

**HEALTH RELATED QUALITY OF LIFE OF SPINAL CORD INJURY
PATIENTS ATTENDING AT SPECIALIZED REHABILITATION CENTRE**

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DU Roll no: 154

DU Reg no: 5237

Session: 2012-2013

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Bangladesh

February, 2017

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

HEALTH RELATED QUALITY OF LIFE OF SPINAL CORD INJURY PATIENTS ATTENDING AT SPECIALIZED REHABILITATION CENTRE

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DECLARATION

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

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Acknowledgement

First of all, I would like to pay my gratitude to Almighty who has given me the ability to complete this research project in time with great success. I would like to pay my gratitude towards my parents who constantly encouraged me to carry out this project. My deepest great-fulness goes to my honorable supervisor & respected teacher Ehsanur Rahman, Assistant Professor, Department of Physiotherapy, Bangladesh Health Professions Institute (BHPI), CRP, Savar, Dhaka, for his keen supervision and tireless effort with excellent guidance and support without which I could not able to complete this project.

In addition, I am thankful to all of my honorable teachers specially Md. Obaidul Haque, Associate Professor, Head of the Department of Physiotherapy, BHPI; Mohammad Habibur Rahman, Assistant Professor, Department of Physiotherapy, BHPI ; Md. Shofiqul Islam, Assistant Professor, Department of Physiotherapy, BHPI; Mohammad Anwar Hossain, Associate Professor, Head of the Department of Physiotherapy, CRP, Savar, Dhaka for given me the permission to collect the data from the Spinal Cord Injury Unit of Physiotherapy Department.

I wish to thanks to all respectable Physiotherapy staff working at CRP Spinal cord injury unit specially honorable teacher Muzaffor Hossain, Senior Physiotherapist & In-charge of SCI Unit, CRP, Savar, Dhaka for helping me in collection of my data.

I would also like to give thanks to BHPI librarian Mrs. Mohosina to her heartily help and library assistant Mr. Anis for their positive help, kind support to find out related books, journals and also access to internet during the project study. I thank all of my friends for their direct and indirect inspiration, suggestion as well as support.

Finally, I would like to thanks those people who eagerly participated as study samples in the conduction of my study and the entire individual who are directly or indirectly involve with this study.

Acronyms

ADL :	Activity of Daily Living
BMRC:	Bangladesh Medical Research Council
BHPI :	Bangladesh Health Profession's Institute
CRP :	Centre for the Rehabilitation of the Paralysed
HRQoL:	Health Related Quality of Life
IRB:	Institutional Review Board
QoL :	Quality of Life
SCI :	Spinal Cord Injury
SPSS :	Statistical Package for the Social Sciences
USA :	United state of America
WHO :	World Health Organization

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ABSTRACT

Purpose: To assess the health related quality of life of the patients with spinal cord injury attending at specialized rehabilitation centre. **Objectives:** To evaluate the health related quality of life of spinal cord injury patients through the evaluation of physical functioning (PF), Role-emotional (RP), Bodily pain (BP), General health (GH), Vitality (VT), Social functioning (SF), Role-emotional (RE), Mental health (MH). **Methodology:** The study design was cross-sectional. Total 115 samples were selected conveniently for this study from Centre for the rehabilitation of the paralyzed (CRP), Spinal cord injury unit, at Savar. Data was collected by using of questionnaire and health-related quality of life (HRQOL) was assessed by the Short Form-v236 (SF-36v2) health survey questionnaire. The study was conducted by using quantitative descriptive analysis through using SPSS software 20.0 version. **Results:** Among 115 SCI patients evaluation, 97 (84.3%) were male and 18 (15.7%) were female where 63 (54.8%) were paraplegia and 52 (45.2%) were tetraplegia. Association found among age, type of injury, severity of injury with the eight components of SF-36v2 questionnaire. It was found that the individual with spinal cord injury had a poor physical health and mental health status where poor physical health status and mental health status claims poor quality of life. The subjects reported lower scores on physical health and mental health in all dimensions of SF-36. **Conclusion:** Spinal cord injury is a disastrous condition which causes individual's quality of life declining. The spinal cord injured persons reported low scores on all of the SF-36 dimensions that characterize poor quality of life (QOL) among all. The study demonstrated that spinal cord injury greatly affects quality of life and gives rise to more problems, especially in the areas of physical and mental health. It is necessary to take steps to improve the physical and emotional status of persons with spinal cord injury, as this will eventually lead to improvement in their quality of life.

Key words: Health related quality of life (HRQOL), Spinal Cord Injury (SCI)

1.1 Background

Spinal Cord Injury is the most complex injury of all catastrophic injuries where patients usually have permanent and devastating neurologic deficits with disability and the injury causes negative effect on the injured person's functional, medical, psychological and economical well being (Smith et al., 2013).

Spinal cord injury (SCI) is a devastating disorder that can cause impairment in physical, psychological, and social functioning (Gurcay et al., 2010; New et al., 2013; Smith et al., 2013). It is a frequent cause of mortality, and is reflected in radical changes in lifestyle and quality of life (QOL) for both the persons with SCI and their family members (Kawanishi & Greguol, 2013).

Spinal cord injury can occur in everyone's life and the patient with Spinal cord injury faces lots of challenges in coping with the injury process as well as rehabilitation; Although some patients recover partial to perform the daily living activities through rehabilitation but many activities are permanently altered (Kumar & Gupta, 2016).

In recent decades the average life expectancy of the people with spinal cord injury has increased (Jensen et al., 2013). Spinal cord injury (SCI) is unexpected which alters dramatically the course of an individual's life; It causes sudden, often devastating damage to the central nervous system, with potential adverse effects in multiple body systems including musculoskeletal, integumentary, digestive, urinary, cardiovascular, reproductive where many of the secondary complications experienced by individuals with SCI are quite unlike those experienced by persons with general health issues or other neurological disorders (Tulsky et al., 2015).

In a developing country like Bangladesh, life expectancy of spinal cord injured persons is much lower than in a developed country (Razzak et al., 2011). SCI continues to be a major cause of disability throughout Asia as well as in Bangladesh (Islam et al., 2011).

SCI is a condition with an annual incidence of 12.1–57.8 cases per million worldwide (Munce et al., 2013). According to the Noonan et al., (2012) , a number of people living with SCI in the US is approximately 270,000. Every year, an estimated 11,000 SCIs occur in the U.S (American Association of Neurological Surgeons, 2017) and in Europe, the incidence is from 10.4 per million per year to 29.7 per million per year (Moghimian et al., 2015). Lim et al., (2017) stated that the highest prevalence of SCI is 906 per million in the United States. In Asia, the incidence rates of SCI range from 12.06 - 61.6 per million, while the average age range of affected persons is 26.8 - 56.6 years (Ning et al., 2012). In the United States, the annual incidence of traumatic SCI is 40 cases per million or 12000 new cases each year (Rabadi et al., 2013).The causes of SCI may differ from person to person due to different age, sex, race and socio- cultural activities (Hoque et al., 2012). The most frequent cause of traumatic spinal cord injury is motor vehicle accidents. (Chen et al., 2013; Mothe & Tator, 2013; Nwankwo & Uche, 2013).

Spinal cord injury (SCI) is one of the most serious injuries of the musculoskeletal system which most cases brings about permanent disability and the unexpected occurrence of the injury and experiencing a new life situation result in a decrease in the quality of life in individuals with SCI ; SCI and its direct consequences entail dramatic changes in the functioning of a person, thus affecting virtually every dimension of life. Disorders of the respiratory, cardiovascular, digestive and urinary systems as well as sexual dysfunctions, spasticity, edema, pain, autonomic dysreflexia, dysfunctions of the endocrine system or disorders of biochemical processes are some of the many severe consequences and complications regarding particular body organs and systems (Pokaczajło et al.,2016).

Quality of life means ,"Person's perception of position in their life within the context of the culture and value systems in which they lives and in relation to their goals, expectations, standards, and concerns. The person's physical health, psychological state, level of independence, social relationships, personal beliefs and relationship to the environment consists the Quality of Life" (WHO,1999).

People with SCI must relearn basic skills such as eating, bathing, dressing, driving and in addition, individuals with SCI must often cope with an increased incidence of many health problems, such as neurogenic bowel and bladder, respiratory symptoms and complications, cardiovascular complications, pressure ulcers, altered sexual functioning, urinary tract infections, autonomic dysreflexia, neuropathic pain, osteoporosis and fractures and often have to cope with altered social roles and psychiatric comorbidities including reactive depression and anxiety disorders ; These issues represent major challenges to living with SCI all of which greatly affect quality of life (Tulsky et al., 2015) .

As the spinal cord is responsible for conducting afferent and efferent stimuli between the periphery and the brain, when this organ is injured, organic structures and functions are compromised, resulting in limitations to perform Activities of Daily Living (ADLs), aspects that affect victims QOL (França et al., 2011).

Quality of life (QOL) measurement can give information about the health status beyond diagnosis, impact of the disease and its management on different domains of life (Geyh et al., 2010). Spinal cord injured (SCI) persons experience poor and lower health-related quality of life (HRQOL) than the general population (Gurcay et al., 2010; Saadat et al., 2010). In Canada, QOL is significantly decreased in persons with SCI as compared to other people, and it was found that younger age, employment and lack of hospitalisation played an important role for a better quality of life (Rabadi et al., 2013). Chronic illnesses such as diabetes, renal disease, chronic pulmonary diseases and pressure ulcers have an effect on quality of life of persons with SCI (Saadat et al., 2010). Literature shows that QOL after SCI is not uniformly worse, but rather a spectrum of recovery outcomes exist that range from QOL well below the general population to QOL that surpasses healthy population averages (Hill et al., 2010). QOL for people with SCI and the factors they identify as contributing to the experience of quality in their lives (Hammell, 2007). QOL in persons with SCI is much related to mental health, mobility, employment, accessibility of the external environment, social support and coping (Geyh et al., 2010).

Measurements of Health Related Quality of life (HRQOL) focus on the individual's satisfaction or happiness with domains in life that are affected by health or health care, and several assessment tools are available for this purpose; the identification of factors affecting HRQOL may influence preventive, diagnostic and therapeutic strategies for the improvement of HRQOL in persons with SCI (Lidal et al., 2008) .

Health-related quality of life (HRQOL) is often considered the primary end point in research, clinical medicine and health promotion when impairments are incurable or insufficiently understood ; people with a traumatic spinal cord lesion (SCI), extended life spans and the need for life-long follow-up make it important to expand the outcome parameters of medical care and health services to include HRQOL measures (Biering-Sørensen et al., 2015).

Quality of Life is a concept that is difficult to define but which can be described as a determination of the individual's satisfaction with life ; Compared with non disabled people, persons with Spinal Cord Injury leads lesser well being and poor state of health and lower physical score and lower emotional and social health domination of life where there is no relationship between the neurologic level, the completeness of Spinal Cord Injury and the subjective Quality of life (Tonack et al., 2008).

The QOL of a persons who sustained spinal cord injury (SCI) seems to be diminished compared to the general population. The QOL appears not to be directly related to the severity of SCI but it is related to perceived health, participation and integration, to social support and relationships as well as to living circumstances, e.g. accessibility or income (Geyh et al., 2010).

Currently, QOL is considered as one of the main concerns for health professionals and is known and used as an index to measure health status in health research that can be reduced subsequent complications such as anxiety and depression (Hammell, 2007)

Quality of life has become both the ultimate goal of rehabilitation following Spinal cord injury and effectiveness of rehabilitaion programmes for patient with spinal cord injury (ICF, 2012).

Both paraplegia and tetraplegia patient with spinal cord injury lead a poor health related quality of life where the Physiological problems as well as Psychological problems hamper the normal activities of daily living and overall Quality of life and delays the phase of rehabilitation (Robertovich et al., 2017).

The relationship between level of impairment and health-related quality of life (HRQOL) is not well understood, although there has been an increased understanding of its importance and Subjective information reported from persons with SCI about their health, well-being, and other important outcomes is necessary for clinicians and health care policy analysts to assess the relative value of competing ways of organizing, providing, and financing health care services (Forchheimer et al., 2008).

Quality of life assessment is important because it broadens the decisions made by the health team, extending them to healthcare programs and policies (Aquarone and Faro, 2014).

The objective approach to assessing QOL evaluates characteristics that can be impartially measured by an external appraiser and the subjective approach to measuring QOL assumes that QOL can only be determined by the individual ; As improved QOL, be it subjective or objective, is indicative of the success of treatment programs or progress in the life of an SCI patient, it should be routinely measured among SCI patients (Hill et al., 2010).

Long term rehabilitation programmes can improve quality of life, the aim of this study was to determine the level of quality of life of persons with SCI, and make recommendations so that treatment can be tailored to their needs and also aimed to evaluate how SCI affects QOL and to measure the impact on different components of HRQOL.

1.2 Rationale

SCI is the most life threatening health issue all over the world and which affects the quality of life of individuals. In general population SCI and its complications are very common, affecting up to 12.1–57.8 cases per million per year worldwide. The word quality of life needs to be explained here because the quality of life is an important consideration of medical care. SCI causes disability and affects activities of daily living. SCI affects patient's mobility, self care, physical functioning, and social functioning, as well as mental status also. After this study physiotherapist will get an idea which level of Quality of life patient will have after SCI. In CRP a large number of people attend to get physiotherapy treatment due to spinal cord injury but the aim of the treatment does not succeed always due to patient's Quality of life.

This idea help to set up treatment plan according to patient needs. We can provide better treatment as well as essential advice to the patients. As a health professional, it will improve our knowledge. With this study patients will also be benefited by gaining knowledge about his/her condition and will gain some informations about their life style which is responsible for their quality of life.

Public health professionals use health related quality of life to measure the effects of numerous disorders in different populations. Tracking health related quality of life in different population can identify subgroups with poor physical or mental health and can help guide policies or intervention to improve their health.

In relation with various studies in different countries ,they mentioned the relationship between quality of life and Spinal Cord Injury. This study will be an attempt to find out the impact of spinal cord injury over Quality of life in Bangladeshi perspective.

1.3 Research Question

What is the health related quality of life of spinal cord injury patients attending at specialized rehabilitation centre?

