Faculty of Medicine

University of Dhaka

ASSESSMENT OF COMPLICATIONS AT ADMISSION OF SPINAL CORD INJURY PATIENTS

Zinat Tasnim

Bachelor of Science in Physiotherapy (B.Sc. PT)

DU Roll no: 811

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BHPI, CRP, Savar, Dhaka-1343

Bangladesh Health Professions Institute (BHPI)

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CRP, Savar, Dhaka-1343

Bangladesh

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

ASSESSMENT OF COMPLICATIONS AT ADMISSION OF SPINAL CORD INJURY PATIENTS

Submitted by Zinat Tasnim, for the partial fulfillment of the requirements for the degree of Bachelor of Science in Physiotherapy.

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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 decline that same any publication, presentation, or dissemination of information of the study. I would bind to take consent from the Department of Physiotherapy of Bangladesh Health Profession Institute (BHPI).

Signature: Date:

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Contents

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Acronyms

ASIA-American Spinal Injury Association

BHPI Bangladesh Health Professions Institute

CRP - Centre for the Rehabilitation of the Paralysed

GU- Genitourinary

NTSCI- Non-Traumatic Spinal Cord Injury

PU- Pressure Ulcer

QoL- Quality of life

SCI-Spinal Cord Injury

SOB- Shortness of Breath

SPSS - Statistical Package for Social Science

TSCI-Traumatic Spinal Cord Injury

UTI- Urinary Tract Infection

WHO - World Health Organization

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Abstract

Purpose: The purpose of the study was to assess the complications of patient with spinal cord injury during admission**. Objectives:** To find out the cardio-respiratory, musculoskeletal, and genitourinary complications of patient with spinal cord injury on admission. To identify the socio-demographic characteristics of spinal cord injured patients. **Methodology:** A cross-sectional study design was selected for conducting the study. A total of 60 samples were conveniently chosen from the SCI unit of CRP, Savar, Dhaka. The data was collected by using a questionnaire, and SPSS version 20 was used for descriptive data analysis**. Result:** Among the 60 participants, 76.67% were male. The maximum respondents were aged between 31-40years, 46.67% of the respondents had completed the primary level. Most of the participants (66.67%) lived in rural areas, and 91.60% of SCI was caused by trauma. The common complications during admission were pain (84%), pressure sores (70%), abnormal muscle tone (70%), postural hypotension (40%), and bowel and bladder incontinence (46%). Associated complications were shortness of breath 10%, autonomic dysreflexia 8%, muscle atrophy 35%, constipation 33%, leg swelling 25%. The study showed an association between complications such as pain, shortness of breath, postural hypotension, autonomic dysreflexia, and socio-demographic information such as age group, gender, and types of paralysis with a 5% ($p<0.05$) level of significance. **Conclusion:** Complications after spinal cord injury are the primary cause of mortality and morbidity. The study finds out the complications of SCI during the admission time. Awareness, early admission, and intervention can prevent the complications after SCI. This research will aid in the early detection and prevention of complications following SCI.

Keywords: Spinal Cord Injury, Complications.

Word count: 9978

CHAPTER I INTRODUCTION

1.1 Background

Spinal Cord Injury is a life-threatening disorder with a significant risk of morbidity and morbidity (Shende &Subedi, 2017). Although spinal cord injury (SCI) is not as prevalent as other injuries, it has devastating physical and psychosocial effects. After a SCI, only a small percentage of people achieve complete neurologic recovery (Chen et al., 2013). In Bangladesh, 90% were male, 57% had paraplegia, 43% had tetraplegia, 69% were married, and 71% had ASIA Impairment Scale A lesions. (Hossain et al., 2019). In North America, the primary causes of SCI were falls (37%) and motor vehicle accidents were the primary causes of injury (28%) (Grossman et al., 2012). In developed countries, the prevalence ranges from 490 to 526 per million people (Knutsdottir et al., 2012; New et al., 2015). In non-developed countries, the prevalence rate was 440.026 per million people (Rahimi-Movaghar et al., 2009). According to one article, the overall prevalence rate of NTSCI was 367.2 people per million in Australia (New et al., 2013). In 2018, the National Spinal Cord Injury Statistical Center reported that in the United States, approximately 54 people per 1 million are affected by spinal cord injury (SCI), resulting in approximately 17,700 new SCI cases each year. In the United States, there are an estimated 288,000 people living with a SCI. According to estimates (51% TSCI and 49 % NTSCI), SCI affects 85,556 people in Canada (Noonan et al., 2012). The annual prevalence rate in Nepal is 1,500–25, 000 (Scovil et al., 2012). The prevalence in India was 0.15 million per year (Singh et al., 2019). The worldwide incidence of TSCI ranges from 3.6 to 195.4 people per million (Jazayeri et al., 2015). The epidemiology of SCI in Brazil, where the annual incidence is reported to be between 16 and 26 per million (Rouanet et al., 2017). In Canada, the initial incidence of TSCI in 2010 was reported to be 1,785 cases per year, with a discharge incidence of 1,389 cases (41 per million). The discharge incidence of NTSCI was reported to be 2,286 cases (68 per million) (Noonan et al., 2012). The annual incidence of traumatic SCI in Nepal is estimated to be 300–5000, with a frequency of 1500–25 000. From 2001 to 2004, one hospital in eastern Nepal reported 149 traumatic SCI hospitalizations, and 233 from 1997 to 2001. Non-traumatic SCI is not reported in Nepal; however, in 2003-2004, one Indian hospital reported that

13% of 207 SCI patients were non-traumatic (Scovil et al., 2012). SCI affects 15,000 people every year on average in India (Singh et al., 2019).

According to one study, many patients living in remote villages in rural Nepal and India, where existence farming is the primary source of income, and where the harsh environment, poor road access, and distance housing are frequently barriers to using mobility devices (Scovil et al., 2012), are at risk of developing a disability. About 48.3% of SCI patients had issues with their housing's default structure, requiring a ramp, lift, or elevator to replace stairs, or renovations to offer ample space to move around in a wheelchair. These issues prohibit free mobility within the home and a safe exit from the home, substantially diminishing autonomy and independence (Khazaeipour et al., 2014). Medical complications, both acute and long-term, are common in people with SCI. Chronic complications, on the other hand, have a particularly significant influence on patients' functional independence and quality of life (Sezer et al., 2015). In a study published in 2012, about 93.4 % of spinal cord injury patients' rehabilitation was not started early enough, resulting in a significantly poor functional outcome. Because of the increased risk of complications as a result of a lack of or inadequate knowledge, hospitalisation is prolonged, the expense of hospitalisation rises, and functional outcomes are significantly impacted. In his study, 10.4% of patients were admitted after the third day of injury.

According to Chhabra's evidence, the time between injury and the right diagnosis is more than three weeks (Chhabra & Arora, 2012). Respiratory complications, cardiovascular complications, urinary and intestinal complications, spasticity, pain syndromes, pressure ulcers, osteoporosis, and bone fractures are all typical secondary long-term consequences after SCI (Sezer et al., 2015).

1.2 Rationale

Spinal cord injury (SCI) is a devastating event that is one of the most common causes of severe disability after a traumatic incident (Murthy, 2010). A person's life is disrupted by a spinal cord injury (SCI), which necessitates a significant coping process. Shortly after the injury, all attention is focused on stabilising the patient, and the individual is faced with physical, social, environmental, and psychological obstacles (Lude et al., 2014). According to the World Health Organization, around 10% of the population is affected by spinal cord injury. Spinal cord injury (SCI) affects a huge number of people, and complications are the leading cause of morbidity and mortality. Kawu et al. (2011) showed in their study that 44.4% of patients die from respiratory failure, 26.4 percent from septicaemia, and 11.8% from DVT. In their study, Amatacheyal et al. (2011) found that tetraplegic patients have more complications than paraplegic patients. Complicacies following SCI include reduced quality of life, challenges returning to work, adjusting to new social responsibilities, and gaining overall individual freedom.

Many complications arise as a result of patients' and their families' lack of awareness. As a result, everyone should be aware of the SCI complications. It will be simple to prevent subsequent complications if you have enough knowledge about the complications that can occur after a SCI. The study's goal is to explore the most prevalent complications that people with spinal cord injuries face at admission. As a result, it is both socially and economically beneficial to our community and country. This is critical for SCI patients, as it focuses on reducing complications and enhancing the quality of life for those who have suffered a spinal cord injury. Finally, participants may benefit from this study, and practitioners will acquire knowledge from it.

1.3 Research Question

What are the complications of patient with spinal cord injury during admission?

1.4 Objectives:

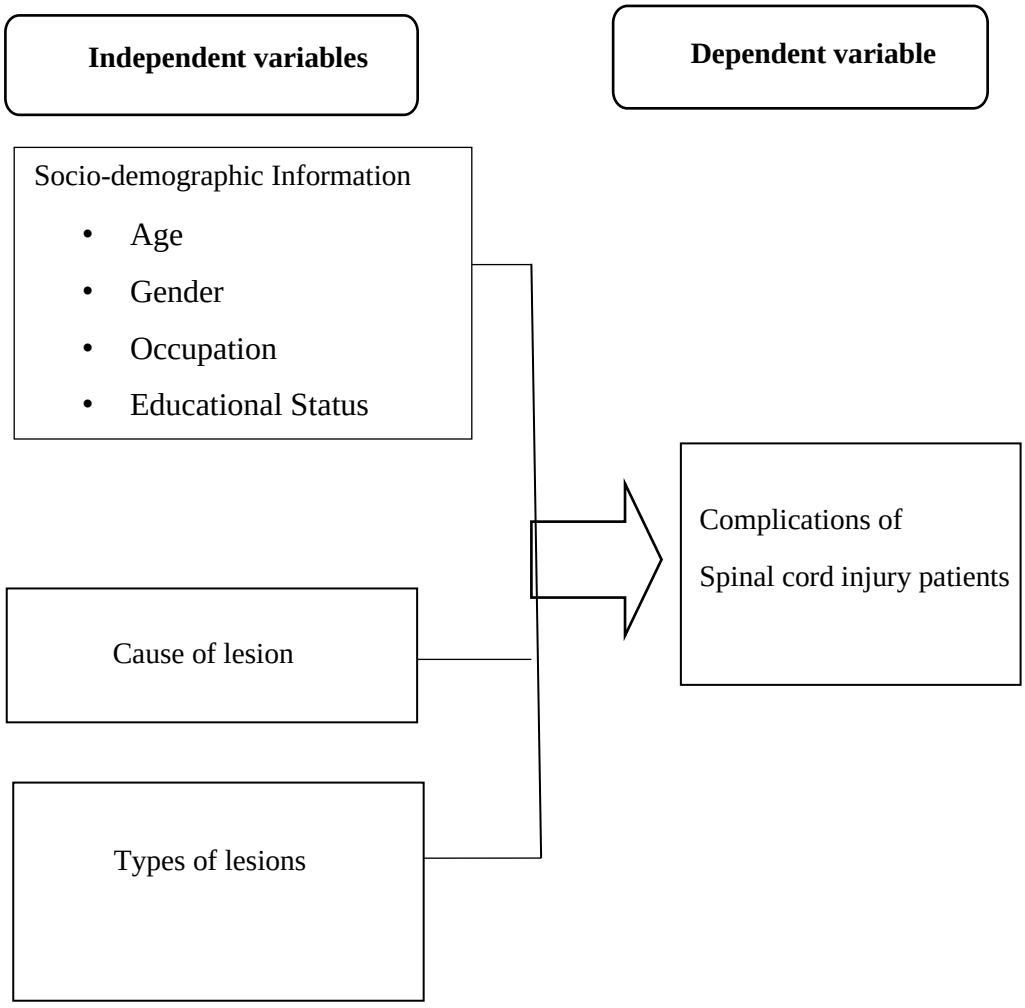
1.4.1 General objective

- To explore the complications of patient with spinal cord injury on admission.

1.4.2 Specific objectives

- To identify the socio-demographic characteristics of spinal cord injured patients.
- To know the types and causes of injury.
- To find out the cardiorespiratory, genitourinary and musculoskeletal complications on the admission time.

1.5 Conceptual Framework:



1.6 Operational definition

Traumatic Spinal Cord Injury

Traumatic Spinal Cord Injury (SCI) is a type of spinal cord injury that causes a direct or indirect injury to the spinal cord as a result of a complete or incomplete spinal cord resection. Incomplete injuries result in the loss of some motor and sensory function, whereas complete cut injuries cause the entire loss of motor and sensory function.

Non-traumatic Spinal Cord Injury

Non-traumatic Spinal Cord Injury (NTSCI) is a neurological condition. It is characterised by damage to the spinal cord due to non-traumatic causes.

Paraplegia

Paraplegia is a condition in which motor and/or sensory function is impaired or lost in the thoracic, lumbar, or sacral (but not cervical) segments of the spinal cord as a result of damage to neuronal components within the spinal canal. Although arm function is preserved in paraplegia, the trunk, legs, and pelvic organs may be affected, depending on the severity of the injury.

Tetraplegia

Tetraplegia (sometimes known as "quadriplegia") is a type of paralysis. Damage to neural components within the spinal canal causes impairment or loss of motor and/or sensory function in the cervical regions of the spinal cord.

Complete injury

Loss of sensory and motor function in the lower sacral segment causes bowel and bladder control to be lost.

Incomplete injury

Injuries that are not comprehensive sensory or motor function that were preserved below the neurological level of injury, which encompassed the lower sacrum section.

Incidence

The occurrence, rate, or frequency of a disease, criminal activity, or other undesirable thing.

Prevalence

The proportion of a population affected by a medical condition (usually a disease or a risk factor) at a given period is known as prevalence.

Complication

A complication is a procedure or event that disrupts or alters the patient's prognosis of disease and its treatment, as well as the length of time it takes for a patient to recover.

