the research, the researcher came up with a few recommendations. In the case of the result discussion, the study observed both positive and limited negative patient experiences. Though the study had some limitations, the investigator identified some additional steps that might be taken to improve the success of future research. Because the study was conducted in a short period of time, a longer period of time would be required in the future. Investigator use only 105 participants as the sample of this study, in the future the sample size would be more. In this study, the investigator took the incomplete SCI person only from the selected after rehabilitation process training of CRP, Savar, Dhaka and as a sample for the study. So for further study investigator strongly recommended including the SCI person from all over Bangladesh to ensure the generalize ability of this study.

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Appendix

Appendix-1 (A)

Permission Letter

Date: 15.06.2021

Head

Department of Physiotherapy

Centre for the Rehabilitation of the Paralysed (CRP)

Chapain, Savar, Dhaka-1343.

Through: Head, Department of Physiotherapy, BHPI.

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

Sir,

With due respect and humble submission to state that I am Md Yousuf ali, a student of 4th year B.Sc in Physiotherapy at Bangladesh Health Profession Institute (BHPI). The Ethical committee has approved my research project "Exercise & life satisfaction of incomplete spinal cord injury in community level" under the supervision of Mst Fatema Akter, Assistant Professor, Department of Physiotherapy BHPI. I want to collect data for my research project from the Department of Physiotherapy at CRP. So, I need permission for data collection from Spinal Cord Injury (SCI) unit of Physiotherapy Department at CRP (CRP, Savar, Dhaka-1343). I would like to assure that anything of the study will not be harmful for the participants.

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

Your Faithfully,

Md. Yousuf Ali

Md Yousuf Ali

4th year

B.Sc. in Physiotherapy

Class Roll: 05, Session: 2015-16

Bangladesh Health Professions Institute (BHPI)

(An academic Institution of CRP)

CRP-Chapain, Savar, Dhaka-1343.

MOHAMMAD ANWAR MOSSA
Senior Consultant &
Head of Physiotherapy Dept
Associate Professor, BHPI
CRP, Savar, Dhaka-1343

Approved
Allow for data
Collection at SCI unit.
1st Mitosis
05.09.2021

Forward
15.06.2021

Recommended

Shofiq

15.06.21

Md. Shofiqul Islam
Associate Professor & Head
Department of Physiotherapy
Bangladesh Health Professions Institute (BHPI)
CRP, Chapain, Savar, Dhaka-1343

Appendix-1 (B)



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

Ref:

CRP/BHPI/IRB/06/2021/469

Date:

16/06/2021

To
Md. Yousuf Ali
B.Sc. in Physiotherapy
Session: 2015-16. Student ID:112150276
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of the thesis proposal "Exercise & life satisfaction of incomplete spinal cord injury patients in community level" by ethics committee.

Dear Md. Yousuf Ali,
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 Mst. Fatema Akter as thesis supervisor. The Following documents have been reviewed and approved:

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

The purpose of the study is to find out exercise & life satisfaction of incomplete spinal cord injury patients in community level. The study involves use of a questionnaire to explore that may take 15 to 20 minutes to answer the specimen and there is no likelihood of any harm to the participants. Data collectors will receive informed consents from all participants. Any data collected will be kept confidential. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 8:30 am on 1st March, 2020 at BHPI (23rd IRB Meeting).

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

Best regards,

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

CRP-Chapain, Savar, Dhaka-1343, Tel : 7745464-5, 7741404
E-mail : principal-bhpi@crp-bangladesh.org, Web: bhpi.edu.bd, www.crp-bangladesh.org

Appendix-2 (A)

সম্মতিপত্র

(অংশগ্রহণকারীকে পড়ে শোনাতে হবে)