1.4 Study Objectives

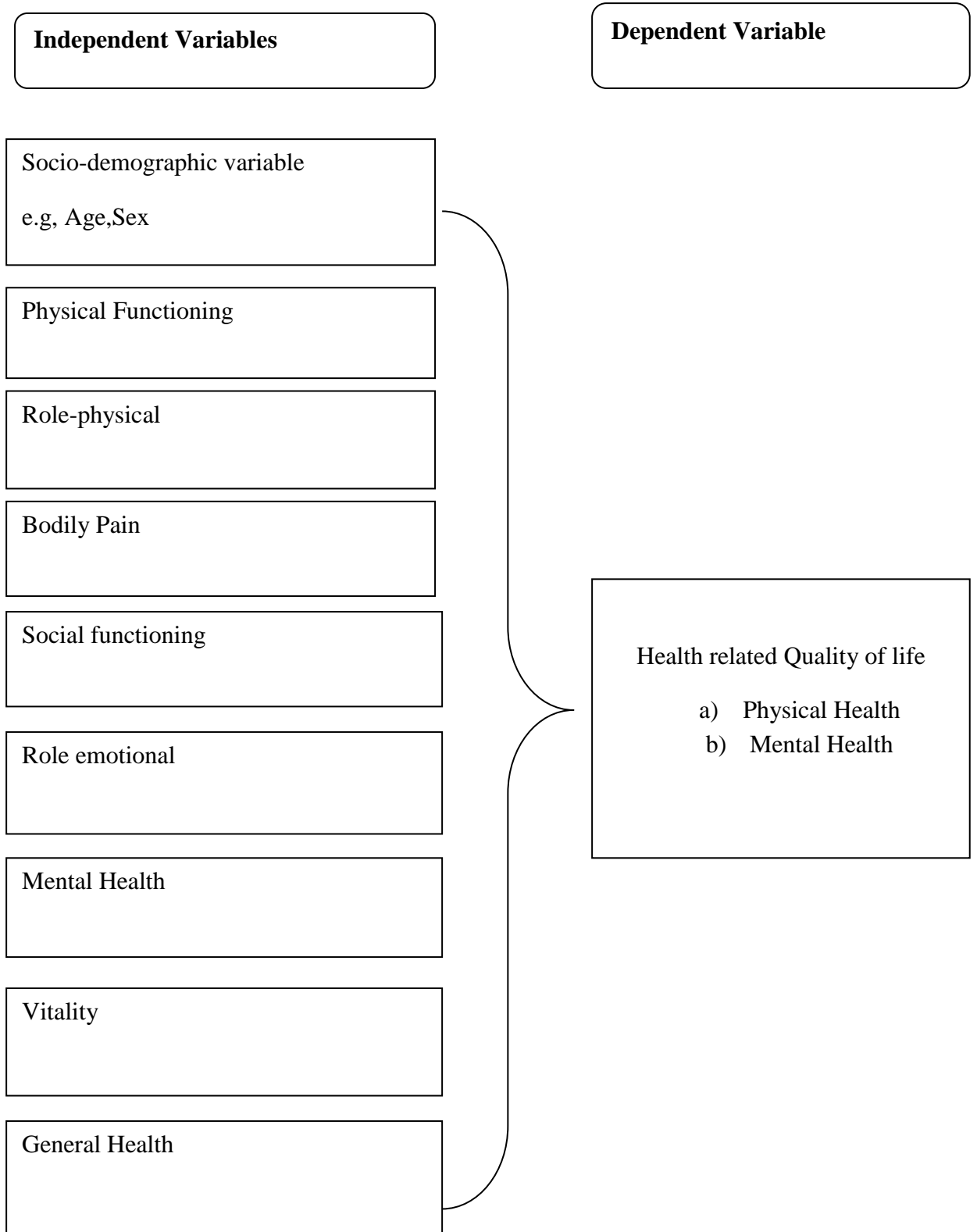
1.4.1 General Objective

To evaluate the health related quality of Life of Spinal Cord Injury patients attending at Specialized Rehabilitation Centre.

1.4.2 Specific Objectives

- 1) To evaluate the physical functioning level of the participants.
- 2) To identify the role-physical ability of the participants.
- 3) To find out the bodily pain status of the participants.
- 4) To detect the general health status of the participants
- 5) To explore the vitality status of the participants.
- 6) To measure the social functioning capacity of the participant.
- 7) To see the role-emotional status of the participants.
- 8) To assess the mental health condition of the participants.

1.5 Conceptual Framework



1.6 Operational Definition

Spinal Cord Injury

Spinal cord injury is defined as the occurrence of an acute traumatic lesion of neural elements in the spinal canal resulting in temporary or permanent sensory and/or motor deficit.

Paraplegia

Partial or complete paralysis of the lower half of the body with involvement of both legs that is usually due to injury or disease of the spinal cord in the thoracic or lumbar region.

Tetraplegia

Tetraplegia is caused by damage to the brain or the spinal cord at a high level C1–C7—in particular, spinal cord injuries secondary to an injury to the cervical spine. The injury, which is known as a lesion, causes victims to lose partial or total function of all four limbs, meaning the arms and the legs.

Quality Of Life

Quality of life (QOL) is the general well-being of individuals and societies, outlining negative and positive features of life. It observes life satisfaction, including everything from physical health, family, education, employment, wealth, religious beliefs, finance and the environment.

Physical health

It is the soundness of the body, freedom from disease or abnormality. It includes pain present in the body, how much physical health interferes in ADL, limitation in bathing or dressing, energy, tiredness etc.

Spinal cord injury results in a high level of individual disability, which is reflected in radical changes in lifestyle (Kawanishi & Greguol, 2013). According to Wyndaele & Wyndaele (2007), worldwide prevalence has been estimated to range between 223 and 755 per million people and because of improved survival rates, SCI prevalence is increasing. On the basis of a national data base of 30,822 SCI people in the United States, life expectancy of persons with SCI has been shown to increase over the past 30 years, with mortality rates reducing by approximately 40% in the first 2 years after the injury (Saadat et al., 2010). According to NSCISC (2013), it is estimated that the annual incidence of SCI, not including those who die at the scene of the accident, is approximately 40 cases per million population in the US or approximately 12,000 new cases each year. The prevalence SCI according to NSCISC (2013) in the United States who are alive with SCI has been estimated to be approximately 273,000 persons, with a range of 238,000 to 332,000 persons. In United States the annual incidence of traumatic SCI is 40 cases per million or 1200 new cases each year (Rabadi et al., 2013). Nwankwo & Uche (2013) found that in SCI, The 31–45 years age group is the most frequently affected and male is more affected than female (4.3:1), 53% injury occurred in cervical spine, 22% thoracic spine and 25% lumbar spine injury.

In Bangladesh the mean life expectancy of the people with SCI was found in a study 5.36 years. Overall, 56.4% of persons admitted with SCI died within 5 years and 43.6% survived 5 years or more after injury. A study shows in Bangladesh at CRP, the most vulnerable age groups were 20-40 years, covering 55.6% of persons. Frequency of SCI was less in those below 20 and above 50 years of age. In the 158 persons, 86.1% had injuries of traumatic and 13.9% of non-traumatic origin, leading to 79.75% with paraplegia and only 20.25% with tetraplegia (Razzak et al., 2011).

In Bangladesh, 63% of SCI is caused by falling from a height (Hoque et al., 2012). Another common cause (18%), in Bangladesh Falling while carrying a heavy load on the head, usually resulting in tetraplegia (Razzak et al., 2011).

The worldwide incidence and prevalence of SCI are increasing progressively. Chen et al. (2013) formulate a global mapping of spinal cord injury epidemiology, he found that the range of reported global prevalence is between 236 and 1009 per million. Asian countries particularly China and India are not appropriately represented, with available Asian statistics likely underestimating the overall prevalence within this populous region. Prevalence data is only exists for the Kashmir region in India with a prevalence of between 236-464 per million traumatic SCI. In western Europe : Two countries only have reported prevalence data - Finland 280 per million and Iceland 316 per million. In North America : USA 721-1009 per million. Canadian data is estimated at approximately 1173 per million (assuming a population of 30.7 million).The most representative incidence statistic for each country within WHO regions is presented along with aetiology data where possible. Asia Pacific: Japan on the basis of a native wide survey, had an incident rate of 40.2 per million and had higher rates of tetraplegia than experienced in other countries . A higher than usual proportion of falls (42%) is probably related to an aged population at the time of injury, given Japan has an extremely aged population with 29.7% of people being aged 60 years or over , based on 2009 statistics . Asia, East : Taiwan had an incident rate of 18.8 per million (70% of possible SCI cases from centers through Taiwan). Land Transport accounted for 49 % of SCI in the general population. The incidence of SCI was higher in Geriatric (age greater than 65) population (47.5 per million) with a higher proportion of tetraplegic patients in this group. Asia, South: Land Transport- related SCI is reported to be much lower than European countries ; falls predominate within southern Asia. The highest percentage of falls was in Pakistan 82% , particularly fall from trees and roof tops. Data from Bangladesh also had high number of falls (63%) ,out of which 43% due to fall from trees and 20% while carrying heavy loads. There is a statistics for people in Nepal under the age of 19, in which 61% of SCI was due to falls mainly from rooftops as opposed to trees in the rest of the region (Geyh et al.,2010).

Traumatic SCI results from motor vehicle collisions (36.5%), falls (28.5%), violence (14.3%) and sports (9.2%) activities being leading causes. Since (2010), motor vehicle crashes account for 36.5% of reported SCI cases. In a study of Razzak (2013), found that the rate of depression after SCI in Bangladesh because of traumatic

injury is 16.9% at CRP. Particularly for rehabilitation of people with traumatic SCI, have been concerned not only with degree of loss of function, but also with quality of life (Geyh et al., 2010).

Non-traumatic SCI is less severe injury than the traumatic injury. Non-traumatic SCI almost have incomplete injuries, while traumatic injuries are slightly more likely to have to have incomplete injuries. Incomplete injuries are far better prognosis for neurologic improvement than complete injuries. Persons with traumatic SCI; persons with non-traumatic SCI are significantly more likely to have paraplegia than tetraplegia (Ranvi, 2010). An estimate of the incidence of non-traumatic as well as traumatic SCI is needed for adequate health care planning (Gurcay et al., 2010).

A spinal cord injury (SCI) results in a number of motor, sensory, and autonomic impairments. It predisposes individuals to multisystem dysfunction, leading to an increased likelihood of a range of related secondary complications (Tonack et al., 2008), defined as medical consequences that can cause functional limitations. Common secondary health complications after SCI include pressure ulcers, urinary tract infections, bowel problems, fractures, chronic pain, and depressive disorders (New et al., 2013). Despite the fact that many of these complications are amenable to treatment and/or prevention, secondary complications represent a significant burden at both the health system and individual level (Dorsett & Geraghty et al., 2008). As a result of secondary complications, individuals with a SCI have greater rates of contact with the health care system than the general population, and also have multiple rehospitalizations throughout their lifetime. Dorsett & Geraghty (2008) found that compared with a control group, individuals with a SCI required 30 more hours of home-care services, were 2.7times more likely to have physician contact, spent 3.3 more days in hospital, and were rehospitalized 2.6 times more often. Rehospitalization following SCI has been studied in a number of countries including the United States (US), Britain, Australia, the Netherlands (Hamell, 2007), Italy (Rabadi et al., 2013).and Turkey (Jaglal et al., 2009). These studies have reported that approximately one-third of persons with a traumatic SCI will be rehospitalized each year (Smith et al., 2013). More recently,our team reported a similar readmission rate of 27.5% one year after initial acute care discharge among

individuals with traumatic SCI in Ontario. Secondary complications, including musculoskeletal, respiratory, gastrointestinal, and urological disorders, were the main reasons for readmission (Jaglal et al., 2009). A large number of visits to family physicians and physiatrists has also been reported. We concluded that the high rate of physician and special is utilization ,emergency department visits, and hospital readmissions, indicate that current care practices are not managing or preventing secondary complications adequately. We suggested that future research is required on strategies that can be implemented to improve the long term quality of care for individuals with traumatic SCI (Jaglal et al., 2009). People with a SCI tend to report fewer feelings of well-being, on average, than non-disabled persons; score lower on physical, mental, and social health, and in other domains of life that people consider important to life quality (Rabadi et al., 2013). Thus, quality of life and well being, and their determinants, have become important outcomes in SCI research and have been widely assessed (Hill et al., 2010). In a recent systematic review of associations between psychological factors and quality of life, Dorsett & Geraghty, (2008) determined that self-efficacy and self-esteem are consistently related to a better quality of life. As such, they suggested that self-management strategies, counseling, or cognitive behavioral therapy may be useful approaches for improving quality of life in this population. However, to date, no systematic reviews exist on the impact of quality improvement (QI) strategies, (including self-management strategies), on the quality of life and the physical and psychological well-being of individuals with an SCI. Thus, the current protocol outlines a strategy for a systematic review that aims to identify, assess, and synthesize evidence on the impact of QI strategies on the quality of life and the physical and psychological well-being of individuals with a SCI.

The expression “Quality of Life” (QOL) was first used by the president of the United States, Lyndon Johnson stated that “these goals cannot be measured by the size of our bank balances. They can only be measured in the quality of the lives that our people lead”. At first the interest in concepts such as “standard of living” and “Quality of Life” was shared by social scientists, philosophers and politicians. The negative impact of technology advances in Medicine and Life Sciences was its progressive dehumanization. Thus, human and biological sciences were concerned with the definition of “Quality of

Life". It should value parameters that go beyond controlling symptoms, reducing mortality or increasing life expectancy (Gurcay et al., 2010). Quality of life assessment is important because it broadens the decisions made by the health team, extending them to healthcare programs and policies. Many researchers are unanimous in stating that the failure of many programs lie on the fact that they are based on the perception of health professionals, with interventions that not connected to the social and QOL conditions. Consequently, there are not many studies and the real needs, beliefs and motivations of patients are undervalued (Forchheimer et al., 2008).

SCI patients are vulnerable to tissue rupture in all injury treatment and rehabilitation phases, ranging from the post-traumatic reinsertion phase. Problems that can affect these patients include pressure ulcers, which affect 35% of patients. Pressure ulcers result in severe medical and psychosocial complications, increased healthcare costs and interfere directly in individuals' QOL (Smith et al., 2013). Other problems resulting from SCI are depression, affecting 25% of men and 47% of women; temporary amenorrhea, affecting 60% of women; neuropathic pain, which occurs in between 34% and 94% of victims. In patients with injuries at T6 or above this level, autonomic dysreflexia may occur, characterized by a dangerous blood pressure (BP) increase. Autonomic dysfunction may also occur, resulting in orthostatic hypotension, thermo dysregulation and vasomotor abnormalities (Jaglal et al., 2009), a severe and impairing phenomenon that requires emergency care, as it can entail disabilities and lead to the patient's death (Smith et al., 2013).

Spinal cord injury also triggers altered urinary and fecal elimination, resulting from the loss of urinary and anal sphincter control and the consequent changes in the pattern of these eliminations, as well as alterations deriving from clinical complications like urinary infections, calculus and hydronephrosis (Gurcay et al., 2010). These problems not only alter human beings' physical and psychological conditions, but also hamper victims' sexual and reproductive capacity (Tulsky et al., 2015). Society tends to boost the impact of SCI. As a rule, researchers study the quality of life of SCI patients, addressing issues related to social relations and male reproduction (Ducharme et al., 2010). Few rehabilitation institutions offer a sexual counseling program where Sexual dysfunction

also affects the Quality of Life and, as literature reports, these programs focus on sexual education and information regarding the repercussions of SCI for the sexual function (Tulsky et al., 2015).