CHAPTER II LITERATURE REVIEW

SCI is a devastating neurological disorder that has a significant socioeconomic impact on people and the health-care system (Alizadeh et al., 2019). SCI is defined as the damage of the neuronal tissue within the spinal cord that results in spinal cord damage and can be caused by trauma, disease, or degeneration (Stack & Stokes, 2012). The primery injury involves both lower and upper motor neurones damages and disturbs sensory, motor, and autonomic functioning, while the secondary injury involves multiple stages of molecular and cellular occurrences that elaborate the original damage. (Shende & Subedi, 2017). Traumatic and non-traumatic etiologies are the two types of SCI. Traumatic SCI occurs when the spinal cord is acutely damaged by an external physical impact (for example, a car accident, fall, sports-related injury, or violence) (Ahuja et al., 2017). A traumatic spinal cord injury is described as an acute lesion to the spinal cord that causes paralysis and/or sensory disorders in various degrees (Nas et al., 2015). An acute traumatic SCI begins with a sudden injury to the spine that results in vertebral fractures or dislocations. Immediate injury is caused by displaced bone fragments and disc debris, which results in incurable axon damage and damaged neural cell membranes. Ruptured blood vessels in the spinal cord can induce bleeding, which can worsen the damage in the hours afterwards. The total injury to the spine is caused by a number of methods. Non-traumatic SCI occurs when the primary injury is caused by an acute or chronic disease process, such as a tumor, infection, or degenerative disc disease (Ahuja et al., 2017). Depending on the level of injury SCI is divided into two types – Paraplegia and tetraplegia. Paraplegia is defined as damage to the thoracic or lumber spinal cord, or the sacral roots, causes partial or full paralysis of both lower limbs and all parts of the trunk. Tetraplegia is a condition in which all four limbs and the trunk, including the respiratory muscle, are partially or completely paralysed as a result of damage to the cervical spinal cord (Bromely, 2006). According to the ASIA scale the SCI is classified as follow-

A- Complete; no sacral motor or sensory sensation in segments S4-5.

B- Sensory incomplete; preservation of sensation below the level of injury, extending through sacral segments S4-5.

C-Motor incomplete; voluntary anal sphincter contraction or sensory sacral sparing with sparing of motor function distal to 3 levels below the motor level of injury, with the majority of key muscles having a strength grade of less than 3.

D- Motor incomplete; voluntary anal sphincter contraction or sensory sacral sparing with sparing of motor function distal to 3 levels below the motor level of injury, with the majority of key muscles having a strength grade of 3 or greater.

E- Normal; normal motor and sensory recovery (Maynard et al, 1997).

ASIA grades were distributed among SCI as follows: A (40%), B (16%), C (15%), and D (15%), E (29%) in North America (Grossman et al., 2012). In US, the most common cause of SCI was automobile crashes (31.5%). The next common causes were falls (25.3%), followed by gunshot wounds (10.4%), motorcycle crashes (6.8%), driving events (4.7%), and medical/surgical complications (4.3%), accounting for 83.1% of total SCIs since 2005. Accidents involving automobiles were common. Falls were the primary cause of SCI until the age of 45. Motorcycle accident, gunshot wounds males suffered more than females as a result of collisions and diving (Chen et al.,2013). In North America, between 2010 and 2014, traffic accidents were the leading cause of all Traumatic SCI accounting for 38% of all injuries (Chen et al., 2016). In India, Singh et al, (2019) reported that the most prevalent degree of injury (37.6%) was thoracic, and the majority (66.9%) were paraplegic. The most common traumatic cause was RTA (42.6%) and the non -traumatic cause was Tuberculosis (66.6%). In Bangladesh, fall (66%) and motor vehicle accident (18.2%) were the main causes of traumatic spinal cord injury. The mechanism of fall was falling from height (36.3%), falling heavy weight on back (15.9%), falling from roof (10.6%). Pott's disease (3.2%) and spinal tumors were the leading causes of non-traumatic spinal cord lesions (2.1%). Farm/ranch (44.7%), street (19.1%), residential area (12.8%), and construction area (3.5%) were the most common working sits during spinal cord injury (Nas et al., 2015).

The most widely utilized radiological methods are plain X-ray, CT, and MRI to detect SCI. In the trauma room, X-rays of the anterior–posterior (AP) and lateral cervical spines, as well as the AP chest and AP pelvis, are taken. X-rays are helpful in detecting large fracture dislocation injuries, which are common in SCI patients. For the detection of bone damage in trauma patients, CT has virtually replaced X-ray. MRI can detect transection of the spinal cord and assess the existence of oedema and/or bleeding. (Woodring & Lee, 1993; Miyanji et al., 2007; Ahuja et al., 2017). The treatment and rehabilitation process for SCI-related trauma is prolonged, costly, and demanding, resulting in biophysical, psychological, and financial issues. Patients with spinal cord injuries get care for many years, starting with immediate surgical procedures and acute care, followed by treatment for sensory, motor, and autonomic dysfunction in the chronic phase; and lastly, lifelong treatment in the home environment (Nas et al., 2015). At the scene of the injury, the patient with SCI receives comprehensive medical care. Immediate immobilisation is applied to prevent further injury. The goals of SCI management are to avoid future spinal cord damage by reducing and stabilising the spine appropriately, to avoid subsequent neural injury, and to avoid medical problems. Nonoperative and surgical treatments of SCI management are the most common (Grundy & Swain, 2002). Rehabilitation programme after SCI is divided into 3 period. They are acute, sub-acute, chronic period.In acute and subacute periods, a 6–12 week bed period that begins with admission to the hospital and the stabilisation of the patient's neurological condition. The goal of rehabilitation during this time is to avoid long-term consequences. During the acute phase of hospitalisation, patients with total injuries should undergo extensive passive exercises to relieve contractures, muscular atrophy, and discomfort. Proper positioning is required in order to protect the joint and maintain muscle tone. Positioning devices are sandbags, cushions, pillows, and different orthoses (plaster splints or braces) (Chi, 2009). Range of motion exercises are performed to improve functional capacity and prevent contractures (Diong et al., 2012). Stretching exercises, isometric, active or active-assisted truncal exercises, strengthening exercises, breathing exercises are also performed in this period. During the chronic period, the most important aim is to obtain independent mobilisation for both complete and incomplete paraplegic patients. Ambulation might be social,

household, or exercise-related. For chronic stage ambulation, walkers, crutches, and orthoses are required. Because of the high frequency of depression, one of the most essential aspects of this phase is repairing the patient's psychological and emotional state (Nas et al., 2015).

Bangladesh is a developing country in Asia. The annual rate of admission of spinal cord injury patients at specialisedcentres like the Centre for Rehabilitation of the Paralyzed in Bangladesh is increasing. As a result, spinal cord injury and associated health complications are increasing day by day. Secondary medical complications, both acute and long-term, are common in people with SCI. In individuals with SCI, prevention, accurate diagnosis, and treatment of chronic secondary complications are crucial for reducing complications, enhancing survival, community engagement, and health-related quality of life. SCI professionals, families, careers, and patients must all work together to manage secondary chronic problems of SCI. Secondary long-term complications of SCI include respiratory complications, cardiovascular complications, urinary and intestinal issues, spasticity, pain syndromes, pressure sores, osteoporosis, and bone fractures (Sezer et al., 2015). The complications of cervical and upper thoracic SCI are neurogenic shock, bradyarrhythmias, ectopic beats, hypotension, abnormal temperature control and disturbance of sweating, vasodilatation, autonomic dysreflexia, respiratory dysfunction and dysphagia, thromboembolism, pressure sores, muscle related problems, spasticity, pain, UTI, anxiety and depression (Hagen, 2015). In Thailand, complications after SCI were experienced by 76% of patients. The common complications were neurogenic pain, urinary tract infections, pressure sores, and falls (Wannapakhe et al., 2015). From 2006 to 2011, we saw a 2.5% yearly rise in the proportion of SCI-related hospitalizations with any GU complication, and a 0.9% annual increase from 2011 to 2015. In-hospital mortality was linked to age, severity of injury, and payer source. Over the course of the study, the cost of GU-related health care topped $4 billion (Skelton et al., 2019). ASIA grades were distributed as follows: A (40 %), B (16%), C (15 %), and D (15 %) (29 %). A total of 58% of patients experienced one or more severe, moderate, or minor problems. Complications were associated with a higher ASIA grade: 84% of Grade A patients and 25% of Grade D patients had at least one incident. Within 14 days after the accident, 78%

of the problems arose. Respiratory failure, pneumonia, pleural effusion, anaemia, cardiac dysrhythmia, and severe bradycardia were the most common severe and moderate effects. The mortality rate was 3.5%, and it was linked to advanced age and prior morbidity (Grossman et al., 2012). In both the acute and long-term phases of a spinal cord injury (SCI), respiratory problems are the most common cause of morbidity and mortality. Up to 80% of patients with a spinal cord injury experience respiratory complications during the acute phase. The most severe complications after SCI are atelectasis, pneumonia, and respiratory failure. To prevent the severity of respiratory complications, start the treatment immediately (Rahman et al., 2017). Musculoskeletal complications after SCI might worsen impairment by interfering with the use of current functional capacity or prolonging the rehabilitation process. The musculoskeletal complications are spasticity, osteoporosis, recurrent knee effusions, osteoporosis, long bone fractures, joint subluxations, carpal tunnel syndrome, heterotopic ossification, and contractures (Sezer et al., 2015). Spasticity affects 70% of SCI patients and causes significant disability for many. (Gorgey et al., 2010). Spasticity, characterised by hypertonus, increased intermittent or prolonged involuntary somatic reflexes (hyperreflexia), clonus, and painful muscle spasms, is a common subsequent disability after SCI (Rabchevsky & Kitzman, 2011). The high prevalence of pain has been observed in people with spinal cord injury and who have experienced both neuropathic and nociceptive pain (Stampacchia et al. 2022). In his study, Islam (2016) found that 93.3% of people with traumatic spinal cord injuries were suffering from pain. Another study in Bangladesh showed that the prevalence of pain was 92% and 74% of the population was experiencing moderate pain (Islam, 2018). A Swiss study found that 68.9% had acute pain and 73.5% had chronic pain (Muller et al., 2017). Pressure ulcers (PU) are one of the most common and significant public health problems that patients with spinal cord injuries suffer. PUs develop over the bony parts of the body where pressure and tissue deformation are the most severe. It has a big influence on patients and the healthcare system. Furthermore, it has psychological, bodily, and social consequences, as well as a negative impact on patients' quality of life (QoL). (Shiferaw et al., 2020). The sacrum (22.1%), heels (14.8%), ears (12.9%), elbows (10.6%), and buttocks (10.6%) were the most prevalent

body regions for pressure ulcers (6.8%). Stage I ulcers accounted for 48% of the ulcers, Stage II for 36%, Stage III-IV for 6%, and unstageable ulcers for 10%. (Groeneveld et al., 2004). Complications of the urinary and bowel systems include the loss of genitourinary and gastrointestinal function, which is one of the most serious consequences of SCI. (Benevento & Sipski, 2002). The common gastrointestinal dysfunctions are constipation, diarrhea, abdominal pain, incontinence, rectal bleeding, hemorrhoids, and autonomic dysreflexia. Urological dysfunction, such as urinary retention, urinary tract infection (UTI), upper and lower urinary tract deterioration, bladder or renal stones, incontinence, and neurogenic bladder, affects up to 80% of people with a spinal cord injury (Hagen, 2015).

CHAPTER III METHODOLOY

3.1 Study design

A cross-sectional survey was conducted among patients with spinal cord injuries at the SCI unit by the Centre for the Rehabilitation of the Paralyzed (CRP). The goal of this study was to learn about the assessment of complications at admission of spinal cord injuries patient. As a result, the study was conducted using a quantitative research model in the form of a cross sectional study design. The data was collected using a quantitative research approach. Cross sectional studies were one of the most prevalent types of observational studies.

3.2 Study area

Data were collected from the persons with Spinal Cord Injury at Centre for the Rehabilitation for Paralyzed, Savar, Dhaka.

3.3 Study population and Sampling techniques

The population of the study were patient with spinal cord injuries who were admitted to CRP for treatment. The sample was chosen by convenience sampling technique. A structural mixed type questionnaire was designed to determine the most common complications.

3.4 Inclusion criteria

- The patient who was attended at Spinal Cord Injury Unit, Savar, Dhaka.
- Both male and female patients were included.
- Within 1-7 days from the date of admission because if unable to communicate during admission, then try later on.
- Patient who was willing to participate.

- Any age range who are seeking treatment at CRP.

3.4 Exclusion criteria

- Patients who were medically unstable.
- Patients who had difficulties in communication in term of spoken.
- Participants who had mental problems.

3.5 Sample size

The equation of sample size:

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

Here,

z= Confidence level at 95% (standard value of 1.96)

P = 1- p

= 1-0.49 (Haisma et al., 2009)

= 0.51

d = 0.05

According to this equation the sample size was 384. Generally, survey needs large sample that will represent whole population. Due to limited set of time frame the number of the sample of the study was 60.

3.6 Sampling method

The samples were selected by using the convenience sampling techniques. It was one of the easiest, cheapest, and fastest methods of sample selection. The sample will meet the inclusion and exclusion criteria and will freely participate in the study.

3.7 Data collection methods and tools

Data was collected via conducting face to face interviews and using a mixed type of questionnaire paper created by the investigators. The questionnaire would give information about sociodemographic characteristics, as well as injury-related information and various sorts of complications at admission of SCI patients. A questionnaire form, consent form, pens and pencils, paper and clip board, a file as well as a bag to store these instruments, were used to collect data.

3.8 Data analysis

The data were analyzed by Statistical Package for Social Science (SPSS) 20version.The researcher analyzed the data by descriptive statistics using Frequency (n), Percentage (%), Pie chart, Bar diagram and also showed the relationship between two variables by non-parametric Chi-Square test.

Chi-square test

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

Formula

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

Here,

$\chi 2$= Chi-square

O= observed value (actual value)

E= expected value.

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.

Assumption

Different and Independent variable

Variables were quantitative

Normal Distribution of the variable

Level of Significance:

The researcher has used a 5% level of significance to test the hypothesis. If the p-value for the calculated y^2 is $p<0.05$ resolve that there is a significant relationship between the two variables**.**

3.9 Ethical consideration

The Institutional Review Board (IRB) and Bangladesh Health Profession Institute (BHPI) both approved the proposal after reviewing it. The World Health Organization (WHO) and Bangladesh Medical Research Council (BMRC) recommendations were followed in conducting the study. Participants gave their written or verbal consent prior to any data collection. The research's purpose and the consent form were verbally explained to the samples who were interested in the study during the duration of the investigation, and they provided consent forms. The research had no negative effects on their jobs. They were informed that taking part in the study was entirely optional and that they might choose to quit or withdraw at any time. They were informed that taking part in the study was fully up to them and that they could choose out or discontinue at any time. Additionally, they received a guarantee that the confidentiality of their sensitive information. The confidentiality of the participant's name and address should be guaranteed. The results of the study would not hurt the participants, it was also made clear to the volunteers.

3.10 Informed Consent

Written consent was provided to each participant prior to filling out the questionnaire. The researcher describes to the participants how they will be helping with this study and objectives of the study. Each participant signed a written consent form that was given to the researcher. As a result, the participant confirmed that they were able to understand the permission form and that their participation was voluntary. The confidentiality of the participants' data was made very obvious to them. The researcher gave the subjects his word that they wouldn't suffer any negative effects from the study. The study may not have directly benefited the participants, but it may have done so in the future for cases similar to theirs, it was revealed. The participants were free to revoke their consent and stop taking part at any moment.