আসসালামুআলাইকুম/নমস্কার,

আমার নাম মো ইউসুফ আলী, বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বি এইচ পি আই) এর চতুর্থ বর্ষের একজন শিক্ষার্থী। আমি "কমিউনিটি স্তরের অসম্পূর্ণ মেরুদণ্ডের আঘাতে রোগীদের ব্যায়াম এবং জীবন সন্তুষ্টি" শিরোনামে একটি গবেষণা করছি যা আমার অধ্যয়নের অন্তর্গত। সে কারণে আমি কিছু ব্যক্তিগত এবং অন্যান্য সম্পর্কিত তথ্য জানতে চাই। এটি প্রায় ১৫-২০ মিনিট সময় নেবে।

আমি আপনাকে জানাতে চাই যে এটি নিখুঁত ভাবে পেশাদার গবেষণা এবং এটি অন্য কোনও উদ্দেশ্যে ব্যবহৃত হবে না। আপনার প্রদত্ত সমস্ত তথ্য কে গোপনীয় হিসাবে বিবেচনা করা হবে এবং কোনও প্রতিবেদন বা প্রকাশের ক্ষেত্রে এটি নিশ্চিত করা হবে যে তথ্যের উৎস বেনামী।

এই গবেষণায় আপনার অংশগ্রহণ স্বেচ্ছাসেবী এবং আপনি এই অধ্যয়নের যে কোনও সময় কোন নেতিবাচক পরিণতি ছাড়াই নিজেকে প্রত্যাহার করতে পারেন। সাক্ষাৎকারের সময় আপনি পছন্দ করেন না বা উত্তর দিতে চান না এমন কোন নির্দিষ্ট প্রশ্নের উত্তর না দেওয়ারও অধিকার আপনার রয়েছে।

আপনার যদি অংশগ্রহণকারী হিসাবে অধ্যয়ন বা আপনার অধিকার সম্পর্কে কোনও প্রশ্ন থাকে তবে আপনি আমার সাথে বা আমার সুপারভাইজার মোছা: ফাতেমা আক্তার, সহকারী অধ্যাপক, ফিজিওথেরাপি বিভাগ, সিআরপি, সাভার, ঢাকা -১৩৪৩, এর সাথে যোগাযোগ করতে পারেন।

আমি শুরু করার আগে আপনার কোন প্রশ্ন আছে

আমি কি এই সাক্ষাৎকার শুরু করতে পারি?

হ্যাঁ

সাক্ষাৎকারপ্রদানকারীর স্বাক্ষর..... তারিখ.....

সাক্ষাৎকার গ্রহণকারীর স্বাক্ষর..... তারিখ.....

Appendix-2 (B)

Informed consent

(Please read out to the participant)

AssalamuAlaikum/nomosker,

My name is *Md Yousuf Ali*. I am conducting this research study which is the part of B.Sc. in Physiotherapy program and my research title is **“Exercise & life satisfaction of incomplete spinal cord injury patients in community level”** under Bangladesh Health Professions Institute (BHPI), University of Dhaka. Because of that I would like to know about some personal and other related information. This will take approximately 15-20 minutes.

I would like to inform you that this is a purely professional study and will not be used for any other purpose. All information provided by you will be treated as confidential and in the event of any report or publication it will be ensured that the source of information remains anonymous.

Your participation in this study is voluntary and you may withdraw yourself at any time during this study without any negative consequences. You also have the right not to answer a particular question that you don't like or do not want to answer during interview.

If you have any query about the study or your right as a participant, you may contact with me or my supervisor Mst. Fatema Akter, Assistant Professor, Department of Physiotherapy. BHPI, CRP, Savar. Dhaka-1343.

Do you have any questions before I start?

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

Yes

No

Signature of the Participant's..... Date.....

Signature of the Data collector's..... Date.....