During the past few decades, advances in medical care are enabling persons with SCI to survive the initial injury and to prolong their life expectancy post-SCI. The need for outcome measures assessing health and QOL after rehabilitation is, therefore, becoming increasingly important (Smith et al., 2013). It is clear that simple outcomes-assessing function are insufficient in measuring rehabilitation after SCI (Hill et al., 2010) and in capturing the adaptation of perceptions and values in patients after SCI (Smith et al., 2013). In fact, it has been suggested that high levels of QOL is synonymous with positive rehabilitation outcomes, and many agree that QOL should be measured with traditional outcomes assessing functional rehabilitation (Tulsky et al., 2015). Such measurements provide different yet complimentary information that aid clinicians in their efforts to help those with SCI. Although an altered life is an inevitable outcome of SCI. Literature shows that QOL after SCI is not uniformly worse, but rather a spectrum of recovery outcomes exist that range from QOL well below the general population to QOL that surpasses healthy population averages (Lidal et al., 2008). QOL is a difficult construct to capture. Description of what constitutes the quality of someone's life is an important factor in our ability to assess, measure, and improve treatment outcomes and post-injury lifestyles. A clear definition of QOL has yet to emerge, which is due in part to a lack of consensus on a general definition of QOL (Smith et al., 2013).

In a study shows the awareness regarding the concept of QOL that a large majority (72%) of British health care professionals associated QOL with happiness. The other most often mentioned descriptions included elements of social (26%), physical (25%), or mental (18%) health or functioning (Tonack et al., 2008).

Quality of life refers to an individual's subjective understanding of life and include indicators such as 'happiness', 'life satisfaction' and 'well being'. These indicators depend predominantly on the direct experience of an individual's life and how they perceive it and need to be measured qualitatively. Dorsett & Geraghty, (2008) cited that the above indicators have been found to account for over 50% of the variance in quality of life for

people with disabilities. In analysing this statement, quality of life is perceived to be more of a psychological experience that may not necessarily correspond to external indicators. Interestingly a study conducted by Tonack et al., (2008) found that there was no significant correlation between life satisfaction and extent of paralysis. However, life satisfaction appeared to be associated with issues of social integration, mobility and locus of control. From this study it appears that in relation to SCI both objective and qualitative elements of a person's life need to be addressed in the assessment of quality of life. As appositely stated by Tartar et al., (2011), quality of life is 'a multi-faceted construct that encompasses the individual's behavioural and cognitive capacities, emotional well being and abilities requiring the performance of domestic, vocational and social roles. Quality of life is therefore a dynamic concept that not only incorporates physical, psychological and social domains, but individual perceptions and values of their role function (Ducharme et al., 2011).

3.1 Study Design

A cross-sectional descriptive study was performed with structured questionnaires and interviews were conducted with persons having spinal cord injury (SCI). This study design was appropriate to find out the objectives. The data was collected all at the same time or within a short time frame.

3.2 Study Site

Data was collected from SCI patients 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) among South Asia.

3.3 Study Population and Sample Population

A population is the 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. In this study the SCI people taking treatment at CRP was chosen as a sample population to carry out this study. About 115 samples were selected for this study.

3.4 Sampling Technique

Sampling refers to the process of selecting the subjects or individual. The researcher was selected convenience sampling technique due to small size of population.

3.5 Sample Size

When the sample frame is finite,

The equation of finite population correction in case of cross sectional study is :

$$\begin{aligned}n &= \frac{Z^2pq}{d^2} \\ &= \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.05)^2} \\ &= 384\end{aligned}$$

Here,

Z (confidence interval) = 1.96

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

And, q = (1-p)

$$= (1-0.5)$$

$$= 0.5$$

The actual sample size was, n = 384.

As it is academic thesis, self funding and data was collected from a single specialized hospital by considering the feasibility and time limitation 115 sample were selected conveniently.

3.5.1 Inclusion Criteria

Persons with Spinal Cord Injury attending at CRP.

Both Paraplegia and Tetraplegia are included.

Both male and female are included.

3.5.2 Exclusion Criteria

Any concomitant impairment that might influence everyday function (such as cognitive or mental impairment)

The SCI patients who are already discharged from CRP.

Undiagnosed injury

Head injury

Any other major disease except SCI.

3.5.3 Data collection tools

SF-36v2 questionnaire, Pen, Paper, File, Pencil, and Calculator were used in the conduction of this study.

3.5.4 Data collection Procedure

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

3.5.5 Duration of data collection

Data was collected carefully and confidentiality and maintained all ethical considerations. The researcher gave each participant a particular time to collect the data. Each questionnaire took approximately 20-25 minutes to complete.

3.6 Data analysis

The collected data were processed and analyzed in the statistical package for the social sciences (SPSS) v20.0 for windows. The analysis focuses on quality of life of the patient. There is no any cut point for SF-36v2 subscales; higher score represent higher quality of life. Researcher analyzed the data by descriptive statistics using frequency (n), percentage(%), Pie diagram and Bar diagram and also shown the associations by non-parametric test which was Chi square (χ^2) Test.

Chi square (χ^2) Test

Chi square (χ^2) Test is the most popular discrete data hypothesis testing method. It is a non-parametric test of statistical significance for bivibrate tabular analysis with a contingency table. In this study Chi square (χ^2) test was done to measure the associations between two variables. It was used to test the statistical significance of results reported in bivariate tables.

Assumption

Different and Independent variable

Variables were quantitative

Normal Distribution of the variable

Formula: the test statistics follow-

$$\chi^2 = \sum_{i=1}^k (O - E)^2 / E$$

Here,

χ^2 = Chi square value

\sum = 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.

Level of significance

The researcher has used 5% level of significant to test the hypothesis. If the p value for the calculated χ^2 is $p < 0.05$ conclude that there is significant association between the two variables. The χ^2 value and the level of significance are presented through tables-

Example:

Age Groups of the participants	Component of SF-36v2	Chi-square value (χ^2)	P-value	Significance
10-20 years (n=3)	Physical functioning	26.956	0.029	Significant
21-30 years (n=45)	Role physical	17.751	0.276	Not Significant
31-40 years (n=27)	Bodily pain	25.238	0.062	Not Significant
41-50 years (n=21)	General health	33.195	0.053	Significant
51-60 years (n=11)	Vitality	39.067	0.010	Significant
61-70 years (n=8)	Social Functioning	25.970	0.038	Significant
	Role emotional	38.814	0.041	Significant
	Mental Health	45.577	0.039	Significant

3.7 Ethical consideration

The research proposal was submitted to Institutional Review Board (IRB) of BHPI for oral presentation and defense was done in front of IRB. Then IRB approved the proposal. Researcher has followed the Bangladesh medical research council (BMRC) guideline & WHO research guideline. This protocol presentation was firstly submitted to the Institutional Review Board (IRB) of BHPI and initial permission was taken. Permission was taken from the Head of the Department of Physiotherapy, BHPI and head of the Department of Physiotherapy, CRP before data collection. Permission was taken from the In-Charge of SCI Unit, CRP for data collection from the patients. Researcher maintained the confidentiality of the collected data from the individuals. Researcher ensured the confidentiality of participants and shared the information only with research supervisor. All rights of the participants were reserved and researcher was accountable to the participant to answer any type of study related question.

3.8 Informed Consent

Written consent (appendix) was given to all participants prior to 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.

3.9 Rigor of the study

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

In this study the results which were found have been showed in different bar diagrams, pie charts and tables.

4.1 Male Female Ratio

Out of 115 participants, the majority was male 84.3% (n=97) and Female was 15.7% (n=18).

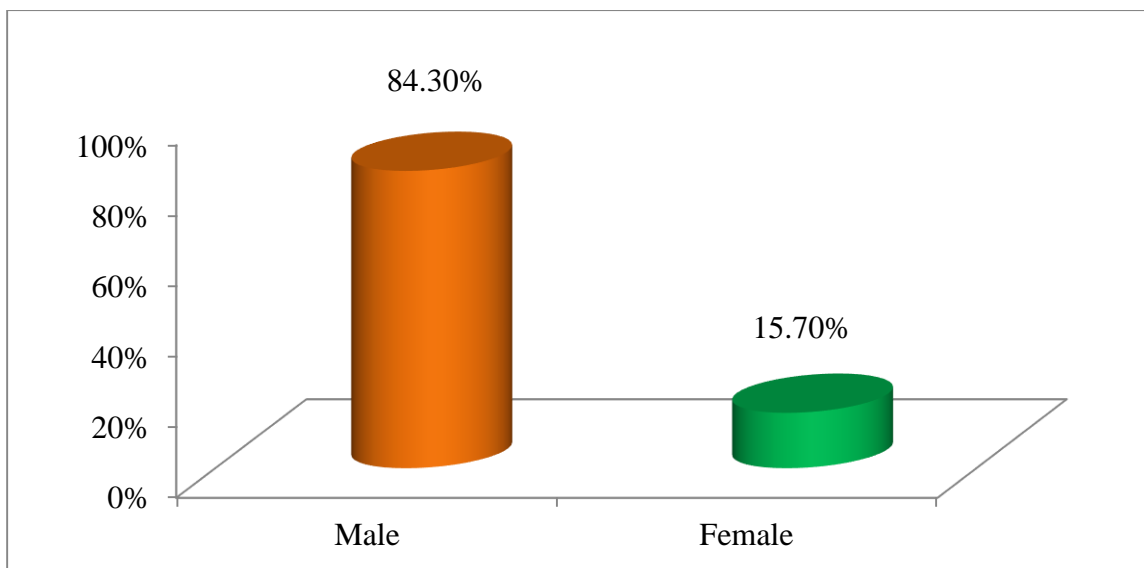


Figure-1: Gender of the Participants

4.2 Age Groups

Among 115 participants 1.5% (n=2) were paraplegia and 0.7% (n=1) were tetraplegia of age range 10-20 years, 21.9% (n=24) were paraplegia and 20.6% (n=21) were tetraplegia of age range 21-30 years, 15.1% (n=15) were paraplegia and 13.9% (n=12) were tetraplegia of age range 31-40 years, 8.9% (n=12) were paraplegia and 6.7% (n=9) were tetraplegia of age range 41-50 years, 3.7% (n=5) were paraplegia and 4.4% (n=6) were tetraplegia of age range 51-60 years, 3.7% (n=5) were paraplegia and 2.2% (n=3) were tetraplegia of age range 61-70 years.

Table -1: Age of the Participants

Age Range	Frequency (n)		Percentage (%)	
	Paraplegia	Tetraplegia	Paraplegia	Tetraplegia
10-20	2	1	1.5%	0.7%
21-30	24	21	21.9%	20.6%
31-40	15	12	15.1%	13.9%
41-50	12	9	8.9%	6.7%
51-60	5	6	3.7%	4.4%
61-70	5	3	3.7%	2.2%
Total	63	52	54.8%	45.2%

4.3 Type of Injury of the Participants

Total participants were 115 (n=115) , among them Paraplegia were 54.8% (n=63) and Tetraplegia were 45.2% (n=52).

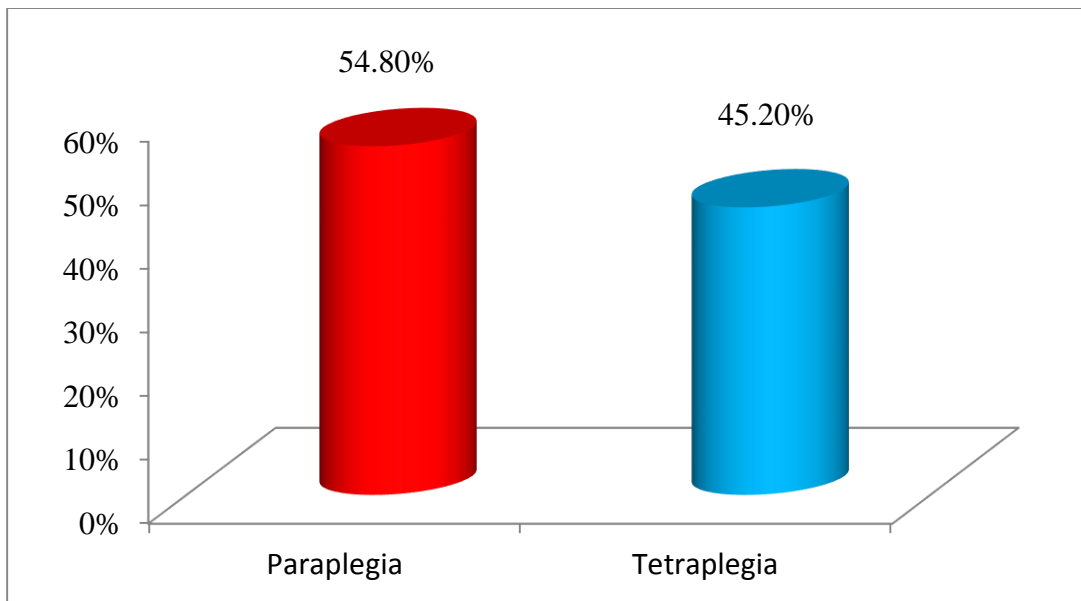


Figure-2: Diagnosis of the participants

4.4 Severity of Injury of the Participants

Among 115 participants , Complete A in ASIA Scale were 78.3% (n=90), Incomplete B in ASIA Scale were 10.4% (n=12), Incomplete C in ASIA scale were 9.6% (n=11) and Incomplete D in ASIA scale were 1.7% (n=2).

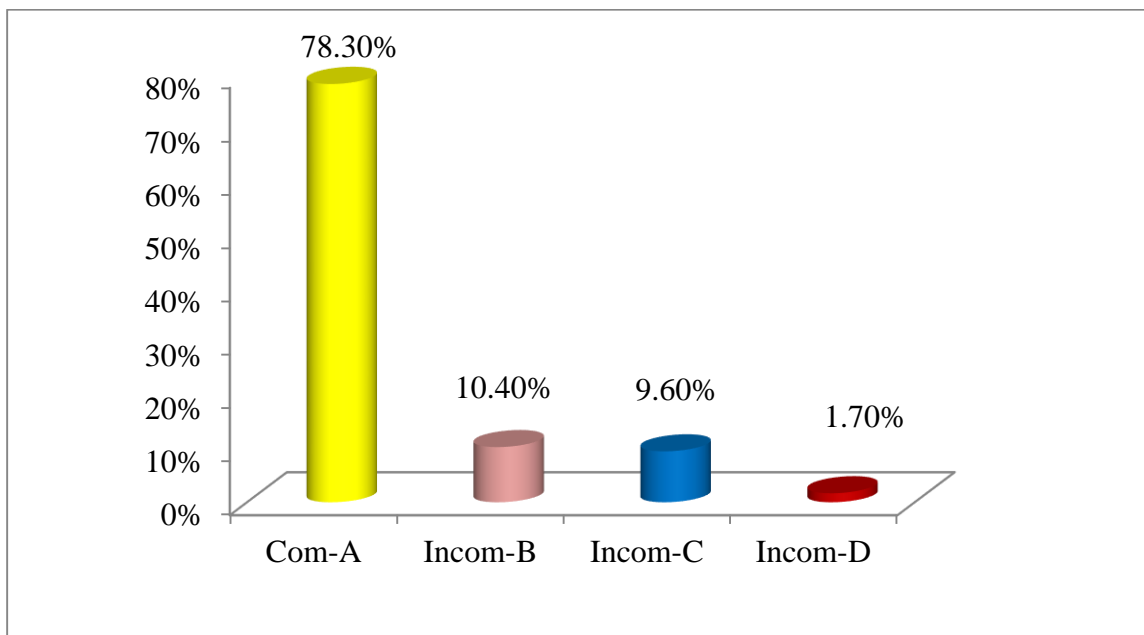


Figure-3: Severity of Injury according to spinal cord injury

4.5 Causes of Spinal Cord Injury

Among 115 participants, 92.2% (n=106) participants had experienced with spinal cord injury due to Traumatic cause such as Fall from height, RTA, Falling of heavy object over head etc and 7.8% (n=9) participants got SCI due to Non-traumatic cause such as TB Spine, Multiple sclerosis, Transverse myellitis etc.