CHAPTER IV RESULTS

Sociodemographic informations

4.1 Age Groups of the participants

Among the 60 participants, 1 participant in between 0-9 years, 10 participants in between 10-20 years, 14 participants in between 21-30 years, 17 participants in between 31-40 years, 14 participants in between 41-50 years, 4 participants in between 51-60 years (Figure 1).

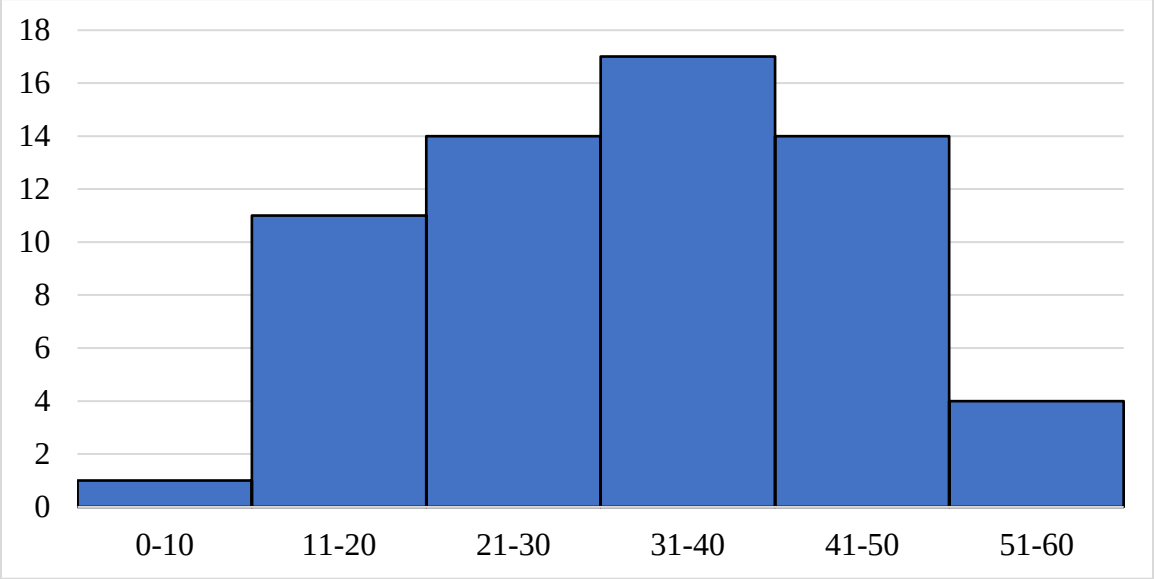


Figure 1: Age Groups

4.2 Gender of the Participants

Among the 60 participants, the male genders were 76.67% (n= 46) and the female genders were 23.3% (n=14) (Figure 2).

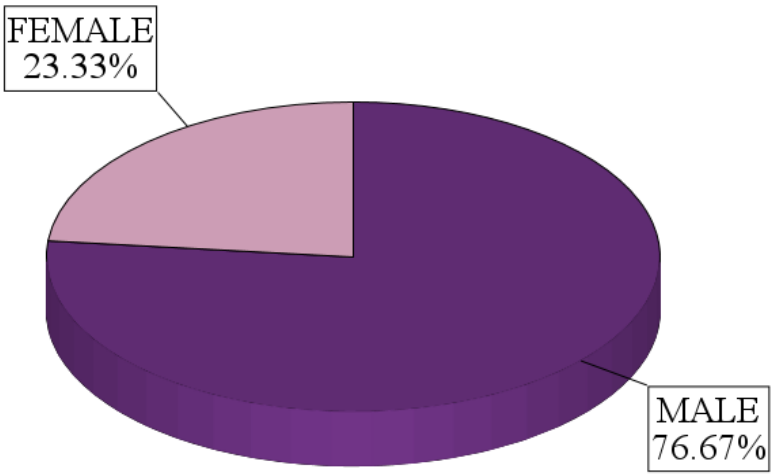


Figure 2: Gender of the Participants

4.3 Educational Status of the participants

Among the 60 participants, the 8.33% (n=5) participants were illiterate, 46.67% (n=28) had passed primary school, 20% (n=12) had passed SSc, 16.67% (n=10) had passed HSc, 8.33% (n=5) had graduated and above (Figure 3).

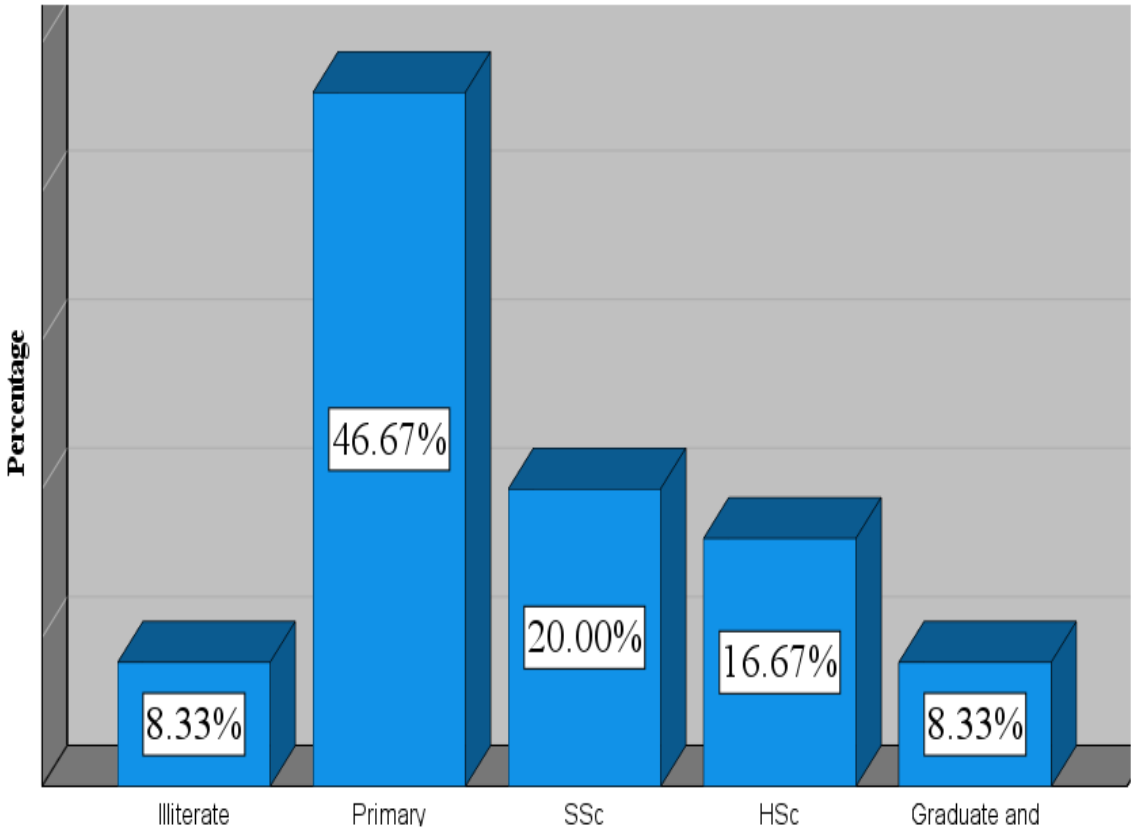


Fig 3: Educational Status of the participants

4.4 Occupational status of the participants

Among the 60 participants, 23.33% (n=14) participants were day labors, 5% (n=3) participants were farmers, 6.67% (n=4) participants were day garments workers, 18.33% (n=11) participants were students, 13.33% (n=8) participants were involved in job, 16.67% (n=10) participants were construction workers, 5% (n=3) participants had abroad job, 11.67% (n=7) participants were involved in others job (Figure 4).

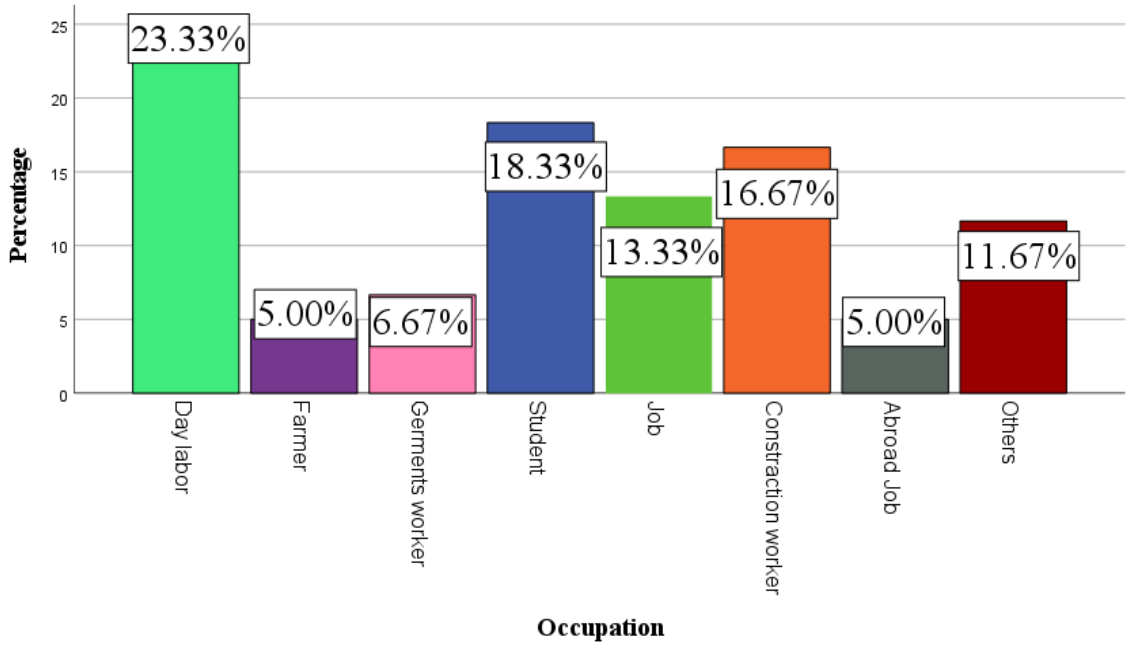


Figure 4: Occupational Status of the Participants

4.5 Family status of the Participants

Among the 60 participants, 63.79% participants had extended family and 36.21 % participants had nuclear family (Figure 5)

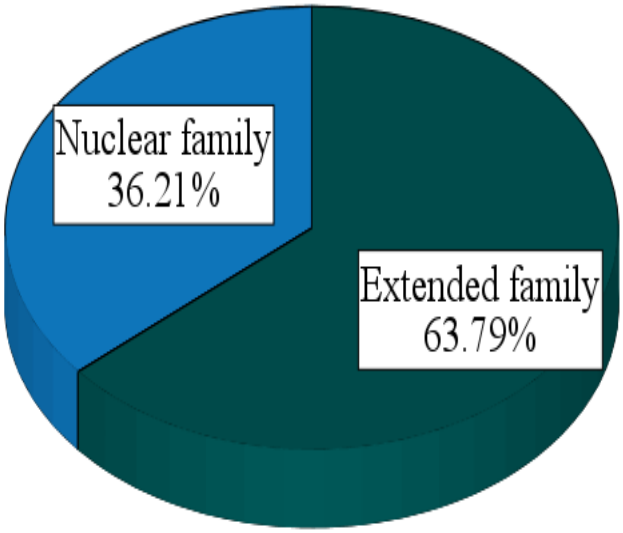


Figure 5: Family status of the Participants

4.6 Residential area of the Participants

Among the 60 participants, 33.33% participants were lived in Urban area and 66.67% participants were lived in Rural area (Figure 6).

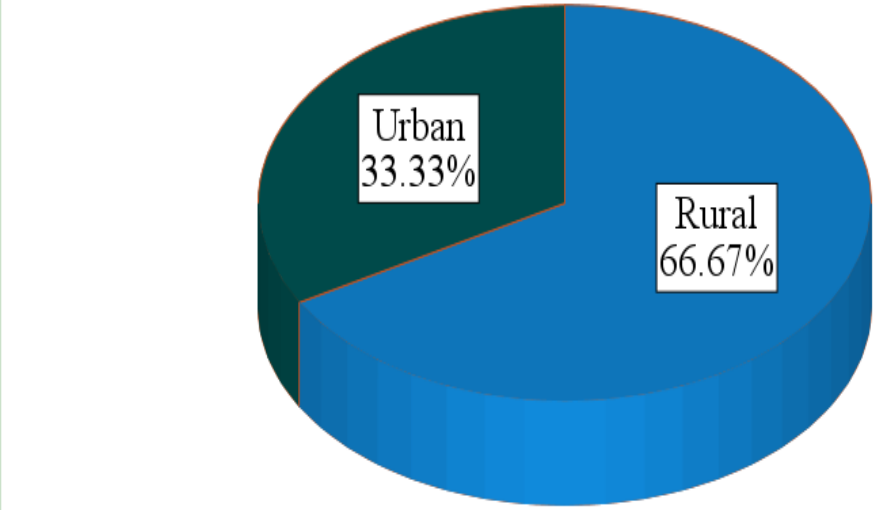


Figure 6: Residential area of the Participants

4.7 Causes of the spinal cord lesion

Among the 60 participants, 91.60% were caused by traumatic injury and 8.30% were caused by non-traumatic cause (Figure 7).