Appendix-3 (A)

গবেষণা প্রশ্নাবলী

শিরোনাম: "কমিউনিটি স্তরের অসম্পূর্ণ মেরুদণ্ডের আঘাতে রোগীদের ব্যায়াম এবং জীবন সন্তুষ্টি

আইডি নং :তারিখ :

মোবাইল নং :

পর্ব- ১: রোগীর জীবন বিত্যান্ত তথ্য

ক্রমিক নং	প্রশ্ন এবং ফিল্টার	কোডিং বিভাগসমূহ	কোড নং
১.১	রোগীর নাম		
১.২	বয়স		
১.৩	লিঙ্গ	পুরুষ=১মহিলা=২	<input type="checkbox"/>
১.৪	ঠিকানা	গ্রাম..... পোস্ট..... জেলা.....	
১.৫	সাধারণত বসবাস	গ্রামীণ=১ নগর=২ আধা নগর=৩	<input type="checkbox"/>
১.৬	বৈবাহিক অবস্থা	বিবাহিত=১ অবিবাহিত=২ বিধবা=৩ পৃথক=৪ তালকপ্রাপ্ত=৫বিধবা=৬	<input type="checkbox"/>
১.৭	ধর্ম	ইসলাম=১ হিন্দু ধর্ম=২ খ্রিস্টান=৩বৌদ্ধধর্ম=৪	<input type="checkbox"/>
১.৮	শিক্ষার স্তর		
১.৯	পেশা		
১.১০	আপনার পরিবারের ধরণ কি?	ক্ষুদ্র=১ যৌথ=২	<input type="checkbox"/>

১.১১	আঘাতের কারণ	আঘাতজনিত = ১ অ-আঘাতজনিত = ২	<input type="checkbox"/>
১.১২	আঘাতের সময়কাল		

পর্ব- ২ : সংশোধিত টিএনও আরবেইদ প্রশ্নাবলী

ক্রমিক নং	প্রশ্ন এবং ফিল্টার	কোডিং বিভাগসমূহ	কোড নং
২.১	রোগ-নির্দিষ্ট আইটেম: মেরুদণ্ডের আঘাত	অসম্পূর্ণ প্যারাপ্লেজিয়া = ১ অসম্পূর্ণ টেট্রাপ্লেজিয়া = ২	<input type="checkbox"/>
২.২	প্রধান উপার্জনকারী সদস্য	হ্যাঁ (যদি হ্যাঁ হয় তবে পরবর্তী প্রশ্নে যান) = ১ না (যদি না হয় তবে পরবর্তী প্রশ্নটি এড়িয়ে যান) = ২	<input type="checkbox"/>
২.২.১	মাসিক আয়	টাকা.....	
২.৩	শিক্ষাগত	নিরক্ষর = ১ প্রাথমিক = ২ মাধ্যমিক = ৩ উচ্চ মাধ্যমিক = ৪ স্নাতক = ৫ মাস্টার্স = ৬	<input type="checkbox"/>
২.৪	আঘাতে পূর্বে কর্মসংস্থান পরিস্থিতি		
	কাজের ধরণ	কৃষক = ১ দিনমজুর = ২ সেবাবাহারী = ৩ ব্যবসায় = ৪ অন্যান্য.....=৫	<input type="checkbox"/>
	কাজের চুক্তি	স্থায়ী নিয়োগপ্রাপ্ত = ১ অস্থায়ী নিয়োগপ্রাপ্ত = ২ স্বনির্ভর = ৩ অন্যান্য=৪	<input type="checkbox"/>
২.৫	বর্তমান কর্মসংস্থান পরিস্থিতি		

	কাজের ধরণ	কৃষক = ১ দিনমজুর = ২ সেবাধারী = ৩ ব্যবসায় = ৪ অন্যান্য.....=৫	<input type="checkbox"/>
	কাজের চুক্তি	স্থায়ী নিয়োগপ্রাপ্ত = ১ অস্থায়ী নিয়োগপ্রাপ্ত = ২ স্বনির্ভর = ৩ অন্যান্য=৪	<input type="checkbox"/>
২.৬	কাজের পরিবর্তন	চাকরি বা নিয়োগকর্তার পরিবর্তন =১ কাজের উপাদানের পরিবর্তন =২ চাকরির পরিবর্তনের জন্য ইচ্ছা =৩ পুনর্মিলন পেশাদারদের সাথে পরিচিত চান =৪ কোনও পরিবর্তনের দরকার নেই =৫	<input type="checkbox"/>
২.৭	বর্তমান কাজের পরিস্থিতি এবং সামাজিক পরিবেশ সম্পর্কে মতামত	উত্তম= ১ খুব ভাল = ২ ভাল = ৩ খারাপ= ৪ খুব খারাপ = ৫	<input type="checkbox"/>