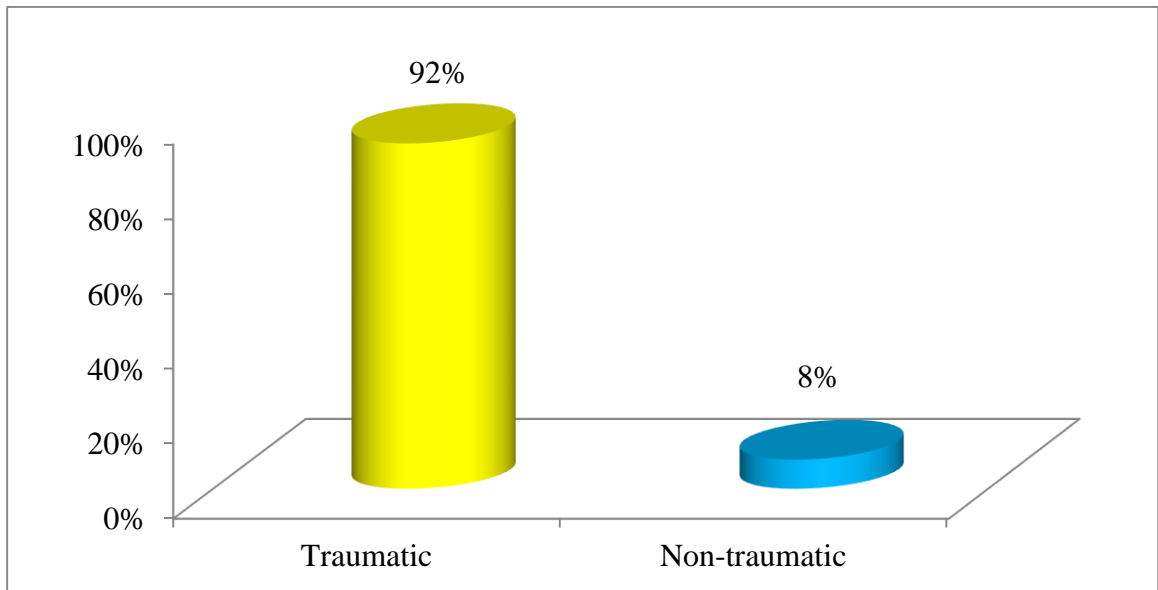


Figure-4: Causes Injury of Spinal Cord

SF-36 consists of eight scaled scores, which are the sum of the question in section. The eight sections are physical functioning, Role limitation due to physical health, Role limitation due to emotional problem, Bodily pain, General health, Vitality, Social functioning and Mental health. Each scale is directly transformed into a 0-100 scale on the assumption that each question carries equal weight (Ware et al., 2000). In this study the scale 0-100 is subdivided into four sections. Score 0-25 indicates poor status, Score 26-50 indicates poor status, Score 51-75 indicates fair status and Score 76-100 indicates good status of all domains.

Table -2: Scoring Categories of SF-36v2 scale

Score (0-25)	Very poor status
Score (26-50)	Poor status
Score (51-75)	Fair status
Score (76-100)	Good status

4.6 Physical Functioning

In this study, Total participants were 115 and among them 100% (n=115) scored <50 at an average out of 100 which denotes Poor physical functioning in the SF dimensions.

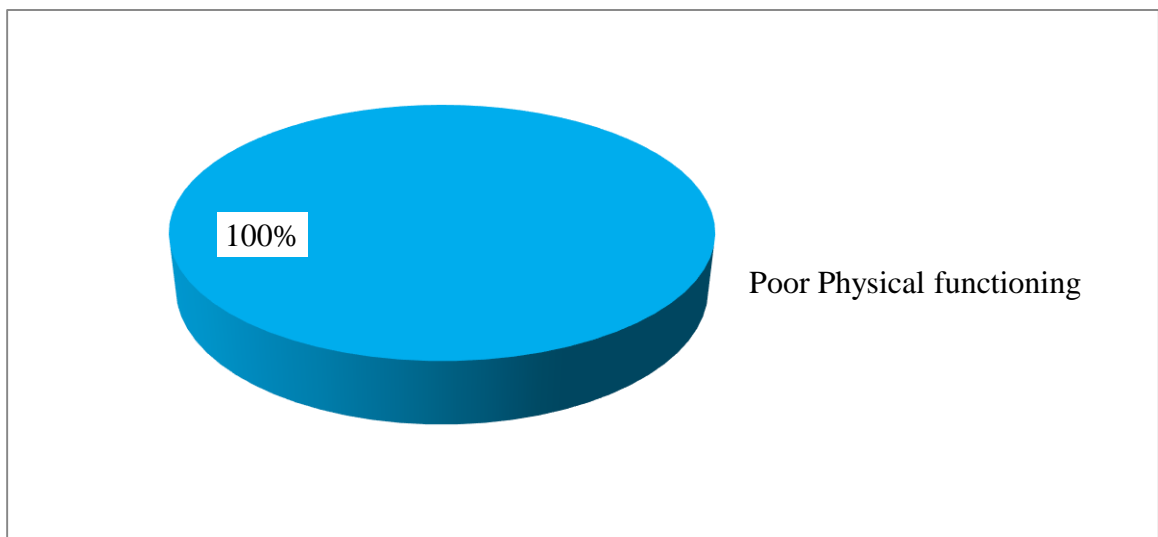


Figure-5 : Physical Functioning of the participants

4.7 Role Physical

Role limitations of the participants due to physical health were very poor role physical for 90.1% (n=90) who scored <25 at an average out of 100, Poor role physical was 9.9% (n=25) who scored <50 at an average out of 100.

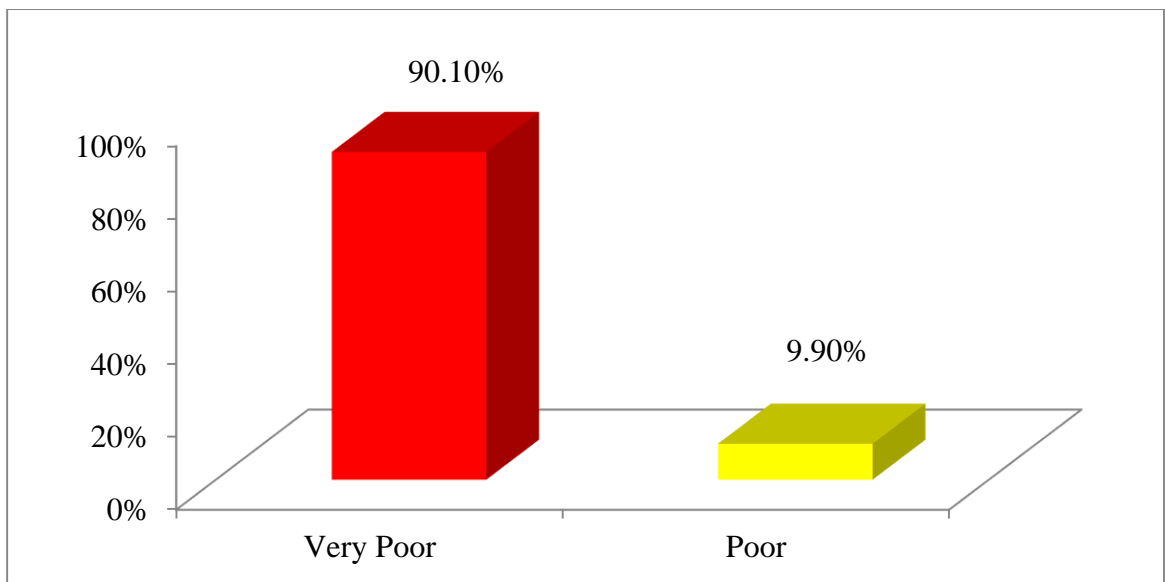


Figure: 6- Role limitation due to physical health of the participants

4.8 Bodily Pain

Among the 115 participants, 14% (n=16) scored <25 at an average out of 100 which denotes very poor physical status due to pain, 45.1% (n=52) scored less than 50 at an average out of 100 which denotes poor physical status due to pain, 13.9% (n=16) scored more than 50 at an average out of 100 which claims fair physical status and 27.0% (n=31) scored more than 75 at an average out of 100 which claims good physical status through the short form-36 scoring system.

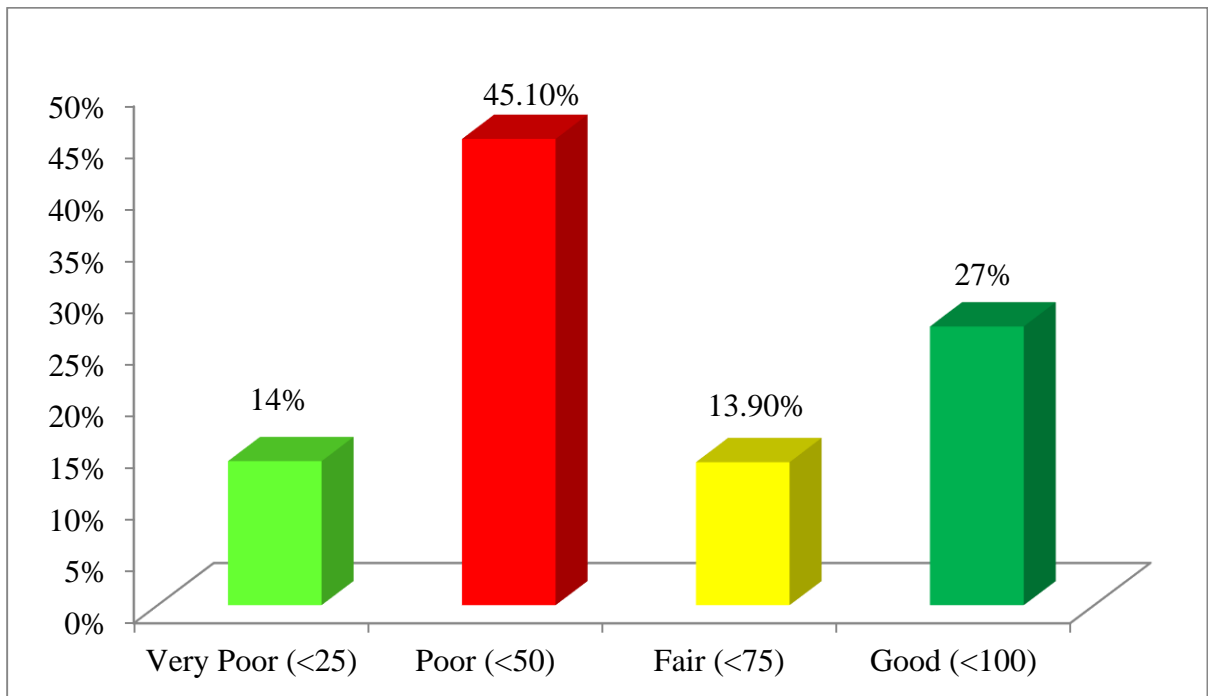


Figure: 7- Bodily pain of the participants

4.9 General Health

Among the 115 participants (n=115), 65.9% (n=75) scored more than 50 at an average out of 100 which denotes fair general health and 34.1% (n=40) scored more than 75 at an average out of 100 which claims good general health through the short form-36 scoring system.

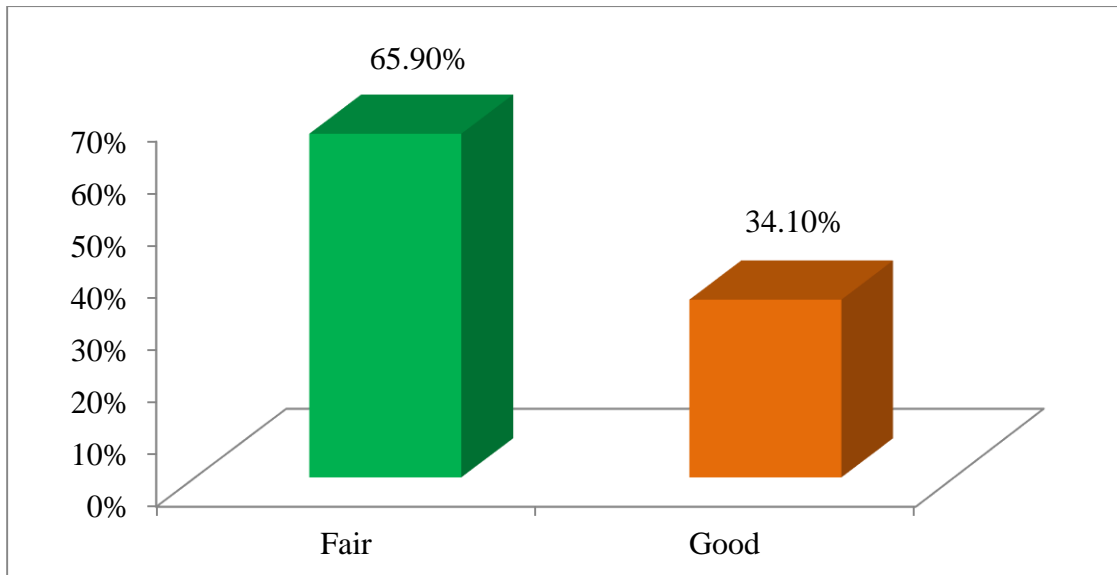


Figure: 8- General health of the participants

4.10 Vitality

Among the 115 participants, 86.0% (n=99) scored less than 50 at an average out of 100 which denotes poor vitality, 14% (n=16) scored more than 50 at an average out of 100 which denotes fair vitality through the short form-36 scoring system.