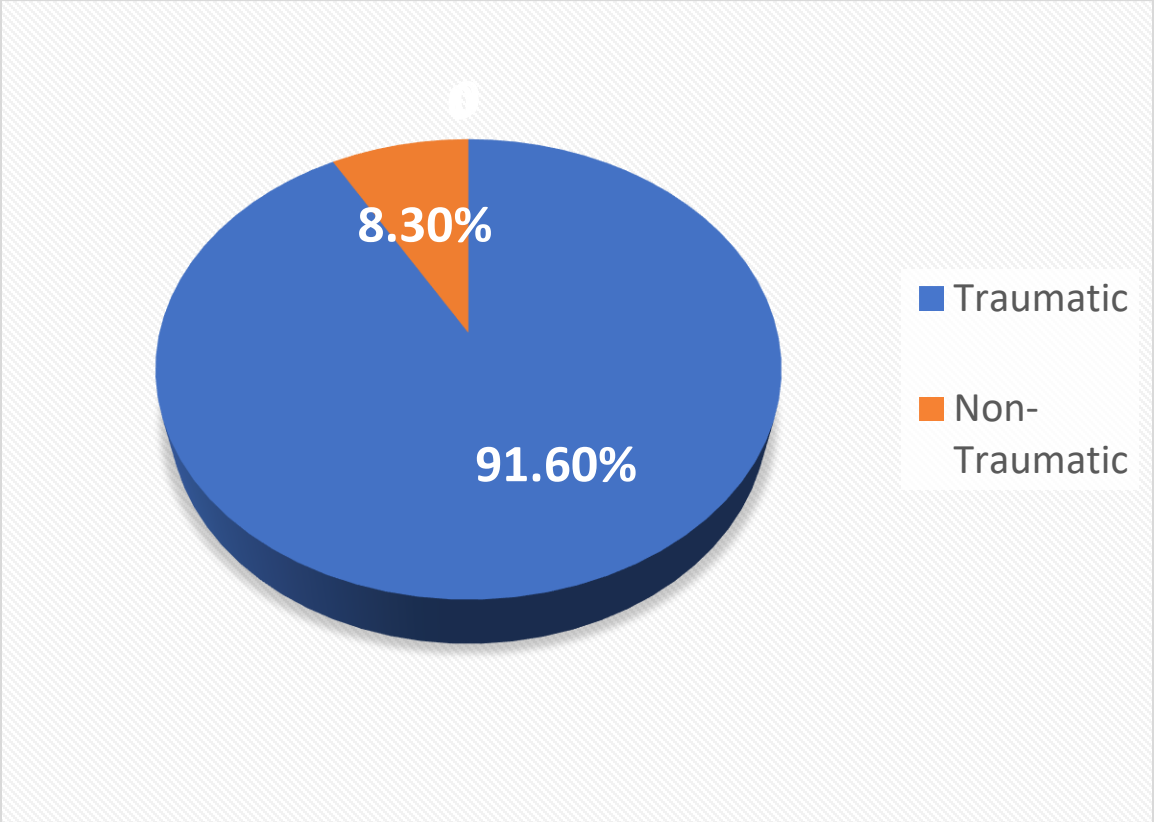


Figure 7: Cause of the Spinal Cord Lesion

4.8 Types of paralysis the Participants

Among the 60 participants, 31.67% participants were tetraplegic and 68.33% participants were paraplegic (Figure 8).

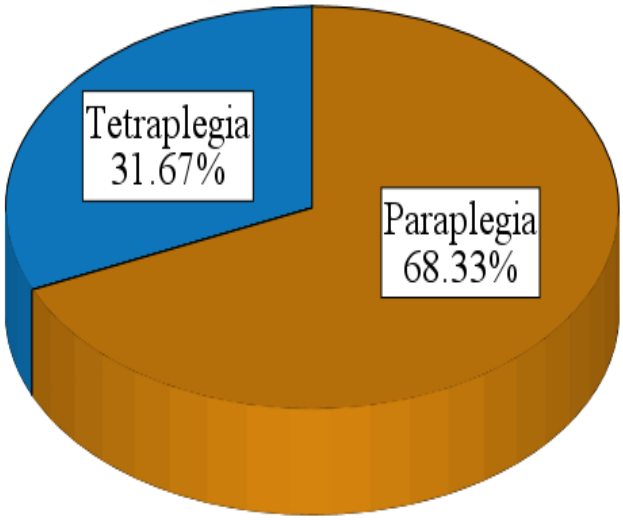


Figure 8: Type of paralysis the Participants

4.9 Cardio-respiratory complications of the Participants

Among the 60 participants, 28% participants were suffered from cardio-respiratory complications and 72% participants had no cardio-respiratory complications (Figure 9).

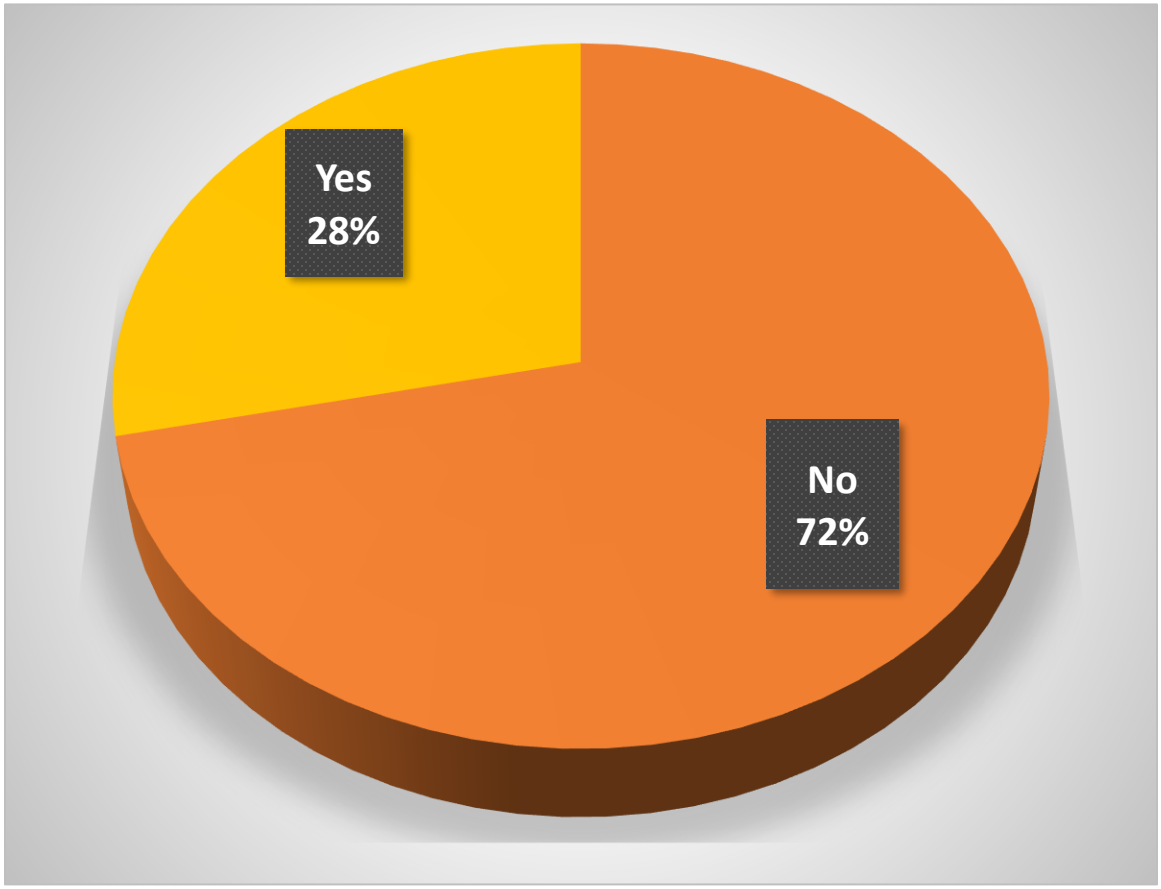


Figure 9: Cardio-respiratory complications of the Participants

4.10 Presence of Autonomic Dysreflexia

Among the 60 participants, 8.33% participants were suffered from autonomic dysreflexia and 91.67% participants had no autonomic dysreflexia (Figure 10).

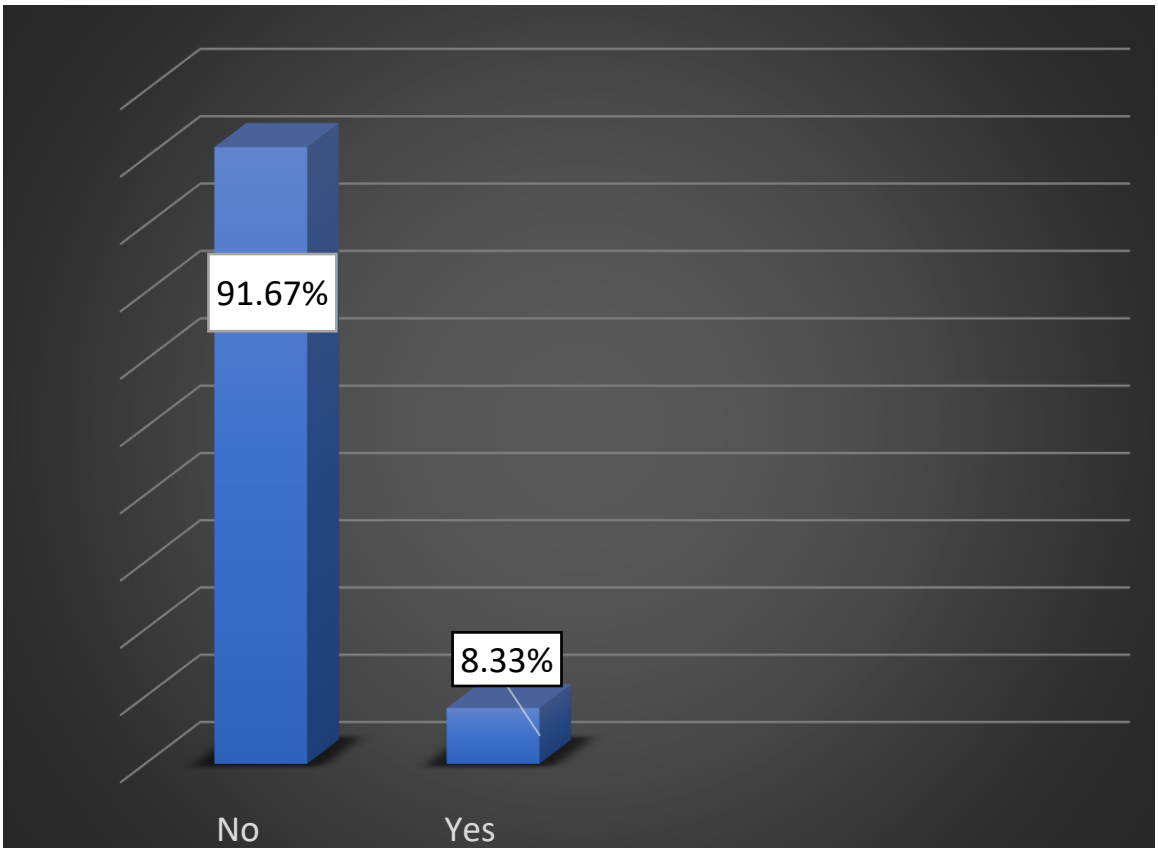


Figure 10: Presence Autonomic Dysreflexia

4.11 Presence of Shortness of breath

Among the 60 participants, 10% participants were suffered from shortness of breath and 90% participants had no shortness of breath (Figure 11).

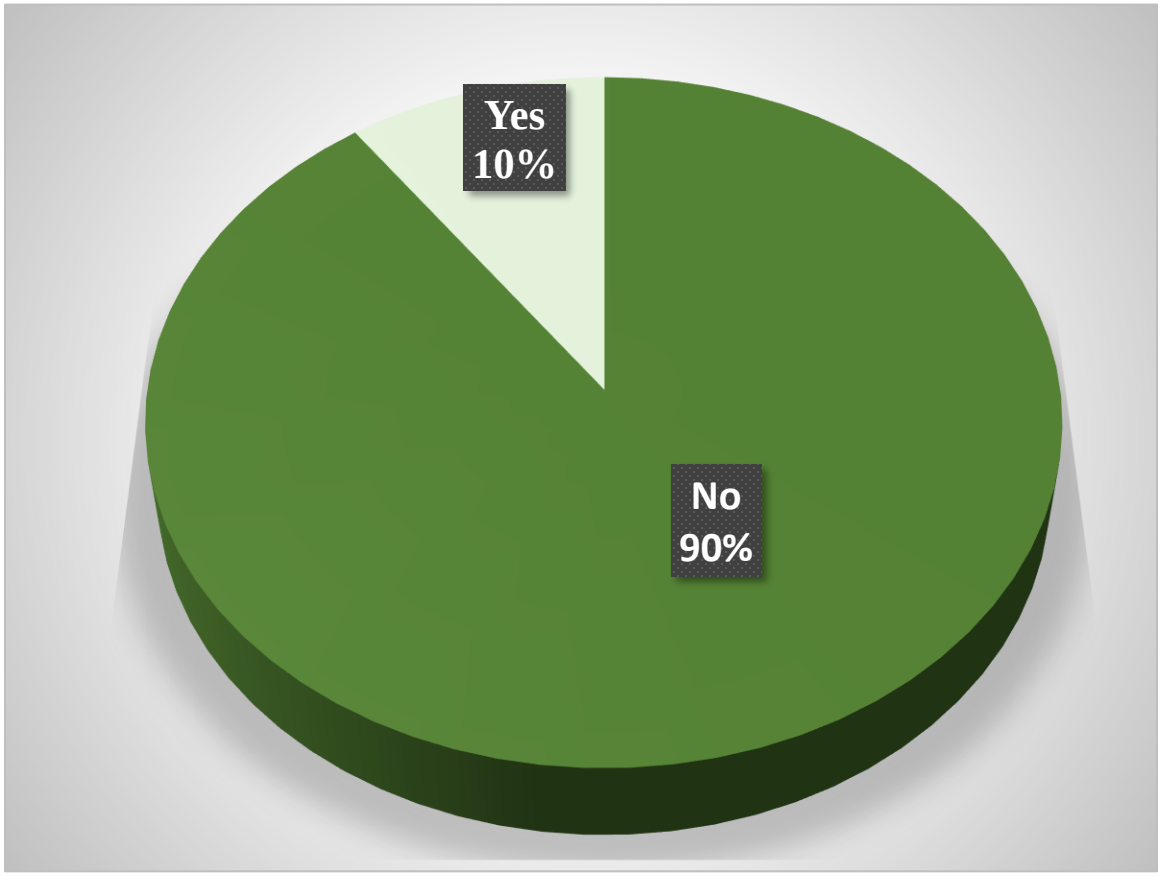


Figure 11: Presence of Shortness of Breath

4.12 Presence of Postural Hypotension

Among the 60 participants, 40% participants had developed postural hypotension and 60% participants had no postural hypotension (Figure 12).