পর্ব -৩ : জীবন সন্তুষ্টি প্রশ্নোত্তর -৯ (LiSAT-9)

রোগীর নাম : _____ তারিখ: _____

কেমন সন্তোষজনক আপনার জীবনের এই বিভিন্ন দিক ? আপনারউপযুক্ত
অবস্থা অনুযায়ী নম্বর সূচিত করুন ।

১ = খুব অসন্তুষ্টি	৪ = সামান্য সন্তুষ্টিজনক
২ = অসন্তুষ্টি	৫ = সন্তুষ্টি
৩ = সামান্য অসন্তুষ্টি	৬ = খুব সন্তোষজনক

মান : (১-৬)

একটি সমপূর্ণ জীবনহিসাবে _____
আমার বৃত্তিমূলক/পেশাগত অবস্থা _____
আমার আর্থিক অবস্থা _____
আমার অবসরের অবস্থা _____
বন্ধু এবং পরিচিতদের সাথে আমার যোগাযোগ _____
আমার যৌন জীবন _____
আমার নিজের -যত্ন বজায় রাখার ক্ষমতা (ড্রেসিং, হাইজিন, স্থানান্তর ইত্যাদি) _____
আমার পারিবারিক জীবন _____
আমার সঙ্গীর সম্পর্ক _____

সমষ্টি: _____

পর্ব- ৪: ব্যায়াম প্রশ্নাবলীতে নিজের—উপলব্ধি(এস পি ই কিউ)

ব্যায়ামপ্রশ্নাবলীতে নিজের উপলব্ধি, সাবস্কেলস ব্যায়ামনিয়ন্ত্রণক্ষমতা (এস পি ই কিউমাস্টারি)

এবং ব্যায়াম ফিটনেস (এস পি ই কিউফিটনেস) |

১ = সম্পূর্ণ একমত
২ = কিছুটা হলেও একমত
৩ = কিছুটা হলেও একমত না
৪ = সম্পূর্ণরূপে একমত না

এস পি ই কিউমাস্টারি :	মান : ১ - ৪			
একরকম, আমি ভালো থাকি যখন শারীরিক কাজে অংশ নিই ।	১	২	৩	৪
কিছু অর্জনের শারীরিক কাজে আমাকে অন্যান্য বিষয়ের সাথে একটি ইতিবাচক অনুভূতি দেয় ।	১	২	৩	৪
শারীরিক কাজ আমার কাছে গুরুত্বপূর্ণ কারণ এটি অনুভূতি দেয় যে আমি সবকিছুতেই নিয়ন্ত্রণে আছি ।	১	২	৩	৪
আমি মনে করি আমি অন্যের চেয়ে বেশি ধরনের শারীরিক কাজে ভাল ।	১	২	৩	৪
আমি মনে করি শারীরিক কাজে করে আমি জীবনের দৈনন্দিন স্ট্রেস থেকে মুক্তি পেতে পারি ।	১	২	৩	৪
সমষ্টি : _____ = _____ + _____ + _____ + _____				
এস পি ই কিউফিটনেস :				
সাধারণত, আমি ভাল অবস্থায় নেই ।	১	২	৩	৪
এটি আমাকে কিছুটা চিন্তিত করে যে আমি ভাল অবস্থানে নেই ।	১	২	৩	৪
আমি চাই আমার চেয়ে আরও ভাল আকারে থাকি ।	১	২	৩	৪
সমষ্টি : _____ = _____ + _____ + _____ + _____				

Appendix-3 (B)
Research Questionnaire

Title: “Exercise & life satisfaction of incomplete spinal cord injury patients in community level”

ID no :

Date of :

Mobile no :