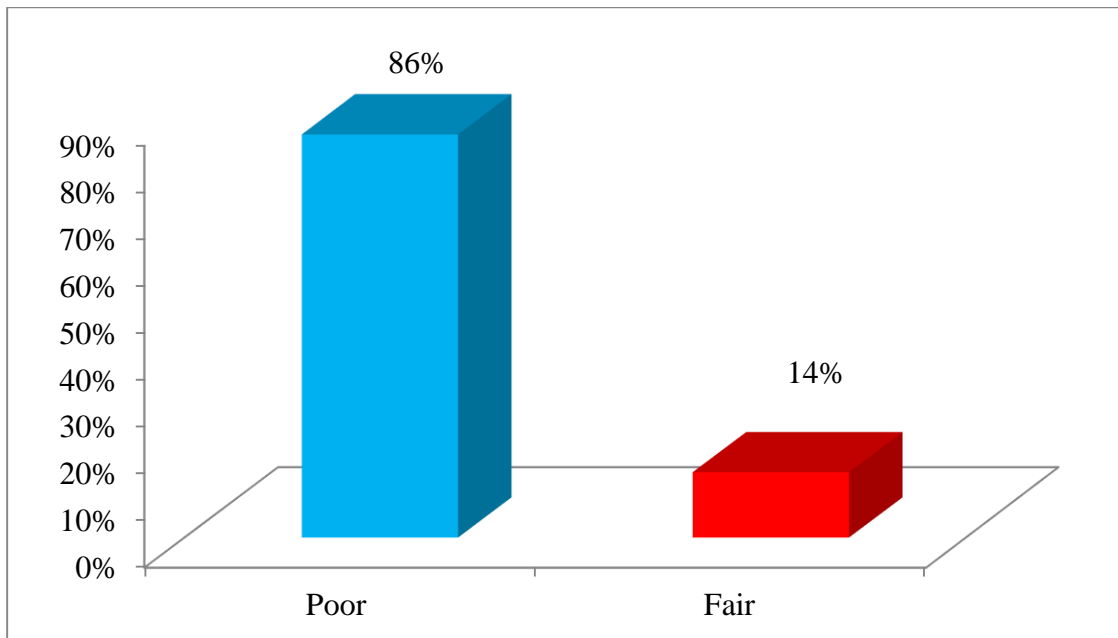


Figure:9 - Vitality of the participants

4.11 Social Functioning

Among the 115 participants, 93.9% (n=108) scored less than 50 at an average out of 100 which denotes poor social functioning , 6.1% (n=7) scored more than 50 at an average out of 100 which denotes fair social functioning through the short form-36 scoring system.

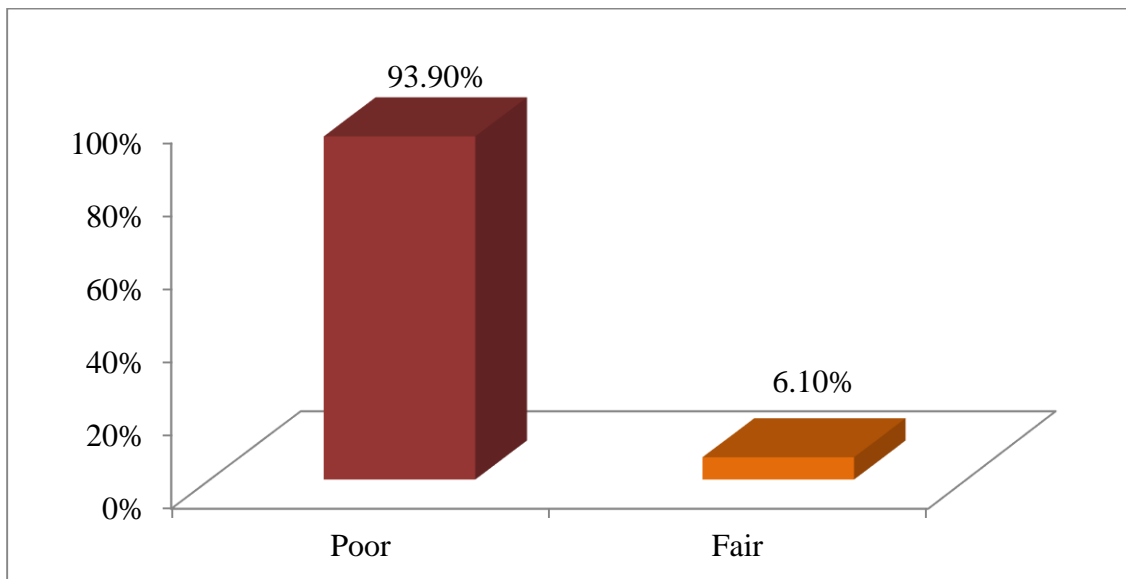


Figure : 10 – Social functioning of the participants

4.12 Role Emotional

Among the 115 participants, 31.3% (n=36) scored less than 50 at an average out of 100 which denotes poor role of emotion , 7.8% (n=8) scored more than 50 at an average out of 100 which claims fair role of emotion and 60.9% (n=71) scored more than 75 at an average out of 100 which claims good of emotion through the short form-36 scoring system.

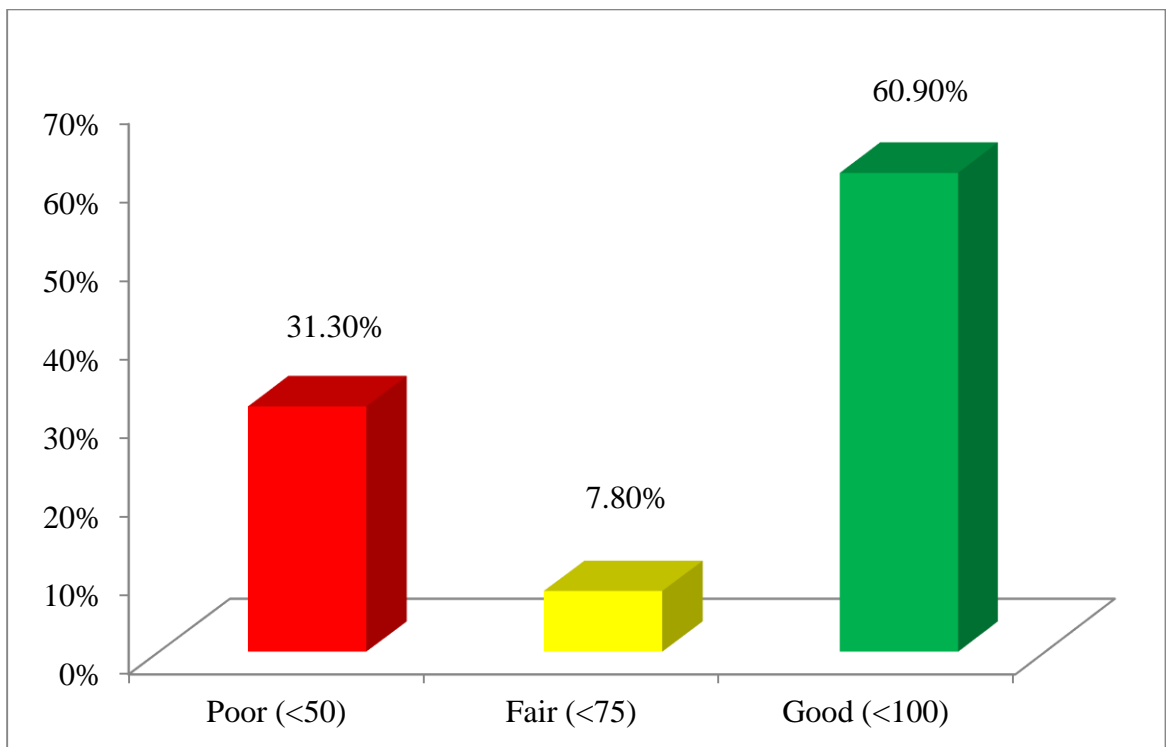


Figure:11- Role emotional of the participants

4.13 Mental Health

Among the 115 participants, 25.3% (n=29) scored less than 50 at an average out of 100 which denotes poor mental health , 74.7% (n=86) scored more than 50 at an average out of 100 which claims fair mental health through the short form-36 scoring system.

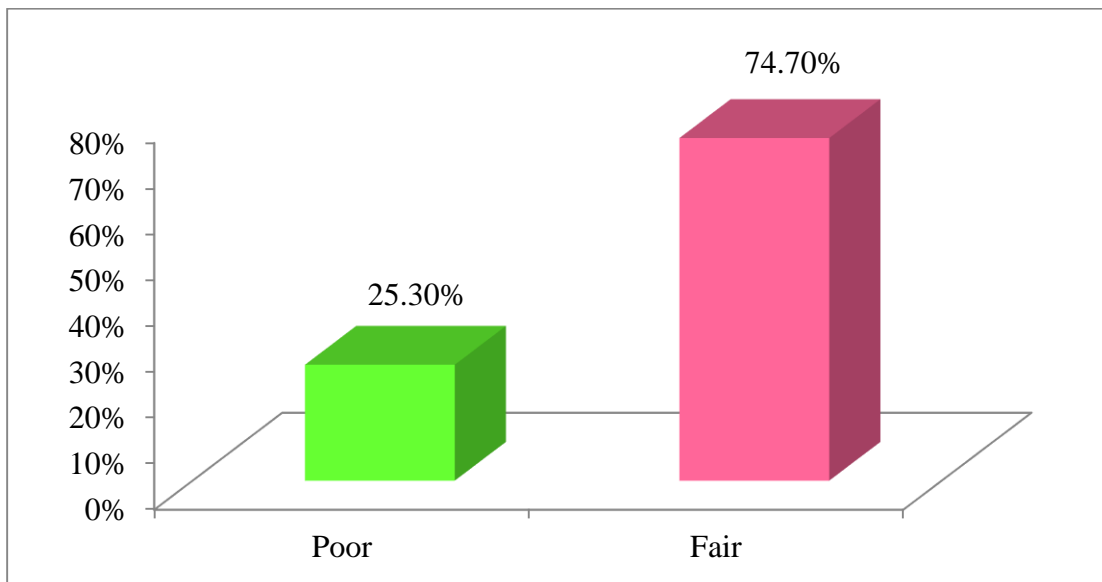


Figure:12- Mental health of the participants

4.14 Distribution of the respondents of association between age of the participants and Components of SF-36v2 (Physical functioning, Role Physical, Bodily Pain, General Health, Vitality, Social Functioning, Role Emotional, Mental Health) :

Age Groups of the participants	Component of SF-36v2	Chi-square value (χ^2)	P-value	Significance
10-20 years (n=3)	Physical functioning	26.956	0.029	Significant
21-30 years (n=45)	Role physical	17.751	0.276	Not Significant
31-40 years (n=27)	Bodily pain	25.238	0.062	Not Significant
41-50 years (n=21)	General health	33.195	0.053	Significant
51-60 years (n=11)	Vitality	39.067	0.010	Significant
61-70 years (n=8)	Social Functioning	25.970	0.038	Significant
	Role emotional	38.814	0.041	Significant
	Mental Health	45.577	0.039	Significant

Above table shows that among 115 participants 1.5% (n=2) were paraplegia and 0.7% (n=1) were tetraplegia of age range 10-20 years, 21.9% (n=24) were paraplegia and 20.6% (n=21) were tetraplegia of age range 21-30 years, 15.1% (n=15) were paraplegia and 13.9% (n=12) were tetraplegia of age range 31-40 years, 8.9% (n=12) were paraplegia and 6.7% (n=9) were tetraplegia of age range 41-50 years, 3.7% (n=5) were paraplegia and 4.4% (n=6) were tetraplegia of age range 51-60 years, 3.7% (n=5) were paraplegia and 2.2% (n=3) were tetraplegia of age range 61-70 years. In this study, Total participants were 115 and among them 100% (n=115) scored <50 at an average out of 100 which denotes Poor physical functioning. Role limitations of the participants due to physical health were very poor role physical for 90.1% (n=90) who scored <25 at an average out of 100, Poor role physical was 24.9% (n=25) who scored <50 at an average out of 100. In bodily pain, 14% (n=16) scored <25 at an average out of 100 which denotes very poor physical status due to pain, 45.1% (n=52) scored less than 50 at an average out of 100 which denotes poor physical status due to pain, 13.9% (n=16) scored more than 50 at an average out of 100 which claims fair physical status and 27.0% (n=31) scored more than 75 at an average out of 100 which claims good physical status. Among the 115 participants (n=115), 65.9% (n=75) scored more than 50 at an average out of 100 which denotes fair general health and 34.1% (n=40) scored more than 75 at an average out of 100 which claims good general health. 86.0% (n=99) scored less than 50 at an average out of 100 which denotes poor vitality, 14% (n=16) scored more than 50 at an average out of 100 which denotes fair vitality. On the other hand, 93.9% (n=108) scored less than 50 at an average out of 100 which denotes poor social functioning, 6.1% (n=7) scored more than 50 at an average out of 100 which denotes fair social functioning. Otherwise, 31.3% (n=36) scored less than 50 at an average out of 100 which denotes poor role of emotion, 7.8% (n=8) scored more than 50 at an average out of 100 which claims fair role of emotion and 60.9% (n=71) scored more than 75 at an average out of 100 which claims good role of emotion. Among the 115 participants, 25.3% (n=29) scored less than 50 at an average out of 100 which denotes poor mental health, 74.7% (n=86) scored more than 50 at an average out of 100 which claims fair mental health through the short form-36 scoring system.

Association found between age of the participants and physical functioning which was statistically significant ($P > .029$) ; Association found between age of the participants and general health which was statistically significant ($P < .057$); Association found between age of the participants and vitality which was statistically significant ($P > .010$) ; Association found between age of the participants and social functioning which was statistically significant ($P > .038$) ; Association found between age of the participants and Role emotional which was statistically significant ($P > .029$) ; Association found between age of the participants and mental health which was statistically significant ($P > .039$).

No association found between the age of the participants and role physical which was not statistically significant ($P < .276$); No association found between the age of the participants and bodily pain which was not statistically significant ($P < .062$).

So, Among all the components of SF-36v2, Association had been found between age of the participants and physical functioning, General health , Vitality, Social functioning, Role emotional and mental health. No association found between age and role physical and between age and bodily pain.

Age is one of the important socio-demographic factor which has a great impact on the health related quality of life of a spinal cord injury patient.