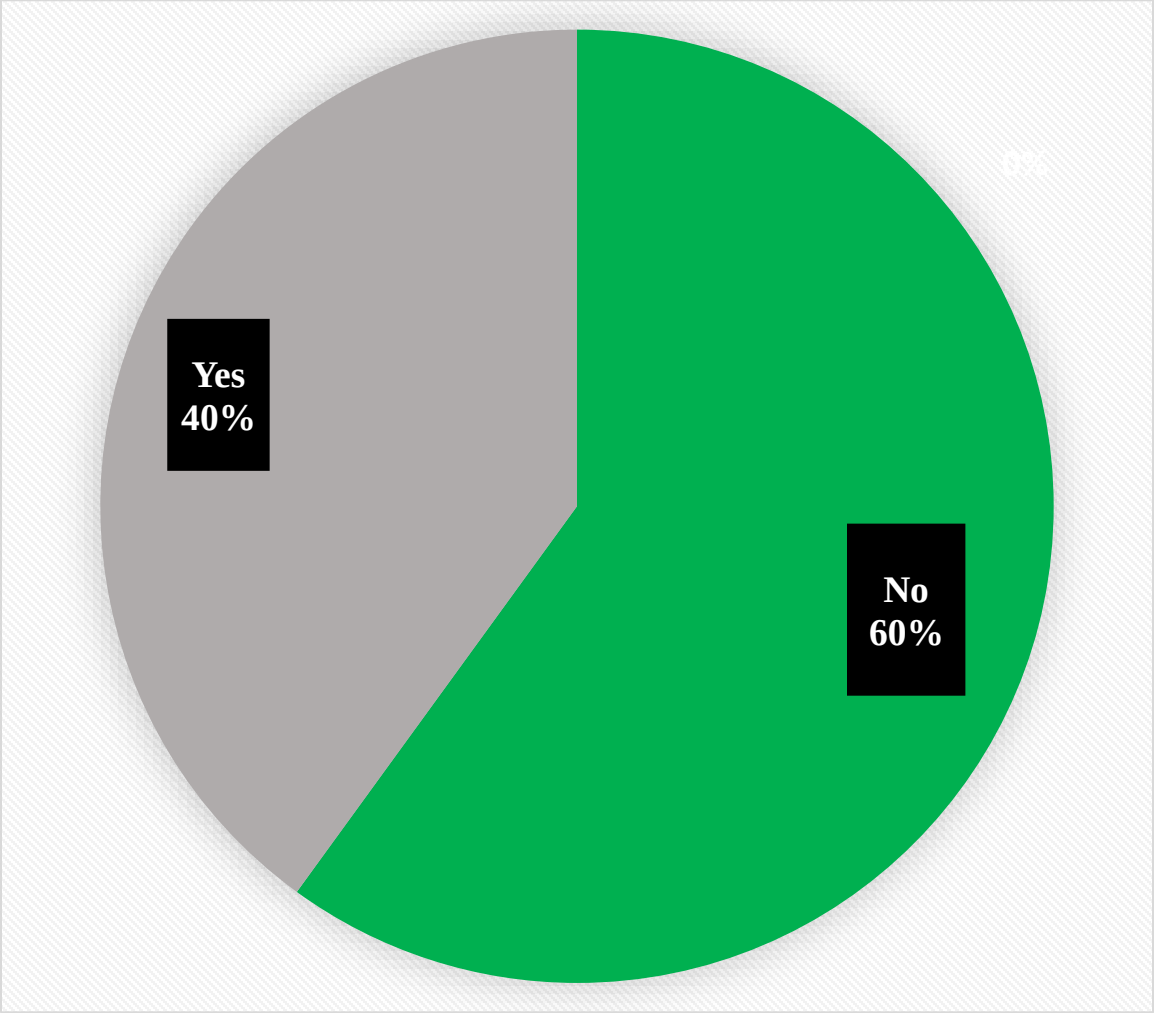


Figure 12: Presence of Postural Hypotension

4.13 Presence of Abnormal Muscle Tone

Among the 60 participants, 70% participants had developed abnormal muscle tone and 30% participants had no muscle tone (Figure 13).

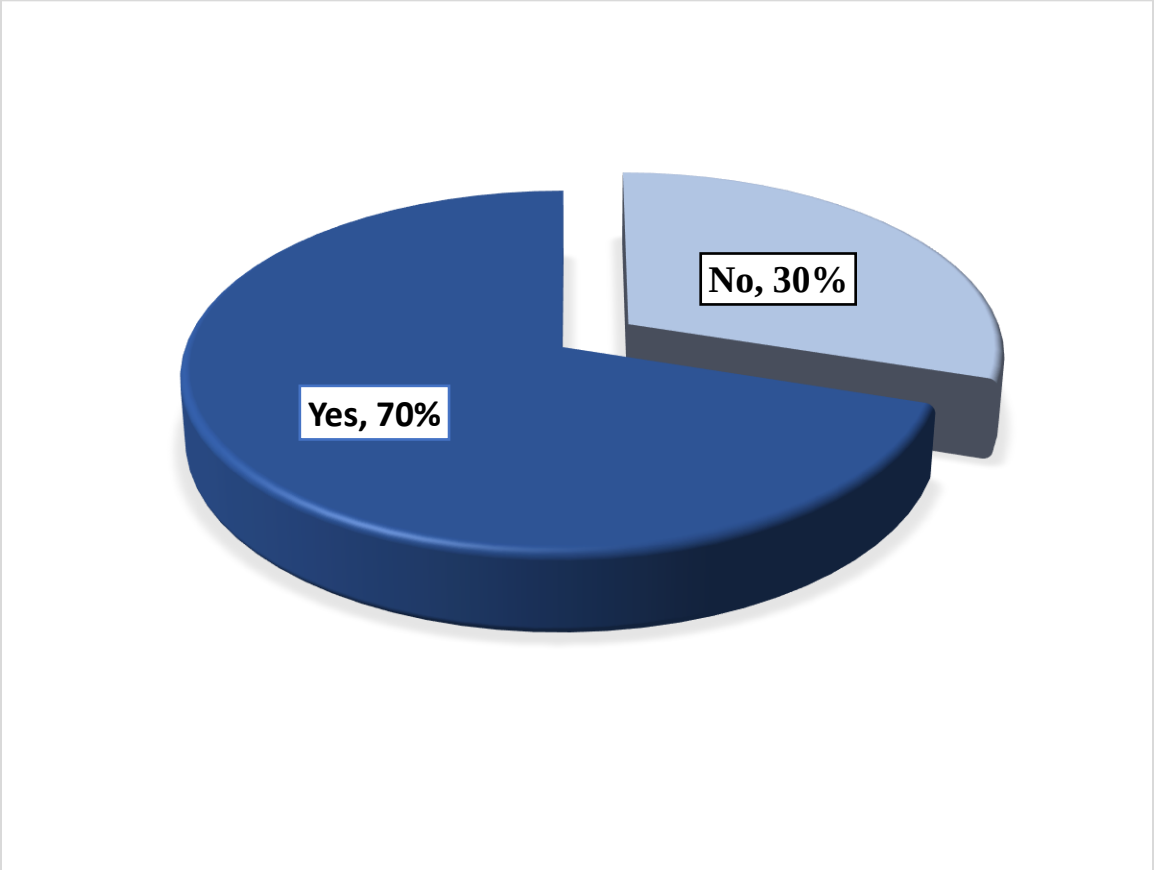


Figure 13: Presence of Muscle Tone

4.14 Types of Muscle Tone

Among the 60 participants, 48.33% participants had spastic tone, 21.66% participants had flaccid tone and 30% had no muscle tone (Figure 14).

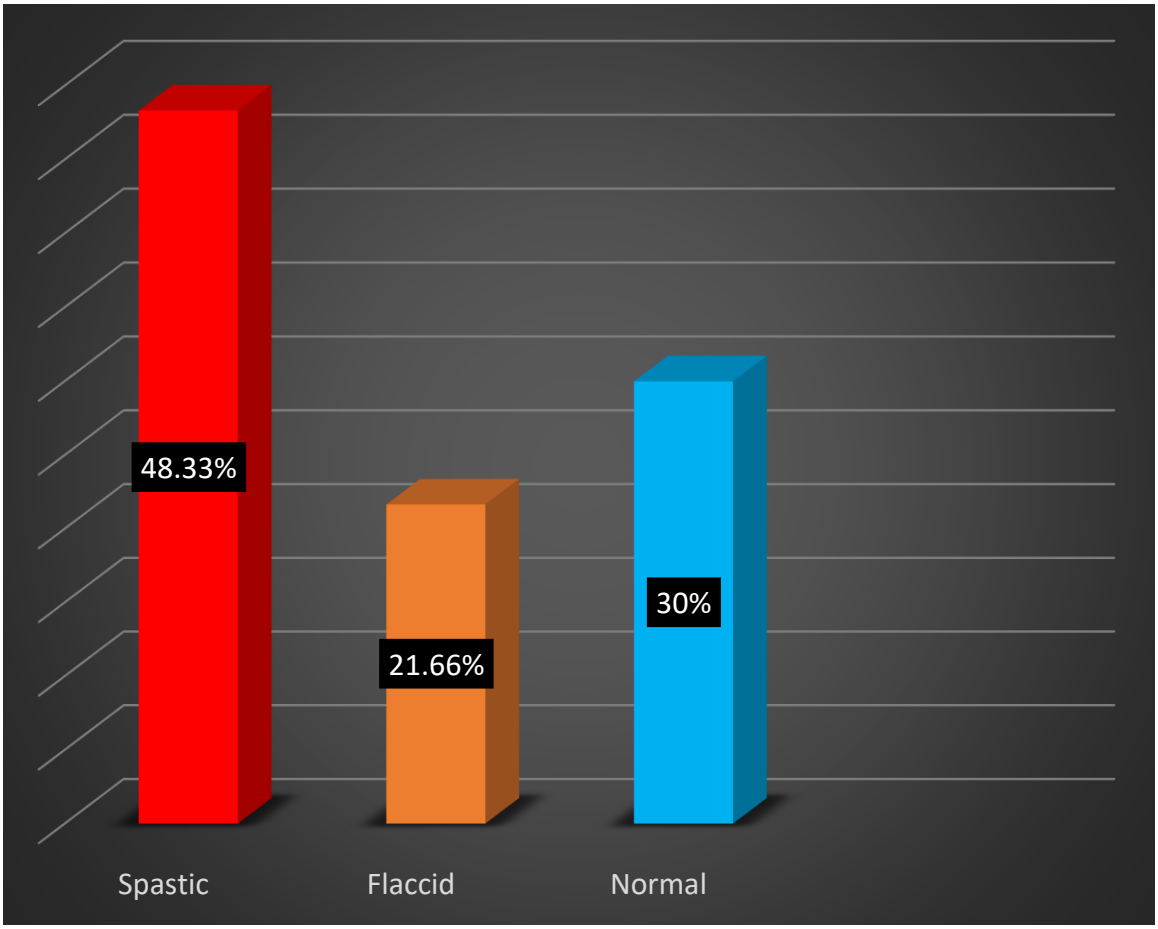


Figure 14: Types of Muscle Tone

4.15 Presence of Pain

Among the 60 participants, 84% participants were suffered from pain and 16% participants had no pain (Figure 15).

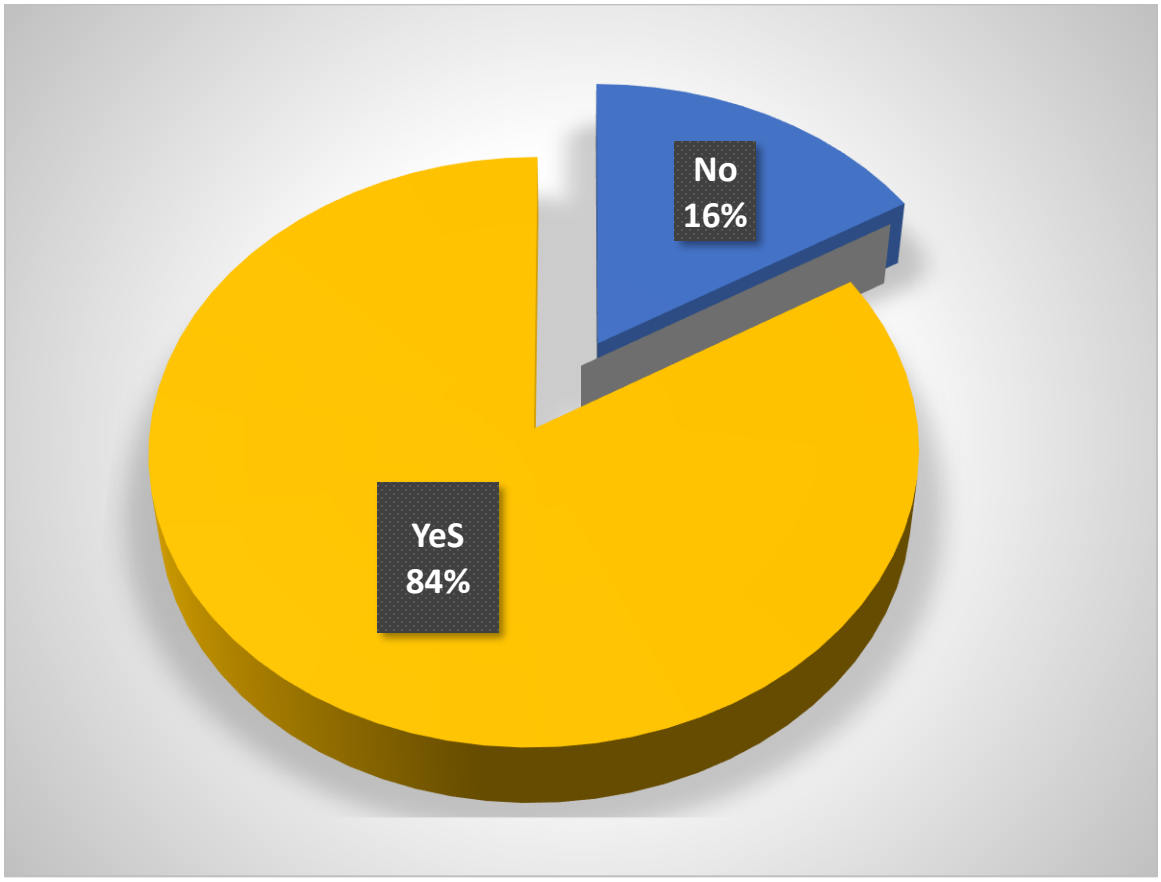


Figure-15: Presence of Pain

4.16 Areas of Pain

Among the 60 participants, 30% pain was presented on shoulder region, 25% pain was presented on the lumber region pain,15% pain was presented on cervical region and,7% was presented on thoracic region (Figure 16).