Part- 1: Patient’s Socio-demographic Information

QN	Question and filters	Coding categories	Code no.
1.1	Patient Name		
1.2	Age		
1.3	Gender	Male=1 Female=2	<input type="text"/>
1.4	Address	Vill..... Post..... Dist.....	
1.5	Usually reside	Rural=1 Urban=2Semi urban=3	<input type="text"/>
1.6	Marital status	Married=1 Single=2 Widow=3 Separated=4 Divorced=5Widower=6	<input type="text"/>
1.7	Religion	Islam=1 Hinduism=2 Christianity=3 Buddhism=4	<input type="text"/>
1.8	Level of education		
1.9	Occupation		

1.10	What is your family type?	Nuclear=1 Joint=2	<input type="text"/>
1.11	Cause of injury	Traumatic=1 Non-traumatic=2	<input type="text"/>
1.12	Duration of injury		

Part-2 : TNO Arbeid Modified Questionnaire

QN	Question and filters	Coding categories	Code no.
2.1	Disease-specific items: Spinal cord injury	Incomplete Paraplegia=1 Incomplete Tetraplegia=2	<input type="text"/>
2.2	Main earning member	Yes (If yes then go to the next question)=1 No (If no then skip the next question)=2	<input type="text"/>
2.2.1	Monthly income	TK.....	
2.3	Educational level	Illiterate=1 Primary=2 Secondary=3 Higher secondary=4 Graduate=5 Masters=6	<input type="text"/>
2.4	Preinjury employment situation		
	Type of job	Farmer=1 Day labourer=2 Service holder=3 Business=4 Other.....=5	<input type="text"/>
	Job contract	Permanent employed=1 Temporary employed=2 Self-employed=3 Other.....=4	<input type="text"/>
2.5	Current employment situation		
	Type of job	Farmer=1 Day labourer=2 Service holder=3 Business=4 Other.....=5	<input type="text"/>

	Job contract	Permanent employed=1 Temporary employed=2 Self-employed=3 Other.....=4	<input type="text"/>
2.6	Job modifications	Change of job or employer=1 Material and immaterial adaptations of the job=2 Wish for (more) job modifications=3 Wish for (more) contacts with reintegration professionals=4 No modification need=5	<input type="text"/>
2.7	Opinions about the current working conditions and social Atmosphere	Excellent=1 Very good=2 Good=3 Poor=4 Very poor=5	<input type="text"/>

Part-3: Life satisfaction Questionnaire-9 (LISAT-9)

Patient Name: _____

Date: _____

How satisfactory are these different aspects of your life? Indicate the number that best suits your situation.

1= Very dissatisfying 4=Rather satisfying
2=Dissatisfying 5=Satisfying
3=Rather dissatisfying 6=Very satisfying

Score: (1-6)

Life as a whole is _____

My vocational situation is _____

My financial situation is _____

My leisure situation is _____

My contact with friends and acquaintances are _____

My sexual life is _____

My ability to maintain my self-care (dressing, hygiene, transfers,
and so on) is _____

My family life is _____

My partner relationship is _____

Total Score: _____

Part- 4: Self- Perception in Exercise Questionnaire

Self-Perception in Exercise Questionnaire, subscales exercise mastery (SPEQ mastery)and exercise fitness (SPEQ fitness)

1= Totally agree
 2= Agree to some extent
 3= Disagree to some extent
 4= Totally disagree

SPEQ mastery:	Score (1-4)			
Somehow, I show what I am good for when I participate in physical activities	1	2	3	4
Physical activity gives me, among other things, a positive feeling of attaining something	1	2	3	4
Physical activity is important to me because it makes me feel I am in control of something	1	2	3	4
I think I am good at more types of physical activities than others	1	2	3	4
I think I can get away from daily stress of life by doing physical activity	1	2	3	4
Total Score : _____ = _____ + _____ + _____ + _____				
SPEQ fitness:				
Generally, I am not in good shape	1	2	3	4
It worries me somewhat that I do not manage to keep in good shape	1	2	3	4
I wish I was in far better shape than I am	1	2	3	4
Total Score : _____ = _____ + _____ + _____ + _____				