4.15 Distribution of the respondents of association between the types of injury (Paraplegia and Tetraplegia) and Components of SF-36v2 (Physical functioning, Role Physical, Bodily Pain, General Health, Vitality, Social Functioning, Role Emotional, Mental Health) :

Components of SF-36v2	Types of Injury	Chi-square value (χ^2)	P-value	Significance
Physical Functioning	Paraplegia (n=63)	50.085	0.000	Significant
Role Physical		28.482	0.000	Significant
Bodily Pain		51.280	0.000	Significant
General health		67.858	0.000	Significant
Vitality	Tetraplegia (n=52)	49.476	0.000	Significant
Social Functioning		29.324	0.000	Significant
Role emotional		58.923	0.000	Significant
Mental health		41.592	0.000	Significant

Above table shows that total participants were 115 and among them 100% (n=115) scored <50 at an average out of 100 which denotes Poor physical functioning. Role limitations of the participants due to physical health were very poor role physical for 90.1% (n=90) who scored <25 at an average out of 100, Poor role physical was 24.9% (n=25) who scored <50 at an average out of 100. In bodily pain, 14% (n=16) scored <25 at an average out of 100 which denotes very poor physical status due to pain, 45.1% (n=52) scored less than 50 at an average out of 100 which denotes poor physical status due to pain, 13.9% (n=16) scored more than 50 at an average out of 100 which claims fair physical status and 27.0% (n=31) scored more than 75 at an average out of 100 which claims good physical status. Among the 115 participants (n=115), 65.9% (n=75) scored more than 50 at an average out of 100 which denotes fair general health and 34.1% (n=40) scored more than 75 at an average out of 100 which claims good general health. 86.0% (n=99) scored less than 50 at an average out of 100 which denotes poor vitality, 14% (n=16) scored more than 50 at an average out of 100 which denotes fair vitality. On the other hand, 93.9% (n=108) scored less than 50 at an average out of 100 which denotes poor social functioning, 6.1% (n=7) scored more than 50 at an average out of 100 which denotes fair social functioning. Otherwise, 31.3% (n=36) scored less than 50 at an average out of 100 which denotes poor role of emotion, 7.8% (n=8) scored more than 50 at an average out of 100 which claims fair role of emotion and 60.9% (n=71) scored more than 75 at an average out of 100 which claims good role of emotion. Among the 115 participants, 25.3% (n=29) scored less than 50 at an average out of 100 which denotes poor mental health, 74.7% (n=86) scored more than 50 at an average out of 100 which claims fair mental health through the short form-36 scoring system. Total participants were 115 (n=115), among them Paraplegia were 54.8% (n=63) and Tetraplegia were 45.2% (n=52).

Association had been found between the type of injury (paraplegia and tetraplegia) and the eight components of SF-36v2 (Physical functioning, Role Physical, Bodily pain, general health, vitality, social functioning, role emotional and mental health) which all were highly significant ($P > .000$). Type of Injury is one of the another important socio-demographic factor which has a great impact on the health related quality of life of a spinal cord injury patient.

4.16 Distribution of the respondents of association between the level of injury according to ASIA scale and Components of SF-36v2 (Physical functioning, Role Physical, Bodily Pain, General Health, Vitality, Social Functioning, Role Emotional, Mental Health) :

Components of SF-36v2	Level of Injury according to ASIA scale	Chi-square value (χ^2)	P-value	Significance
Physical Functioning	Complete – A (n=90)	4.654	0.863	Not Significant
Role Physical		19.248	0.023	Significant
Bodily Pain		20.046	0.170	Not Significant
General health		19.793	0.345	Not Significant
Vitality		8.633	0.896	Not Significant
Social Functioning		16.009	0.052	Significant
Role emotional		18.428	0.428	Not Significant
Mental health		24.161	0.452	Not Significant

Above table shows that total participants were 115 and among them 100% (n=115) scored <50 at an average out of 100 which denotes Poor physical functioning. Role limitations of the participants due to physical health were very poor role physical for 90.1% (n=90) who scored <25 at an average out of 100, Poor role physical was 24.9% (n=25) who scored <50 at an average out of 100. In bodily pain, 14% (n=16) scored <25 at an average out of 100 which denotes very poor physical status due to pain, 45.1% (n=52) scored less than 50 at an average out of 100 which denotes poor physical status due to pain, 13.9% (n=16) scored more than 50 at an average out of 100 which claims fair physical status and 27.0% (n=31) scored more than 75 at an average out of 100 which claims good physical status. Among the 115 participants (n=115), 65.9% (n=75) scored more than 50 at an average out of 100 which denotes fair general health and 34.1% (n=40) scored more than 75 at an average out of 100 which claims good general health. 86.0% (n=99) scored less than 50 at an average out of 100 which denotes poor vitality, 14% (n=16) scored more than 50 at an average out of 100 which denotes fair vitality. On the other hand, 93.9% (n=108) scored less than 50 at an average out of 100 which denotes poor social functioning, 6.1% (n=7) scored more than 50 at an average out of 100 which denotes fair social functioning. Otherwise, 31.3% (n=36) scored less than 50 at an average out of 100 which denotes poor role of emotion, 7.8% (n=8) scored more than 50 at an average out of 100 which claims fair role of emotion and 60.9% (n=71) scored more than 75 at an average out of 100 which claims good role of emotion. Among the 115 participants, 25.3% (n=29) scored less than 50 at an average out of 100 which denotes poor mental health, 74.7% (n=86) scored more than 50 at an average out of 100 which claims fair mental health through the short form-36 scoring system. Among 115 participants 78.26% (n=90) patients were complete -A.

Association found between complete-A and role physical which was statistically significant ($P>.023$); Association found between Complete-A and social functioning which was statistically significant ($P>.057$).

No association found between Complete-A and Physical functioning, Bodily pain, General health, Vitality, Role emotional, Mental health which were not statistically significant.

4.17 Distribution of the respondents of association between the level of injury according to ASIA scale and Components of SF-36v2 (Physical functioning, Role Physical, Bodily Pain, General Health, Vitality, Social Functioning, Role Emotional, Mental Health) :

Components of SF-36v2	Level of Injury according to ASIA scale	Chi-square value (χ^2)	P-value	Significance
Physical Functioning	Incomplete – B (n=12)	7.526	0.583	Not Significant
Role Physical		17.620	0.040	Significant
Bodily Pain		21.603	0.119	Not Significant
General health		22.849	0.196	Not Significant
Vitality		11.227	0.736	Not Significant
Social Functioning		15.274	0.084	Not significant
Role emotional		21.077	0.276	Not Significant
Mental health		25.761	0.365	Not Significant

Above table shows that association found between Incomplete-B and role physical which was statistically significant ($P > .040$) & There was no any other association between the other components of SF-36v2 and Incomplete –B.

Table of distribution of the respondents of association between the level of injury Incomplete -C and Components of SF-36v2 (Physical functioning, Role Physical, Bodily Pain, General Health, Vitality, Social Functioning, Role Emotional, Mental Health) is mentioned in Appendix-I where there was an association between incomplete-C and social functioning which was statistically significant ($P > .005$) .

Table of distribution of the respondents of association between the level of injury Incomplete -D and Components of SF-36v2 (Physical functioning, Role Physical, Bodily Pain, General Health, Vitality, Social Functioning, Role Emotional, Mental Health) is mentioned in Appendix-II where there was an association between incomplete-D and bodily pain which was statistically significant ($P > .052$) .

4.18 SF-36v2 Score Tabulation (Physical functioning, Role Physical, Bodily Pain, General Health, Vitality, Social Functioning, Role Emotional, Mental Health)

Table:8- Score tabulation of all component of SF-36

Scale	Minimum	Maximum	Mean	±SD
Physical Functioning	0.00	20.00	4.52	± 7.64
Role Physical	0.00	43.75	23.26	± 13.03
Bodily Pain	10.00	90.00	53.97	± 26.28
General Health	55.00	85.00	68.90	± 9.26
Vitality	30.00	60.00	38.99	± 9.95
Social Functioning	1.50	50.00	30.87	± 8.97
Role Emotional	37.50	125.00	74.57	± 29.90
Mental Health	36.00	68.00	54.19	± 8.65

SF-36v2 Measurement Model

The eight scales- Physical Functioning (PF), Role Physical (RP), Bodily Pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), Role emotional (RE), Mental Health (MH) are hypothesized to form two distinct higher-ordered clusters due to physical and mental health variance that they have in common ; Physical functioning, Role Physical, Bodily Pain, General Health correlate most highly with the physical Component Summary (PCS) Measure and the mental component correlates most highly with the Vitality, Social functioning, Role emotional, Mental health, which also contribute most to the scoring of the Mental Component Summary (MCS) measure (Ware et al.,2000).

Physical Health

Total participants were 115 (n=115), all of them (100%) had poor Physical health (Score <50). Score <50 indicates poor status of physical health where physical health is the prominent component to measure health related quality of life (HRQOL). As the status of physical health is poor of all participants, it claims poor quality of life too.

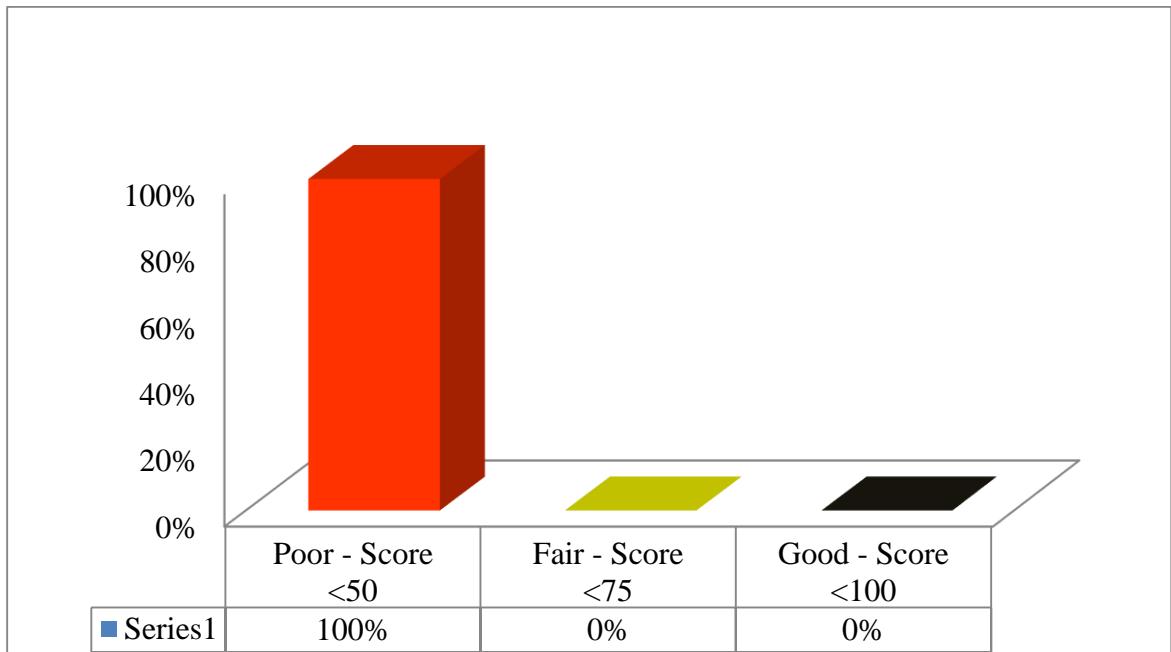


Figure:13- Overall Physical health status of the participants

Mental Health

Among 115 participants, 45.3% (n=52) had score below 50 which indicates poor mental health and 54.7% (n=63) had score above 50 which indicates fair status of mental health. Mental health is the another one most important component of measuring health related quality of life (HRQOL). So, Quality of life is not so good where 45.3% (n=52) had poor mental health.

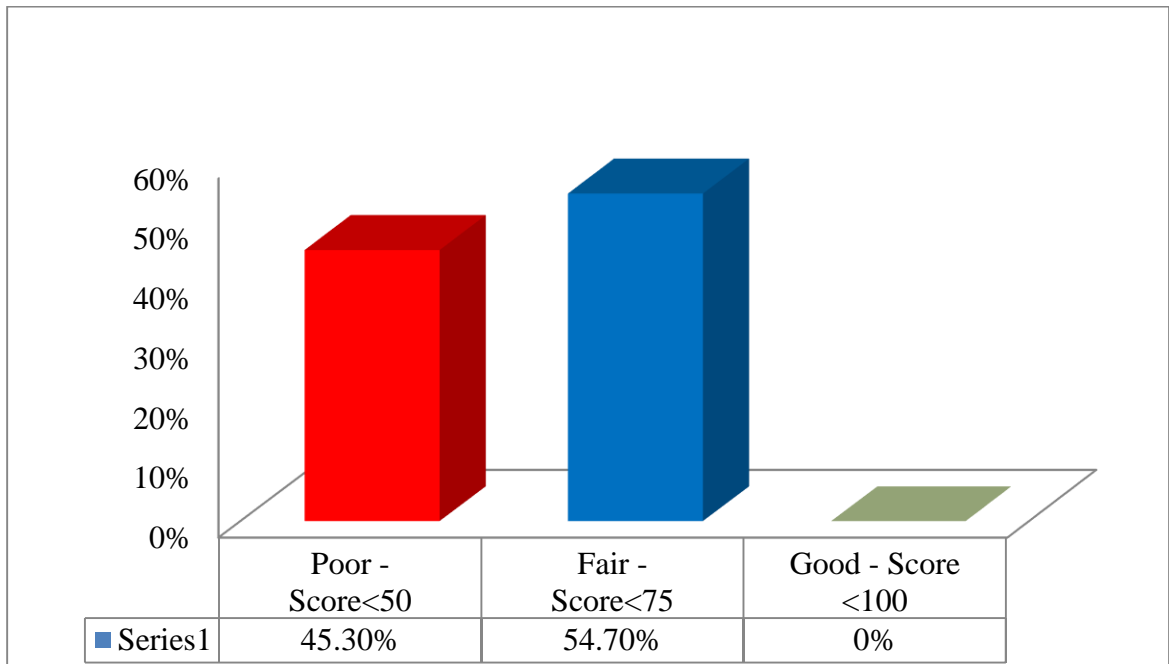


Figure:14- Overall mental Health status of the Participants

Now-a-days the quality of life has become a major topic of research in the area of health and the findings contribute to the definition and approval of treatments and evaluation of cost benefits of the Spinal cord injury patients. The HRQOL of patient with SCI was measured by the SF-36 and results showed a greater impact on the physical component than the mental component.

A cross sectional study was used to assess the health related quality of life of individuals with spinal cord injury. As this was a cross-sectional study, we consider this research as a preliminary study that can yield valuable information that may clarify many important questions related to spinal cord injury and their quality of life. The obtained results may lead to the elaboration of strategies to reduce the impact caused by the disease in the life and health of the persons with spinal cord injury.

This study showed that the ‘severity of pain’ and ‘pain interferes in the work’ did not hamper physical status. However the maximum number of participants felt ‘physical health interferes in the normal work’, ‘limitations in bathing or dressing independently’, ‘accomplish less work than the participants want’, as well as decline in energy and feeling tired most of the time. Hence, it was found that there was a reduced level of physical functioning in SCI clients. The same results were noted in a study in Australia which reported that the limitation was more in physical functioning (Kreuter et al, 2005).