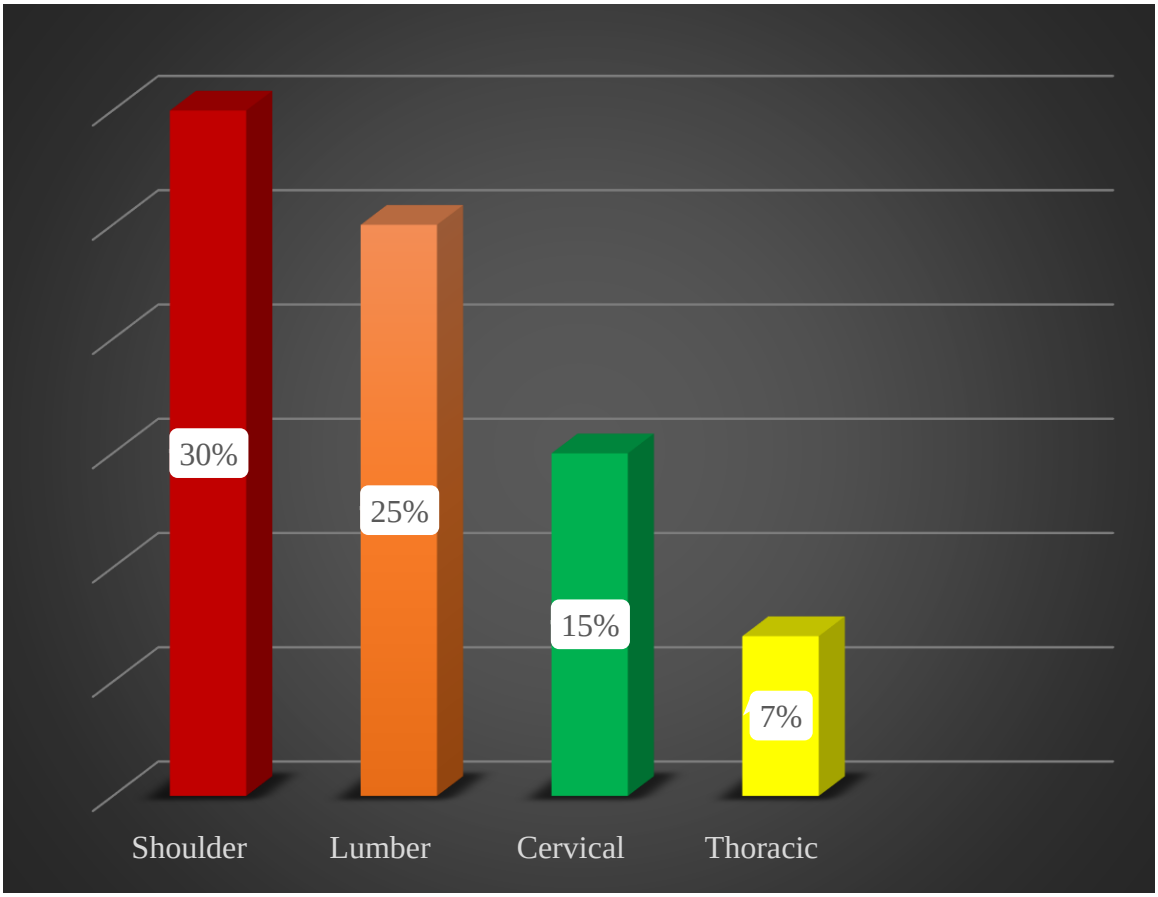


Figure 16: Areas of Pain

4.17 Presence of Pressure Sore

Among the 60 participants, 70% participants were suffered from pressure sore and 30% participants had no pressure sore (Figure 17).

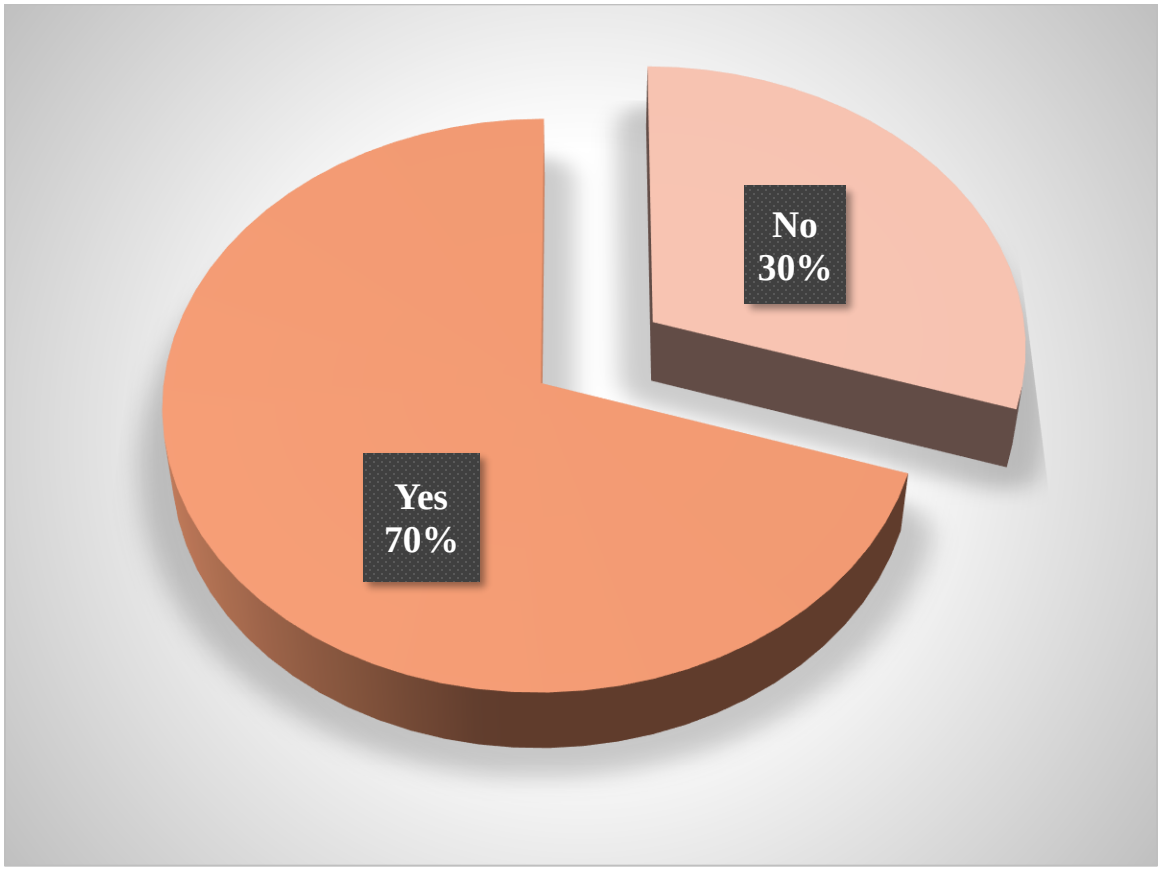


Figure 17: Presence of Pressure Sore

4.18 Multiple areas affected by Pressure Sore

Among the 60 participants, 20% participants had one area affected by pressure sore,50% participants had multiple areas affected and 30% had no pressure sore (Figure 18).

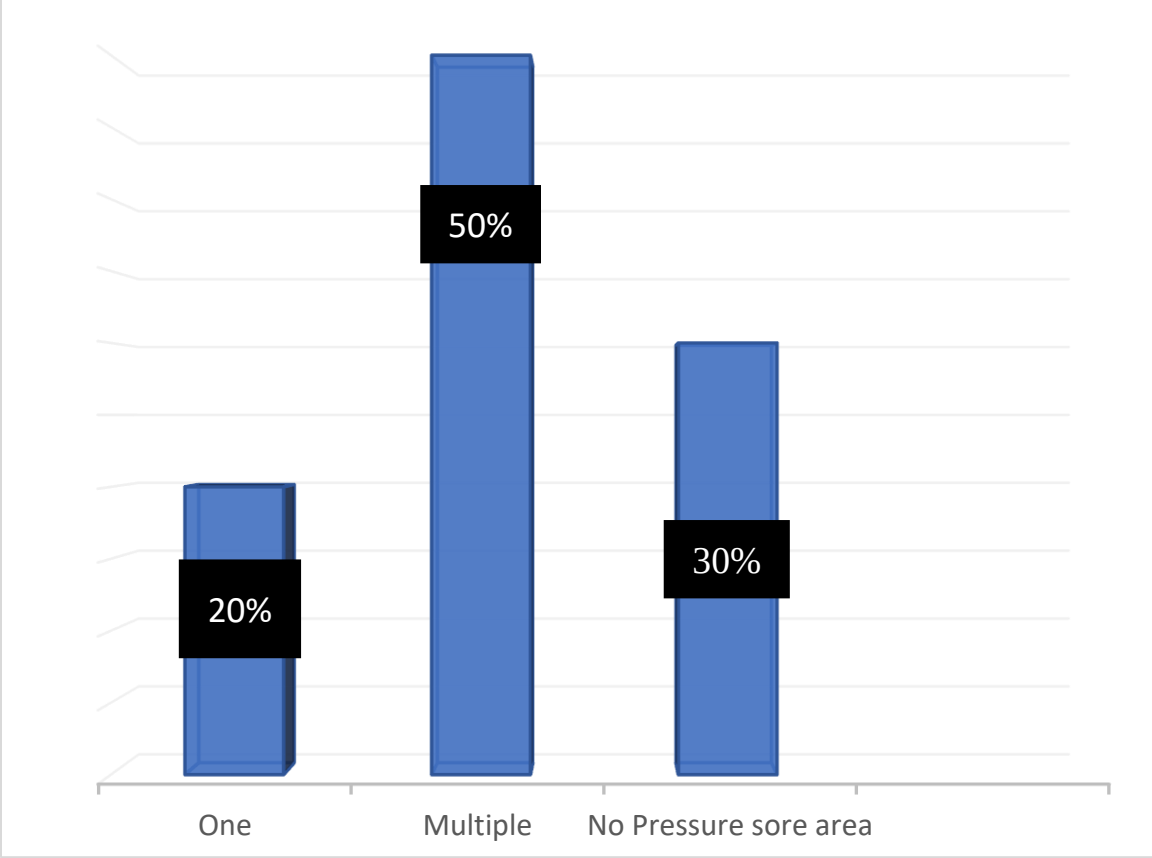


Figure 18: Multiple areas affected by Pressure Sore

4.19 Areas of Pressure Sore

Among the 60 participants, 8% pressure sore was presented on the back of head and ear, 6%was presented on the shoulder,9% was presented on elbow and 35% was presented on lower back & buttock ,2% on the knee and 10% on the heels (Figure 19).

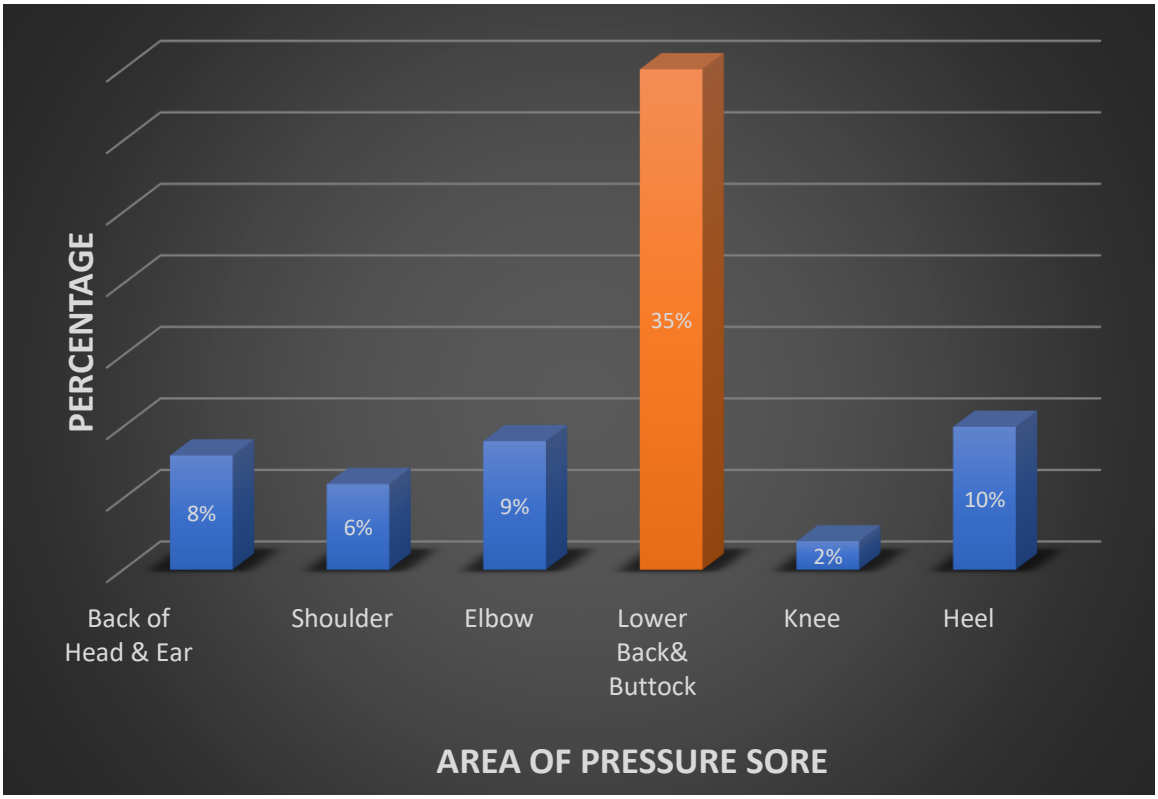


Figure 19: Area of Pressure Sore

4.20 Presence of Muscle Atrophy

Among the 60 participants, 35% participants had developed muscle atrophy and 65% participants had no muscle atrophy (Figure 20).

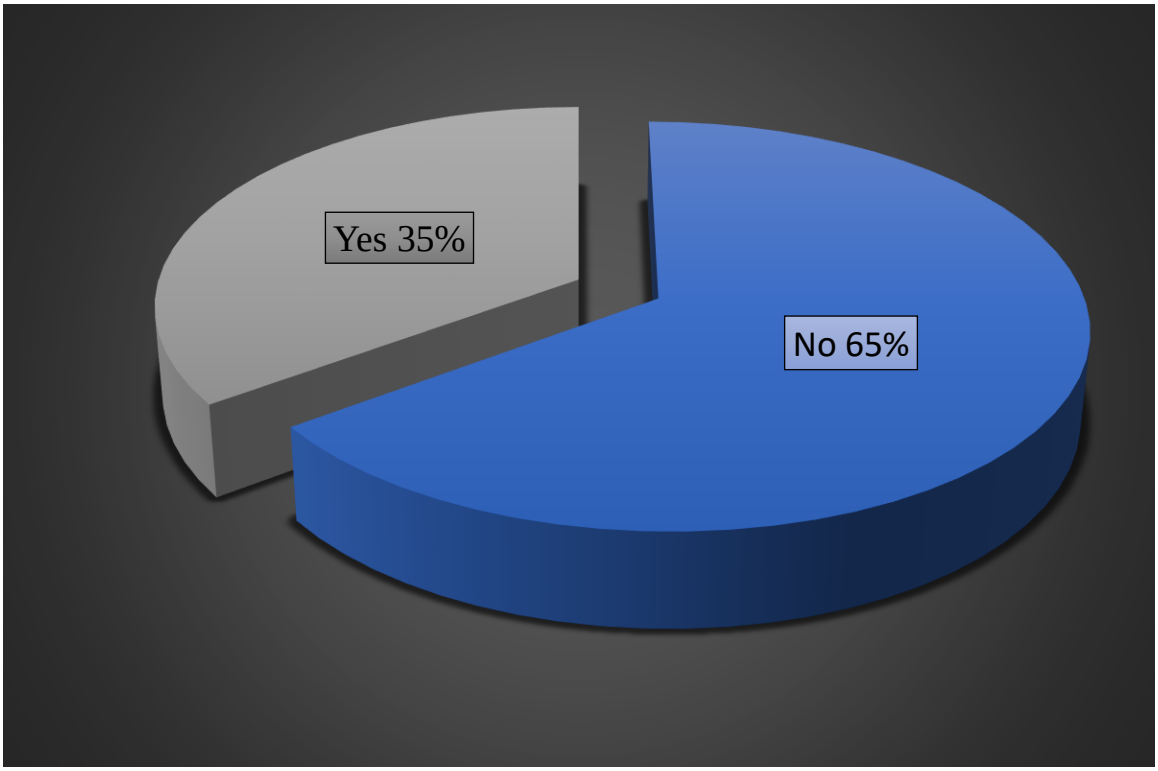


Figure 20: Muscle Atrophy

4.21 Presence of Joint Stiffness

Among the 60 participants, 52% participants had developed joint stiffness and 48% participants had no joint stiffness (Figure 21).

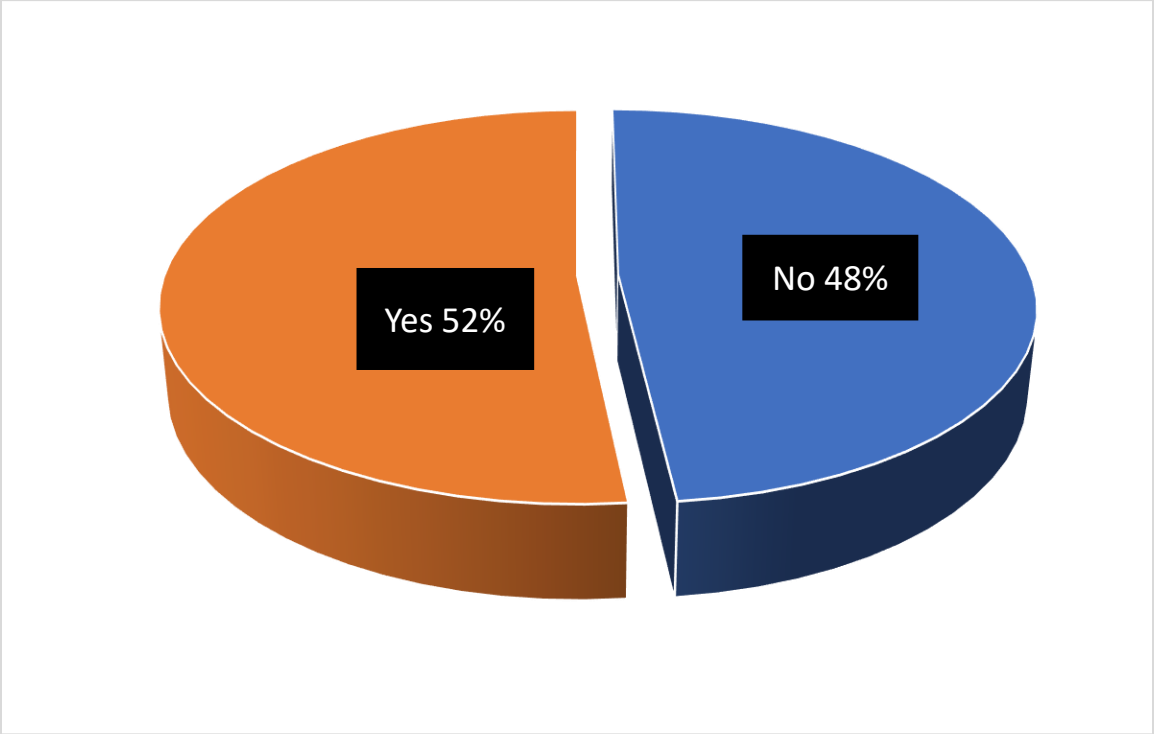


Figure 21: Presence of Joint Stiffness

4.22 Presence of Genitourinary Complications

Among the 60 participants, 75% participants had developed Genitourinary Complications and 25% participants had no Genitourinary Complications (Figure 22).

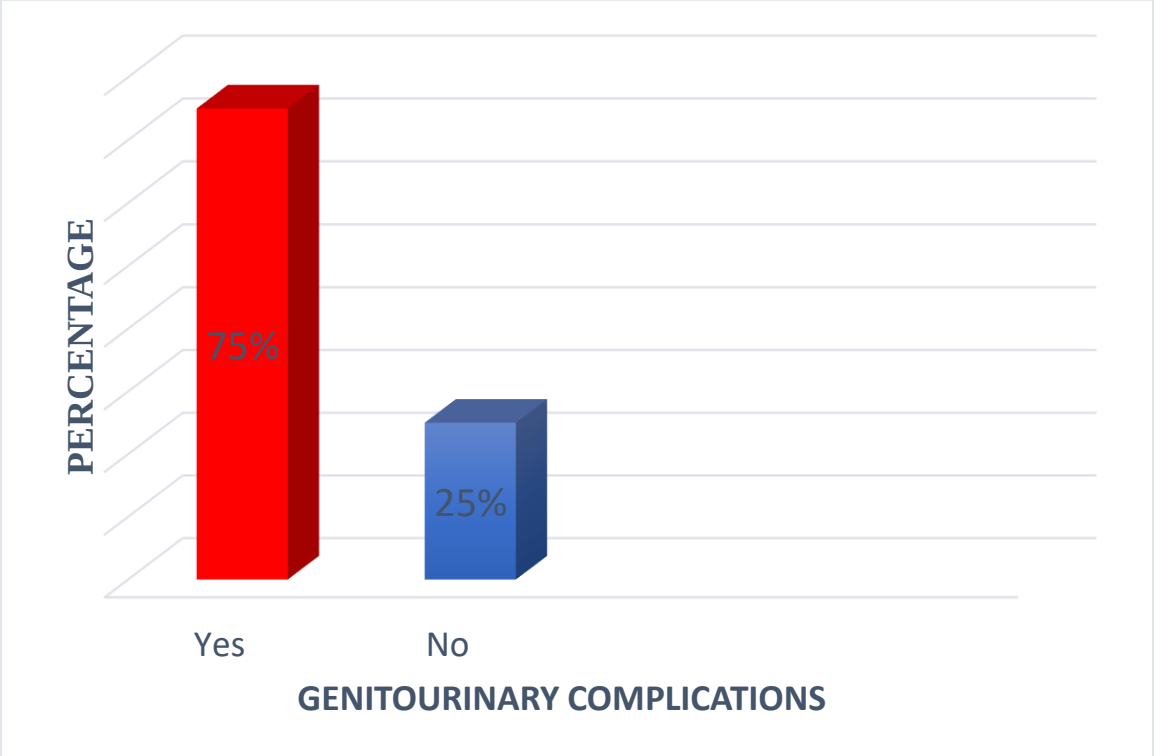


Figure 22: Genitourinary Complications

4.23 Presence of Constipation

Among the 60 participants, 33.33% participants were suffered from constipation and 66.67% participants had no constipation (Figure 23).

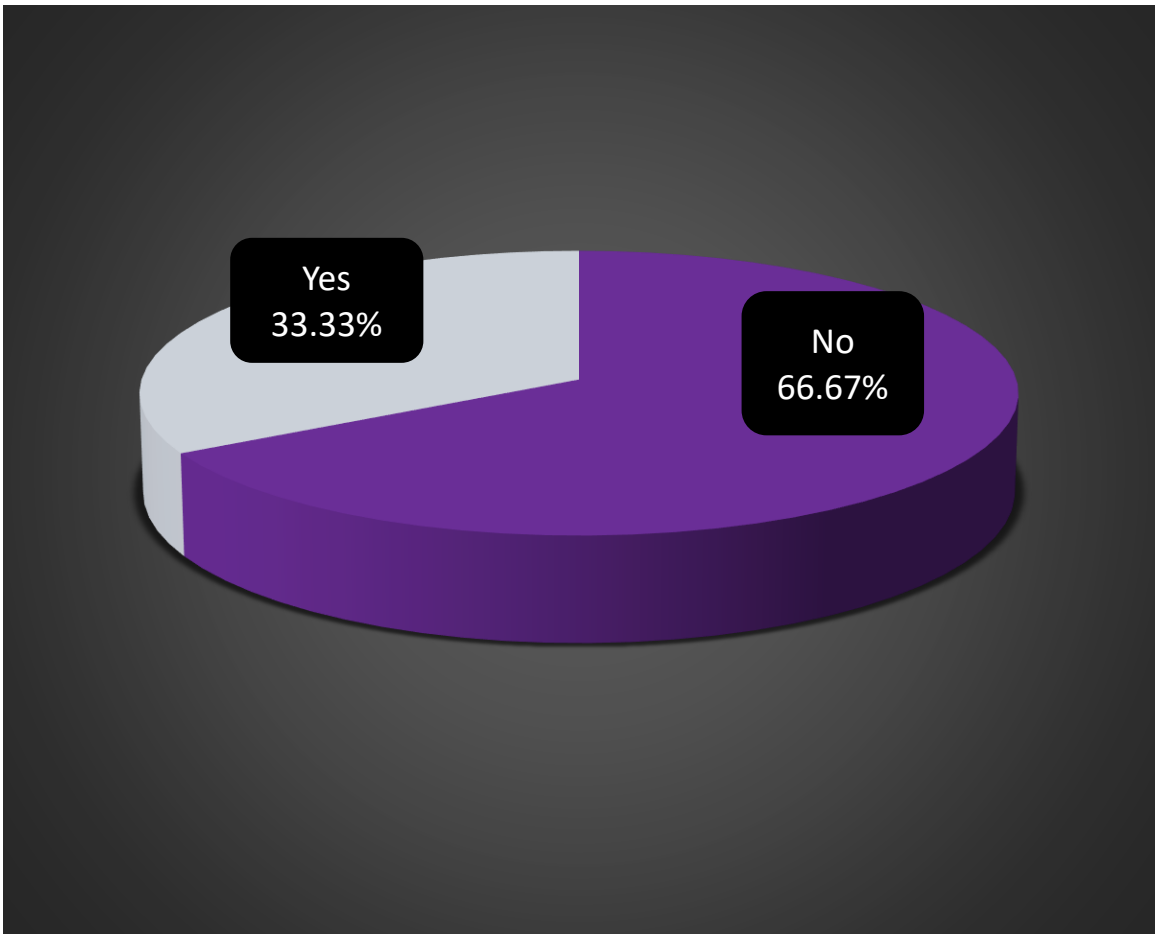


Figure 23: Presence of Constipation

4.24 Presence of Bowel &Bladder Incontinence

Among the 60 participants, 46% participants had bowel & bladder Incontinence and 56% participants had no bowel & bladder Incontinence (Figure 24).

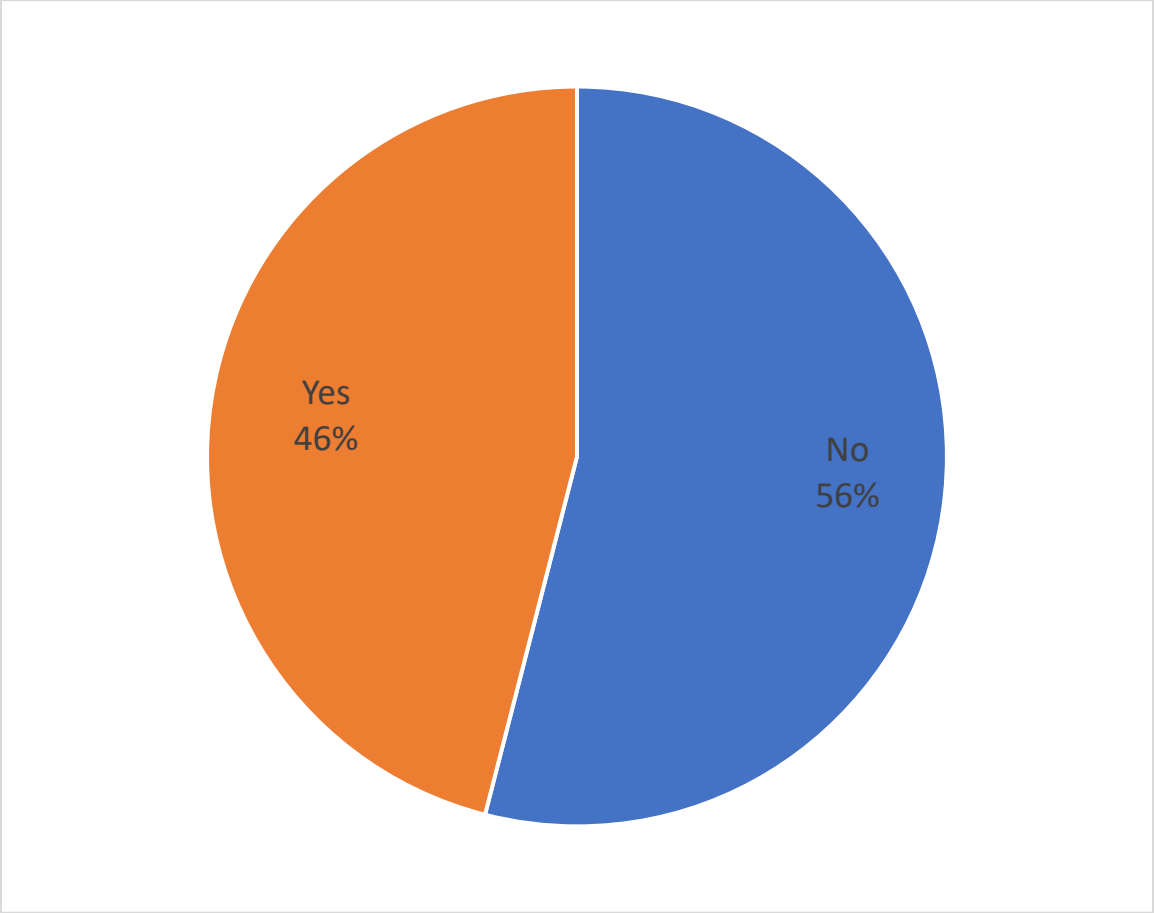


Figure 24: Presence of Bowel & Bladder Incontinence

4.25 Leg Swelling

Among the 60 participants, 25% participants had leg swelling and 75% participants had no leg swelling (Figure 25).