The result of this study showed that lower scores present in all dimensions of SF-36, specially result indicated poor status of physical health and mental health. Among the participants, 84.3% were male; 15.7% were female where 54.8% were paraplegia and 45.2% were tetraplegia. In this study 100% (n=115) patients had poor status of physical health where more than 50% patients had fair status of mental health. The most influenced individual dimensions were physical functioning and role-physical where 100.0% participants had score below 50 indicating poor physical functioning and poor role physical. It was found that the emotional status level was poor among the participants, which affects quality of life greatly. This supports the finding of Muncie et

al (2013) and Kreuter et al (2005), that for SCI clients' health status, physical and psychological factors have great impact on quality of life.

The study was conducted on 115 participants, among them 92.2% (N=106) participants had experienced with spinal cord injury due to Traumatic cause such as Fall from height, RTA, Falling of heavy object over head etc and 7.8% (N=9) participants got SCI due to Non-traumatic cause such as TB Spine, Multiple sclerosis, Transverse myelitis etc. In North America the main cause of traumatic spinal cord injury (TSCI) was motor vehicles accident rather than fall from height (Mothe and Tator, 2013). But in the current study, the most common cause of injury was fall from height followed by road traffic accidents. This could be due to the fact that a greater percentage of people live in the villages in Bangladesh, similar to neighboring countries like India (Singh et al, 2003).

In this study, association found between age of the participants and physical functioning which was statistically significant ($P < 0.029$); Association found between age of the participants and general health which was statistically significant ($P < 0.053$); Association found between age of the participants and vitality which was statistically significant ($P < 0.010$); Association found between age of the participants and social functioning which was statistically significant ($P < 0.038$); Association found between age of the participants and Role emotional which was statistically significant ($P < 0.029$); Association found between age of the participants and mental health which was statistically significant ($P < 0.039$). Similar result was found in the study of Tartar et al., (2011). Another association had been found between the type of injury (paraplegia and tetraplegia) and the eight components of SF-36v2 (Physical functioning, Role Physical, Bodily pain, general health, vitality, social functioning, role emotional and mental health) which all were highly significant ($P < 0.000$) which was almost similar with the result found in the study of Taylor & Francis (2014).

SF-36v2 questionnaire has eight subscales, total scores may range from 0 to 100. Each scales ranging from 0 (presence of all problems) to 100 (no problems at all) within the dimension (Roux et al., 2004). This study indicates that subjects with paraplegia scored significantly higher than those with tetraplegia on the dimensions related to both in physical function and in mental function.

5.1 Limitations

There were a number of limitations and barriers in this research project which had affect the accuracy of the study, these are as follow:

The samples were collected only from the CRP at Savar and the sample size was small, so the result of the study could not be generalized to the whole population of Spinal Cord Injury in Bangladesh. There was little evidence to support the result of this project in the context to Bangladesh. A convenience sampling was used that was not reflecting the wider population under study. The research project was done by an undergraduate student and it was first research project for her . So the researcher had limited experience with techniques and strategies in terms of the practical aspects of research. As it was the first survey of the researcher so might be there were some mistakes that overlooked by the supervisor and the honorable teacher.

6.1 Conclusion

Despite the small sample and the drawbacks identified in this study, this research provides valuable insight into the quality of life for individuals following SCI. Study shows that the Quality of Life of Persons with Spinal Cord Injury was remarkably lower. Quality of life is a term used to evaluate individual's well-being in a wide range of contexts. For patients with SCI, achieving a satisfactory HRQOL is a primary goal of treatment and rehabilitation. Along with greater awareness and proper counseling, necessary steps should be taken to improve the physical and mental health of persons with spinal cord injury, in order to improve their quality of life.

This study measured the HRQoL in patients affected by SCI using SF-36v2 questionnaire, which is a patient-measured and validated method in terms of reliability and reproducibility. This study may bring about policy changes to provide them with additional support and increased access to equipment or lifestyle interventions as identified. Future longitudinal studies with larger sample size and assessment of additional variables are required to assess HRQoL of the patient experienced with spinal cord injury.

Quality of life among people with SCI is complex however, and is an area that is not well understood despite a growing amount of literature amassed over the last few decade. It has been postulated that after SCI, individuals change their expectations and values and thus their markers with which they judge their quality of life. Thus, there have been increasingly more calls for the use of measures that capture subjective HRQoL of the patients having spinal cord injury.

6.2 Recommendations

The aim of the study was to assess the health related quality of life of the caregivers. Though the study had some limitations but investigator identified some further step that might be taken for the better accomplishment of further research. The main recommendations would be as follow:

The random sampling technique rather than the convenience sampling technique would be chosen in further in order to enabling the power of generalization the results.

The duration of the study was relatively short, so in future wider time would be taken for conducting the study.

Investigator used 115 participants as the sample of this study, in future the sample size would be more.

In this study, the investigator took the participants only from the one selected hospital of Savar as a sample for the study. So for further study investigator strongly recommended to include the SCI patients from all over the Bangladesh to ensure the generalize ability of this study.

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**Appendix – I : Table of Association between Incomplete-C and
component of SF-36v2**

Distribution of the respondents of association between severity of injury and components of SF-36v2 :

Components of SF-36v2	Level of Injury according to ASIA scale	Chi-square value (χ^2)	P-value	Significance
Physical Functioning	Incomplete – C (n=11)	3.736	0.231	Not Significant
Role Physical		18.048	0.357	Not Significant
Bodily Pain		19.775	0.076	Not Significant
General health		18.576	0.911	Not Significant
Vitality		8.266	0.119	Not Significant
Social Functioning		14.836	0.005	Significant
Role emotional		17.731	0.496	Not Significant
Mental health		20.905	0.342	Not Significant

Appendix – II : Table of Association between Incomplete-D and component of SF-36v2

Distribution of the respondents of association between severity of injury and components of SF-36v2 :

Components of SF-36v2	Level of Injury according to ASIA scale	Chi-square value (χ^2)	P-value	Significance
Physical Functioning	Incomplete – D (n=2)	1.433	0.148	Not Significant
Role Physical		.847	0.174	Not Significant
Bodily Pain		3.151	0.052	Significant
General health		1.153	0.452	Not Significant
Vitality		2.437	0.113	Not Significant
Social Functioning		8.059	0.105	Not Significant
Role emotional		1.463	0.212	Not Significant
Mental health		1.902	0.150	Not Significant

Appendix- III: English Verbal Consent Form

Assalamualaikum/Namasker,

My name is Tamanna Tasnim; I am conducting this study for a B.Sc. in Physiotherapy project study dissertation titled “**Health related quality of life of spinal cord injury patient attending at specialised rehabilitation centre**” under Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some personal and other related information regarding health related quality of life of SCI patient. You have to answer some questions which are mention in the attached form. This will take approximately 20 minutes.

I would like to inform you that this is a purely academic study and will not be used for any other purpose. The researcher is not directly related with this SCI area, so your participation in the research will have no impact on your present or future treatment in the SCI unit. All information provided by you will be treated as confidential and in the event of any report or publication it will be ensured that the source of information remains anonymous and also all information will be destroyed after completion of the study. Your participation 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, and/or Ehsanur Rahman , Assistant Professor, department of physiotherapy, BHPI, CRP, Savar, Dhaka.

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

Yes No

Signature of the Participant/career with date _____

Signature of the Interviewer with date _____

Appendix-IV: সম্মতিপত্র বাংলা

আসসালামুয়ালাইকুম / নমস্কার,

আমি তামান্না তাসনিম, আমি এই গবেষণা প্রকল্পটি বাংলাদেশ হেলথ প্রফেশন ইনস্টিটিউট (বিএইচপিআই) এ পরিচালনা করছি যা আমার ৪র্থ বর্ষ বি এস সি ইন ফিজিওথেরাপী কোর্সের অধিভুক্ত। আমি “মেরুরজুতে আঘাতপ্রাপ্ত পারালাইসিস রোগীদের স্বাস্থ্য সম্পর্কীয় জীবনযাত্রার মান” এর উপর গবেষণা করছি। আমি এক্ষেত্রে আপনাকে কিছু ব্যক্তি গত, রোগের বৈশিষ্ট্য এবং সংশ্লিষ্ট নিয়ামকের উপর আনুষঙ্গিক কিছু প্রশ্ন করতে চাচ্ছি। এতে আনুমানিক ১০-১৫ মিনিট সময় লাগবে। আমি আপনাকে অনুগত করছি যে, এটা আমার অধ্যয়নের অংশ এবং যা অন্য কোন উদ্দেশ্যে ব্যবহৃত হবেনা। এই গবেষণায় আপনার অংশগ্রহণ বর্তমান ও ভবিষ্যৎ চিকিৎসায় কোন প্রকার প্রভাব ফেলবেনা। আপনি যেসব তথ্য প্রদান করবেন তার গোপনীয়তা বজায় থাকবে এবং আপনার প্রতিবেদনের ঘটনা প্রবাহে এটা নিশ্চিত করা হবে যে এই তথ্যের উৎস অপ্রকাশিত থাকবে। এই অধ্যয়নে আপনার অংশগ্রহণ স্বেচ্ছা প্রণোদিত এবং আপনি যেকোন সময় এই অধ্যয়ন থেকে কোন নেতিবাচক ফলাফল ছাড়াই নিজেকে প্রত্যাহার করতে পারবেন। এছাড়াও কোন নির্দিষ্ট প্রশ্ন অপছন্দ হলে উত্তর না দেয়ার এবং সাক্ষাৎকারের সময় কোন উত্তর না দিতে চাওয়ার অধিকার ও আপনার আছে।

এই অধ্যয়নে অংশগ্রহণকারী হিসেবে যদি আপনার কোন প্রশ্ন থাকে তাহলে আপনি আমাকে অথবা/এবং আমার সুপারভাইজার, এহসানুর রহমান, সহকারী অধ্যাপক, ফিজিওথেরাপী বিভাগ, বিএইচপিআই, সিআরপি,সাভার, ঢাকা-তে যোগাযোগ করতে পারেন।

আমি কি আপনার অনুমতি নিয়ে সাক্ষাৎকার শুরু করতে পারি?

হ্যাঁ না

অংশগ্রহণকারীর স্বাক্ষর ও তারিখ.....

উপাত্ত সংগ্রহকারীর স্বাক্ষর ও তারিখ.....

গবেষকের স্বাক্ষর ও তারিখ.....

Questionnaire- English

Part -1 : Socio-demographic Questionnaire

Patient's name:

Age:

Gender:

Type of Injury:

Paraplegia

Tetraplegia

Severity of injury according to ASIA scale:

Complete A

Incomplete B

Incomplete C

Incomplete D

Causes of Injury:

Traumatic

Non-traumatic

Part 2: Quality Of Life Scale (SF-36 V2 Health Survey)

This survey asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities.

1. In general, would you say about your health related quality of life?

1. Excellent 2. Very good 3. Good
4. Fair 5. Poor

2. Compared to one year ago, how would you rate your health in general now?

1. Much better now than a year ago
2. Somewhat better now than a year ago
3. About the same as one year ago
4. Somewhat worse now than one year ago
5. Much worse now than one year ago

3. The following items are about activities you might to do during a typical day. Does your health now limit you in these activities? If so, how much?

a. Vigorous activities, such as running, lifting heavy object, participating in strenuous sports.

1. Yes, limited a lot
2. Yes, limited a little
3. No, not limited at all

b. Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf?

1. Yes, limited a lot
2. Yes, limited a little
3. No, not limited at all

c. Lifting or carrying groceries

1. Yes, limited a lot
2. Yes, limited a little
3. No, not limited at all

d. Climbing several flights of stairs

1. Yes, limited a lot
2. Yes, limited a little
3. No, not limited at all

e. Climbing one flight of stairs.

1. Yes, limited a lot
2. Yes, limited a little
3. No, not limited at all

f. Forward bending, kneeling or stooping

1. Yes, limited a lot
2. Yes, limited a little
3. No, not limited at all

g. Walking more than a mile

1. Yes, limited a lot
2. Yes, limited a little
3. No, not limited at all

h. Walking several hundred yards

1. Yes, limited a lot
2. Yes, limited a little
3. No, not limited at all

i. Walking one hundred yards

1. Yes, limited a lot
2. Yes, limited a little
3. No, not limited at all

j. Bathing or dressing yourself

1. Yes, limited a lot
2. Yes, limited a little
3. No, not limited at all

4. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of a physical health?

a. Cut down on the amount of time you spent on work or other activities

1. All of the time
2. Most of the time
3. Some of the time
4. A little of the time
5. None of the time

b. Accomplished less than you would like?

1. All of the time
2. Most of the time
3. Some of the time
4. A little of the time
5. None of the time

c. Were limited in the kind of work or other activities?

- 1. All of the time 2. Most of the time 3. Some of the time
- 4. A little of the time 5. None of the time

d. Had difficulty performing the work or other activities (for example, it took extra time)

- 1. All of the time 2. Most of the time 3. Some of the time
- 4. A little of the time 5. None of the time

5. Have you had any of the following problems with your work or other regular

daily activities as a result of any emotional problems (such as feeling depression or anxious)?

a. Cut down the amount of time you spent on work or other activities?

- 1. All of the time 2. Most of the time 3. Some of the time
- 4. A little of the time 5. None of the time

b. Accomplished less than you would like?

- 1. All of the time 2. Most of the time 3. Some of the time
- 4. A little of the time 5. None of the time

c. Didn't do work or other activities as carefully as usual

- 1. All of the time 2. Most of the time 3. Some of the time
- 4. A little of the time 5. None of the time

6. What extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors or groups?

1. Not at all
2. Slightly
3. Moderately
4. Quite a bit
5. Extremely

7. How much bodily pain have you had during the past 4 week?

1. Not at all
2. Slightly
3. Moderately
4. Quite a bit
5. Extremely

8. How much pain interferes with your normal work (including both work outside the home and housework?)

1. Not at all
2. Slightly
3. Moderately
4. Quite a bit
5. Extremely

9. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks.

a. Did you feel full of pep?

1. All of the time
2. Most of the time
3. Some of the time
4. A little of the time
5. None of the time

b. Have you been a very nervous person?

1. All of the time
2. Most of the time
3. Some of the time
4. A little of the time
5. None of the time

c. Have you felt so down in the dumps nothing could cheer you up?

1. All of the time
2. Most of the time
3. Some of the time
4. A little of the time
5. None of the time

d. Have you felt calm and peaceful?

1. All of the time
2. Most of the time
3. Some of the time
4. A little of the time
5. None of the time

e. Did you have a lot of energy?

1. All of the time
2. Most of the time
3. Some of the time
4. A little of the time
5. None of the time

f. Have you felt downhearted and blue?

1. All of the time
2. Most of the time
3. Some of the time
4. A little of the time
5. None of the time

g. Did you feel worn out?

1. All of the time
2. Most of the time
3. Some of the time
4. A little of the time
5. None of the time

h. Have you been a happy person?

1. All of the time
2. Most of the time
3. Some of the time
4. A little of the time
5. None of the time

i. Did you feel tired?

1. All of the time
2. Most of the time
3. Some of the time
4. A little of the time
5. None of the time

10. How much of the time physical or emotional problems interfere your social activities (like visiting friends, relative neighbors etc.)?

1. All of the time
2. Most of the time
3. Some of the time
4. A little of the time
5. None of the time

11. How true or false is each of the following statements for you?

a. I seem to get sick a little easier than other people

1. Definitely true 2. Mostly true 3. Don't know
4. Mostly false 5. Definitely false

b. I am as healthy as anybody I know

1. Definitely true 2. Mostly true 3. Don't know
4. Mostly false 5. Definitely false

c. I expect my health to get worse

1. Definitely true 2. Mostly true 3. Don't know
4. Mostly false 5. Definitely false

d. My health is excellent

1. Definitely true 2. Mostly true 3. Don't know
4. Mostly false 5. Definitely false

Questionnaire – বাংলা

এস এফ -৩৬

এই প্রশ্নগুলোতে আপনার স্বাস্থ্য সম্পর্কে আপনার মতামত জানতে চাওয়া হয়েছে। এই তথ্যগুলি দ্বারা আপনি কি অনুভব করেন এবং কতটা ভালভাবে আপনার প্রাত্যাহিক কর্মসম্পাদনে সক্ষম সে ব্যাপারে নজর রাখতে সাহায্য করবে। এই সমীক্ষাটি সম্পূর্ণ করার জন্য আপনাকে ধন্যবাদ।

নিম্নলিখিত প্রতিটি প্রশ্নের উত্তরগুলোর মাঝে যেটিকে আপনার সবচেয়ে সঠিক বলে মনে হয়, অনুগ্রহপূর্বক সেগুলোতে টিক চিহ্ন দিন।

১। সাধারণভাবে বলতে, আপনার মতে আপনার স্বাস্থ্য হলঃ

- চমৎকার
- খুব ভাল
- ভাল
- মোটামুটি
- খারাপ

২। গত এক বছর এর সাথে তুলনা করলে আপনার স্বাস্থ্য কেমন ?

- গত এক বছরের তুলনায় এখন অনেক ভাল
- গত এক বছরের তুলনায় এখন খানিকটা ভাল
- প্রায় গত এক বছরের মতন
- গত এক বছরের তুলনায় এখন কিছুটা খারাপ
- গত একবছরের তুলনায় এখন অনেক খারাপ

৩। নিম্নলিখিত প্রশ্নগুলো আপনি একটি সাধারণ দিনে যেসব কাজকর্ম করে থাকেন সেই সম্পর্কিত । আপনার স্বাস্থ্য কি আপনার কাজকর্ম বাঁধা হয়ে দাঁড়িয়েছে ? যদি হয় , তবে কতটুকু?

a.খুব পরিশ্রমসাহ্য কাজগুলি, যেমন দৌড়ানো, ভারি জিনিস তোলা, শ্রমসাহ্য খেলাধুলা করা -

- হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে
- হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে
- না, একেবারেই বাঁধা হয় নি

b. অপেক্ষাকৃত কম পরিশ্রমসাহ্য কাজগুলি, যেমন টেবিল সরানো, ঘর ঝাঝু দেওয়া, বাগানে কাজ করা অথবা সাইকেল চালানো -

- হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে
- হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে
- না, একেবারেই বাঁধা হয় নি

c. মুদিখানার পন্যদ্রব্য তোলা বহন করা -

- হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে
- হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে
- না, একেবারেই বাঁধা হয় নি

d. কয়েক তলা সিঁড়ি বেয়ে উঠা-

- হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে
- হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে
- না, একেবারেই বাঁধা হয় নি

e. একতলা সিঁড়ি বেয়ে উঠা-

- হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে
- হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে
- না, একেবারেই বাঁধা হয় নি

f. ব্লকে কিছু করা, হাঁটু গেড়ে বসা, নিচু হয়ে কাজ করা-

- হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে
- হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে
- না, একেবারেই বাঁধা হয় নি

g. এক মাইলের বেশি হাঁটা -

- হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে
- হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে
- না, একেবারেই বাঁধা হয় নি

h. কয়েকশত মিটার হাঁটা-

- হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে
- হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে
- না, একেবারেই বাঁধা হয় নি

i. একশো মিটার হাঁটা-

- হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে
- হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে
- না, একেবারেই বাঁধা হয় নি

j. নিজে নিজে গোসল করা বা জামাকাপড় পড়া-

- হ্যাঁ, অনেকখানি বাঁধা হয়ে দাঁড়িয়েছে
- হ্যাঁ, খানিকটা বাঁধা হয়ে দাঁড়িয়েছে
- না, একেবারেই বাঁধা হয় নি

৪. বিগত চার সপ্তাহে, প্রাত্যহিক জীবনের কাজগুলো সম্পাদন করতে গিয়ে আপনার
সাস্থ্যের জন্য আপনি কি পরিমাণ সমস্যার মুখে পড়েছেন ?

a. আপনার কর্মস্থলে এবং অন্যান্য কাজগুলোতে আপনি কম সময় দিয়েছেন -

- সবসময়
- বেশিরভাগ সময়
- মাঝেমধ্যে
- খুব কম সময়
- কখনই নয়

b. আপনি যতটুকু চেয়েছিলেন তার চেয়ে কম কাজ করেছেন -

- সবসময়
- বেশিরভাগ সময়
- মাঝেমধ্যে
- খুব কম সময়
- কখনই নয়

c. আপনার নিজের কাজ বা অন্যান্য কাজেই সীমাবদ্ধ ছিলেন -

- সবসময়
- বেশিরভাগ সময়
- মাঝেমধ্যে
- খুব কম সময়
- কখনই নয়

d. আপনার নিজের কাজ বা অন্যান্য কাজ করতে গিয়ে অসুবিধা বোধ করেছিলেন -

- সবসময়
- বেশির ভাগ সময়
- মাঝেমধ্যে
- খুব কম সময়
- কখনই নয়

৫. বিগত চার সপ্তাহে, প্রাত্যহিক জীবনের কাজগুলো সম্পাদন করতে গিয়ে আপনার মানসিক সমস্যার কারণে আপনি নিচের কোন সমস্যাগুলোর মুখে পড়েছেন? (যেমন - মানসিক চাপ বা দুশ্চিতাগ্রস্থ হওয়া)।

a. আপনার কর্মস্থলে এবং অন্যান্য কাজগুলোতে আপনি কম সময় দিয়েছেন -

- সবসময়
- বেশিরভাগসময়

- মাঝেমধ্যে
- খুবকমসময়
- কখনইনয়

b. আপনি যতটুকু চেয়েছিলেন তার চেয়ে কম কাজ করেছেন -

- সবসময়
- বেশিরভাগ সময়
- মাঝেমধ্যে
- খুব কম সময়
- কখনই নয়

c. অন্যান্য সময়ের চেয়ে কাজে কম মনযোগ দিয়েছেন -

- সবসময়
- বেশিরভাগ সময়
- মাঝেমধ্যে
- খুব কম সময়
- কখনই নয়

৬। বিগত চার সপ্তাহে আপনার শারীরিক বা মানসিক সমস্যাগুলি আপনার পরিবার , বন্ধুবান্ধব , প্রতিবেশী বা গোষ্ঠীর সাথে সামাজিক কাজকর্মে কতখানি বাঁধা সৃষ্টি করেছে?

- একেবারে না
- সামান্য রকম
- মাঝামাঝি রকম
- অনেকখানি
- অত্যন্ত বেশিরকম

৭। গত চার সপ্তাহে , আপনি কতখানি শারীরিক ব্যাথা অনুভব করেছেন?

- একেবারে না

- সামান্য রকম
- মাঝামাঝি রকম
- অনেখানি
- অত্যন্ত বেশিরকম

৮। গত চার সপ্তাহে , আপনি কতখানি শারীরিক ব্যাথা আপনার প্রাত্যাহিক কাজে কি পরিমাণ বাঁধা সৃষ্টি করেছে (ঘরে ও বাইরে) ।

- একেবারে না
- সামান্য রকম
- মাঝামাঝি রকম
- অনেখানি
- অত্যন্ত বেশিরকম

৯।বিগত চার সপ্তাহে, আপনার শারীরিক অবস্থা কেমন ছিল এবং আপনি কেমন অনুভব করেছিলেন নিচের প্রশ্নগুলো সেই সম্পর্কিত। প্রতিটি প্রশ্ন এর জন্য আপনি যেমন অনুভব করেছিলেন সে অনুযায়ী সবচেয়ে প্রযোজ্য উত্তরটি দিন।

গত চারসপ্তাহে কতবার -

- a. আপনি কি খুব স্বাচ্ছন্দবোধ করেছিলেন?
- সবসময়
 - বেশিরভাগ সময়
 - মাঝেমধ্যে
 - খুব কম সময়

b. আপনি কি খুব বিচলিত ছিলেন ?

- সবসময়
- বেশিরভাগ সময়
- মাঝেমধ্যে
- খুব কম সময়

c. আপনি কি এমনই হতাশাগ্রস্ত হয়ে পড়েছিলেন যে কোনকিছুই আপনাকে উদ্দীপিত করতে পারছিলেন ?

- সবসময়
- বেশিরভাগ সময়
- মাঝেমধ্যে
- খুব কম সময়

d. আপনি কি খুব স্থির ও শান্ত ছিলেন ?

- সবসময়
- বেশিরভাগ সময়
- মাঝেমধ্যে
- খুব কম সময়

e. আপনার কি প্রচুর প্রাণশক্তি ছিল ?

- সবসময়
- বেশিরভাগসময়
- মাঝেমধ্যে
- খুবকমসময়

f. আপনি কি মানসিকভাবে হতাশ ও মনমরা হয়ে পড়েছিলেন ?

- সবসময়
- বেশিরভাগ সময়
- মাঝেমধ্যে
- খুব কম সময়

g. আপনি কি বিপর্যস্থবোধ করেছিলেন ?

- সবসময়
- বেশিরভাগ সময়
- মাঝেমধ্যে
- খুব কম সময়

h. আপনি কি আনন্দে ছিলেন ?

- সবসময়
- বেশিরভাগ সময়
- মাঝেমধ্যে
- খুব কম সময়

i. আপনি কি ক্লান্ত ছিলেন ?

- সবসময়
- বেশিরভাগ সময়

- মাঝেমধ্যে
- খুব কম সময়

১০। বিগত চার সপ্তাহে, আপনার শারীরিক এবং মানসিক সমস্যাগুলো আপনাকে সামাজিক কার্যক্রমে কি পরিমাণ বাধার সৃষ্টি করেছে? (যেমন - বন্ধু-বান্ধব এবং আত্মীয়-স্বজনদের সাথে দেখা করতে যাওয়া)।

- সবসময়
- বেশিরভাগ সময়
- মাঝেমধ্যে
- খুব কম সময়

১১। নিম্নলিখিত বিবৃতিগুলো প্রত্যেকটি আপনার ক্ষেত্রে কতটুকু সত্য বা মিথ্যা?

- a. আমার মনে হয় অন্যান্য মানুষের চেয়ে একটু বেশি অসুস্থ হয়ে পড়ি -
- সবসময়
 - বেশিরভাগ সময়
 - মাঝেমধ্যে
 - খুব কম সময়
- b. আমি আমার জানাশোনা মানুষ গুলোর মতই সুস্থ -
- সবসময়
 - বেশিরভাগ সময়
 - মাঝেমধ্যে
 - খুব কম সময়

c. আমি আমার স্বাস্থ্য খারাপ হবার আশংকা করি -

- সবসময়
- বেশিরভাগ সময়
- মাঝেমধ্যে
- খুব কম সময়

d. আমার স্বাস্থ্য অনেক ভাল -

- সবসময়
- বেশিরভাগ সময়
- মাঝেমধ্যে
- খুব কম সময়

[এই প্রশ্নগুলির উত্তর সম্পূর্ণ করার জন্য আপনাকে ধন্যবাদ]

Permission letter

March 13, 2017

Head of the Department,
Department of Physiotherapy,
Centre for the Rehabilitation of the Paralysed (CRP),
Chapain, Savar, Dhaka-1343.

Through: Head, Department of Physiotherapy, BHPI.

Subject: Seeking permission of data collection to conduct my research project.

Dear Sir,

With due respect and humble submission to state that I am Tamanna Tasnim, student of 4th Professional B.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI). The ethical committee has approved my research project entitled on "Health Related Quality of Life of Spinal Cord Injury Patients Attending at Specialised Rehabilitation Centre" under the supervision of Ehsanur Rahman, Assistant Professor, Department of Physiotherapy, BHPI, CRP. Conducting this research project is partial fulfillment of the requirement for the degree of B.Sc. in Physiotherapy. I want to collect data for my research project from the patients of CRP. So, I need permission for data collection from the Spinal Cord Injury Unit of Physiotherapy department of CRP-Savar. I would like to assure that anything of my study will not be harmful for the participants.

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

Sincerely,
Tamanna Tasnim, 13.03.2017,
Tamanna Tasnim

4th Professional B.Sc. in Physiotherapy
Roll-06, Session: 2012-2013
Bangladesh Health Professions Institute (BHPI)
(An academic Institute of CRP)
CRP, Chapain, Savar, Dhaka-1343.

Approved
Please contact with Kazi Imdadul
Haque on a counter part of data collecti-
proceeds.

Kazi Imdadul Haque
05/04/17
Head of Physiotherapy Dept.
CRP, Chapain, Savar, Dhaka-1343.

Recommended
9/14/03/17
Md. Obaidul Haque
Associate Professor & Head of the Department
Department of Physiotherapy
Bangladesh Health Professions Institute (BHPI)
CRP, Chapain, Savar, Dhaka-1343.

Shayab
5/4/17

Forwarded
to Head of Dept, PT, CRP
E. Rahman
13/03/17

Allow for data
collection.
Muzaffar Hossain
5/4/17

Muzaffar Hossain
Savarn PT & Incharge SCI Unit
Physiotherapy Department
CRP, Savar, Dhaka-1343



বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)
(The Academic Institute of CRP)

Ref: CRP-BHPI/IRB/04/17/96

Date: 15/04/2017

To
Tamanna Tasnim
B.sc in Physiotherapy.
Session: 2012-2013, Student ID 112120006
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: "Health Related Quality of Life of Spinal Cord Injury Patient Attending at Specialized Rehabilitation Centre".

Dear Tamanna Tasnim,

The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application on 14/08/2016 to conduct the above mentioned thesis, with yourself, as the Principal investigator. The following documents have been reviewed and approved:

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

Since the study involves SF-36 questionnaire that takes 20 to 30 minutes, have no likelihood of any harm to the participants and have possibility of benefit of patients to design appropriate rehabilitation program. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 09:00 AM on August 17, 2016 at BHPI.

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: 02-7745464-5, 7741404, Fax: 02-7745069,
Email: contact@crp-bangladesh.org, www.crp-bangladesh.org