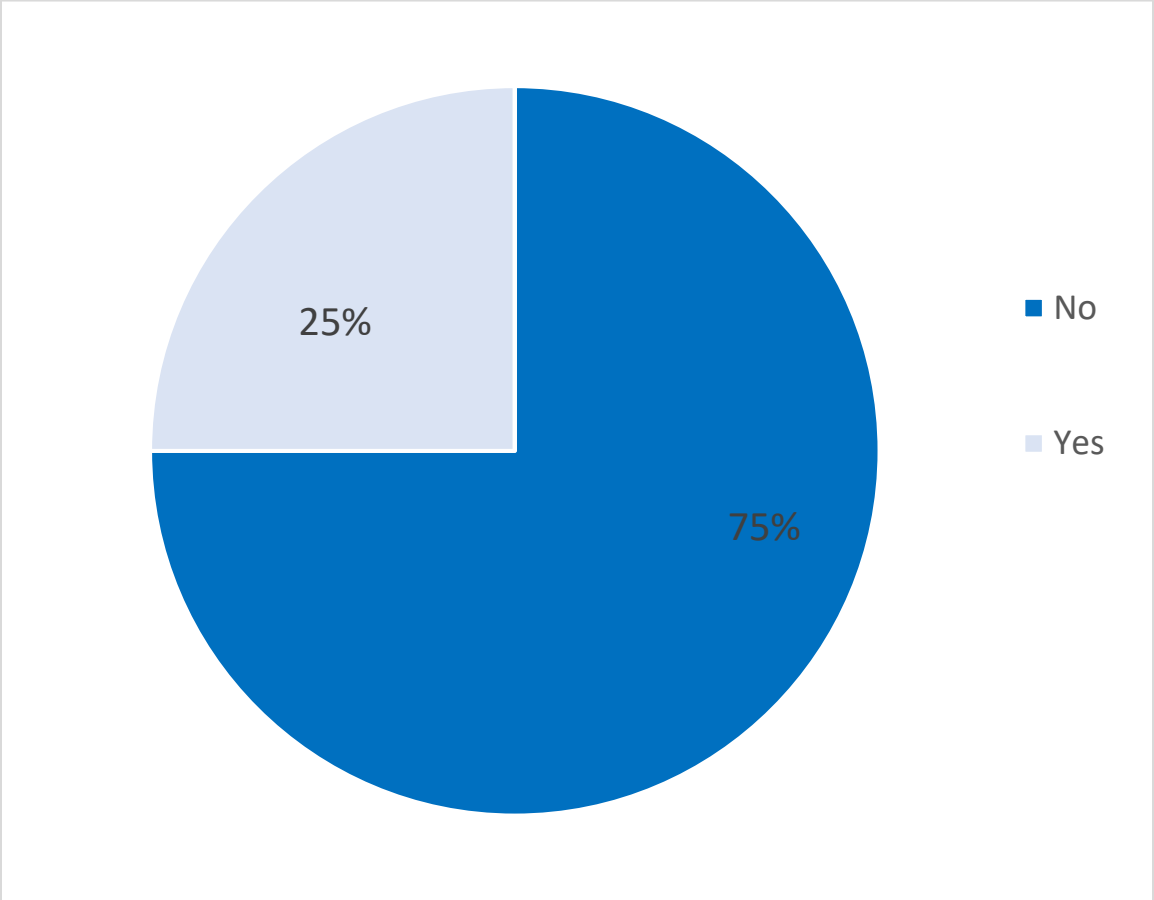


Figure 25: Presence of Leg Swelling

4.26 Complication of paraplegic patients during admission

Complications	Tetraplegic	Paraplegic
Cardio-respiratory complications		
SOB	56.6%	43.75%
Autonomic dysreflexia	40%	60%
Postural Hypotension	54%	45%
Musculoskeletal Complications		
Pain	28%	72%
Abnormal Muscle Tone	57%	44%
Joint Stiffness	56%	44%
Muscle Atrophy	52%	48%
Genitourinary complications		
Bowel & Bladder incontinence	36%	64%
Constipation	55%	45%
Others		
Leg Swelling	40%	60%

Table-1: Complications of patients during admission

4.27Association among different variables

Table-2: Association among age group and complications during admission

Socio-demographic	Complications	Chi-Square Value	P-Value
Age group	Pain	5.460	0.243
	Pressure sore	4.262	0.372
	Abnormal Muscle Tone	5.406	0.248
	Muscle Atrophy	0.192	0.996
	Joint Stiffness	10.376	**0.04***
	Autonomic dysreflexia	6.701	0.153
	SOB	4.701	0.319
	Postural Hypotension	10.080	**0.039***
	Constipation	1.647	0.800
	Leg Swelling	2.112	0.715

***Significant (p<0.05)**

In this study, two complications (p) showed a significant association with age group. For complication “Postural Hypotension” chi-square value was 10.080 with a p-value 0.039; “Joint Stiffness” chi-square value was 10.376 with a p-value 0.04.

Table-3: Association among gender and complications during admission

Socio-demographic information	Complications	Chi-Square Value	P-Value
Gender	Pain	0.075	0.785
	Pressure sore	0.284	0.594
	Abnormal Muscle Tone	0.034	0.854
	Muscle Atrophy	1.478	0.224
	Joint Stiffness	0.200	0.121
	Autonomic dysreflexia	0.568	0.451
	Shortness of breath	0.166	0.684
	Postural Hypotension	5.0731	**0.025***
	Constipation	0.047	0.829
	Leg Swelling	0.885	0.347

***Significant (p<0.05)**

In this study, one complication (postural hypotension) showed a significant association with gender. In this statement, the chi-square value was 5.0731 which was moderately significant with a p-value of 0.025 ($p<0.05$).

Table-4: Association among educational status and complications during admission

Socio-demographic information	Complications	Chi-Square Value	P-Value
Educational Status	Pain	1.834	0.766
	Pressure sore	1.531	0.821
	Abnormal Muscle Tone	4.070	0.397
	Muscle Atrophy	2.732	0.604
	Joint Stiffness	4.843	0.304
	Autonomic dysreflexia	2.462	0.651
	Shortness of breath	5.847	0.211
	Postural Hypotension	5.437	0.245
	Constipation	3.939	0.414
	Leg Swelling	3.769	0.438

***Significant (p<0.05)**

This study showed that there was no association in between complications (pain, pressure sore, abnormal muscle tone, muscle atrophy, joint stiffness, autonomic dysreflexia, SOB, postural hypotension, constipation, leg swelling) with educational status.

Table-5: Association among types of paralysis of the participants and complications during admission

Socio-demographic information	Complications	Chi-Square Value	P-Value
Types of Paralysis	Pain	0.240	0.624
	Pressure sore	0.000	1.000
	Abnormal Muscle Tone	1.429	0.232
	Muscle Atrophy	0.000	1.000
	Joint Stiffness	8.543	**0.003***
	Autonomic dysreflexia	0.436	0.000
	Shortness of breath	3.333	0.068
	Postural Hypotension	0.313	0.576
	Constipation	0.038	0.846
	Leg Swelling	0.039	0.844

***Significant (p<0.05)**

In this study, one complication have showed association with types of paralysis of the participants. For complication “Joint Stiffness” chi-square value was 8.543 with a p-value 0.003.

;

Table-6: Association among Causes of lesion and complications during admission

Socio-demographic information	Complications	Chi-Square Value	P-Value
Causes of lesion	Pain	0.044	0.835
	Pressure sore	0.260	0.610
	Abnormal Muscle Tone	0.260	0.610
	Muscle Atrophy	0.060	0.807
	Joint Stiffness	2.190	0.139
	Autonomic dysreflexia	0.023	0.858
	Shortness of breath	0.496	0.481
	Postural Hypotension	0.909	0.340
	Constipation	0.436	0.509
	Leg Swelling	0.343	0.558

***Significant (p<0.05)**

This study showed that there was no association in between complications (pain, pressure sore, abnormal muscle tone, muscle atrophy, joint stiffness, autonomic dysreflexia, SOB, postural hypotension, constipation, leg swelling) with Cause of lesions of the participants.

Table-7: Association among tetraplegic participants and complications during admission

Types of Paralysis	Complications	Chi-Square Value	P-Value
Tetraplegic	Pain	0.410	**0.038***
	Pressure sore	0.732	**0.001***
	Abnormal Muscle Tone	0.565	**0.03***
	Muscle Atrophy	0.332	0.435
	Joint Stiffness	0.280	0.111
	Autonomic dysreflexia	0.542	**0.001***
	Shortness of breath	0.732	**0.000***
	Postural Hypotension	0.356	**0.045***
	Constipation	0.089	0.451
	Leg Swelling	0.245	0.726

***Significant (p<0.05)**

In this study, 4 complications have showed association with tetraplegic participants. For complication “Pain” chi-square value was 0.410 with a p-value 0.03; “Pressure sore” chi-square value was 0.732 with a p-value 0.001; ‘’Abnormal Muscle Tone’’ chi-square value was 0.565 with a p-value 0.03 “Autonomic dysreflexia” chi-square value was 0.542 with a p-value 0.001; “Shortness of breath” chi-square value was 0.356 with a p-value 0.000; “Postural Hypotension” chi-square value was 0.456 with a p-value 0.045.

Table-8: Association among paraplegic participants and complications during admission

Types of Paralysis	Complications	Chi-Square Value	P-Value
Paraplegic	Pain	0.568	**0.02***
	Pressure sore	0.069	**0.01***
	Abnormal Muscle Tone	0.169	0.192
	Muscle Atrophy	0.424	0.304
	Joint Stiffness	0.228	0.121
	Autonomic dysreflexia	0.011	0.933
	Shortness of breath	0.069	0.594
	Postural Hypotension	0.276	**0.04***
	Constipation	0.103	0.921
	Leg Swelling	0.315	**0.03***

***Significant (p<0.05)**

In this study, 4 complications have showed association with tetraplegic participants. For complication “Pain” chi-square value was 0.568 with a p-value 0.02; “Pressure sore” chi-square value was 0.069 with a p-value 0.01; “Postural Hypotension” chi-square value was 0.276 with a p-value 0.04; “Leg Swelling” chi-square value was 0.315 with a p-value 0.03;

CHAPTER V DISCUSSION

The study's goal was to discover socio-demographic data, injury-related data, and problems among spinal cord injury patients at admission time. This study included 60 SCI patients. The age 30% (n=18) participants in between 31-40 years, 23.33% (n=14) participants in between 21-30 years, 23.33% (n=14) participants in between 41-50 years, 16.7% (n=10) participants in between 10-20 years, and 6.7% (n=4) participants in between 51-60 years. As a result, the largest sample is made up of participants between the ages of 31-40, while the smallest sample is made up of participants between the ages of 51-60. In Bangladesh, one study showed that the age range was 30–39 years (Rahman et al., 2017). This study found that 76.67% (n=46) were male and 23.33% were female. Rahman et al. (2018) found that 86.2% of the participants were male and 13.8% of the participants were female. From this study, 8.33% (n=5) participants were illiterate, 46.67% (n=28) had passed primary school, 20% (n=12) had passed SSc, 16.67% (n=10) had passed HSc, and 8.33% (n=5) had graduated and above. So, the largest participants were passed through the primary school. Among 60 participants, 33.33% of participants lived in urban areas and 66.67% participants lived in rural areas. So, rural people are more vulnerable to SCI. This result supported the one previous study (Rahman et al., 2017). About 63.79% participants had extended family and 36.21% of participants had nuclear family. According to the study, 91.60% were caused by traumatic injury, while 8.30% were caused by non-traumatic causes. So, the main cause of SCI is traumatic. The study should show that paraplegic patients are more affected than tetraplegic. 31.67% participants were tetraplegic and 68.33% participants were paraplegic. One study reported that among 50 participants, almost 64%(n=32) of the participants were paraplegic and 36% (n=18) of the participants were tetraplegic (Islam, 2017) One study showed that the common complications were pain, spasticity, pressure sores, and bowel and bladder dysfunction (Hagan et al., 2015). Another study found that muscle spasms (98.8%) and neurogenic pain (94.5%) were the main complications. Respiratory failure (44.4%) was the commonest cause of death (Kawu et al., 2011). Among the 60 participants, 28% suffered from cardio-respiratory complications, and 72% had no

cardio-respiratory complications. 10% of participants suffered from shortness of breath, and 40% of participants had developed postural hypotension. This study showed that 70% of participants had developed abnormal muscle tone; among them, 48.33% had spastic tone, 21.66% had flaccid tone, and 30% had no muscle tone. Among 60 participants, 84% of participants suffered from pain, and 16% of participants had no pain. One study in Bangladesh found that 74% of participants were in pain (Iffat, 2019). The study reported that 70% of participants suffered from pressure sores and 30% of participants had no pressure sores. 20% of participants had one area affected by pressure sores, and 50% of participants had multiple areas affected. The area of pressure sore was 8% on the back of the head and ear, 6% on the shoulder, 9% on the elbow, and 35% on the lower back and buttock, 2% on the knee, and 10% on the heels. 34 percent (n=17) had pressure sores, while 66 percent (n=33) had none. In Bangladesh, one study reported that about 24 % (n=12) had at least one pressure sore, 6% (n=3) had two pressure sores, 4% (n=2) had three pressure sores, and 66% (n=33) had no pressure sores. The pressure sore area was 2% (n=1) on the elbow 30% (n=15) on the gluteal area, 2% (n=1) on the ankle, and 66% on the back (Islam et al., 2017). In this study, 35% of the participants had developed muscle atrophy and 65% of the participants had no muscle atrophy. This study found that 52% of participants had developed joint stiffness and 48% of participants had no joint stiffness. About 46% of participants had joint stiffness and 54% had no joint stiffness (Islam et al., 2017).75% of participants had developed genitourinary complications and 25% of participants had no genitourinary complications. 33.33% of participants suffered from constipation, and 66.67% of participants had no constipation. About 46% of the participants had bowel and bladder incontinence, and 56% of the participants had no bowel and bladder incontinence, and 25%of the participants had leg swelling. The study found that the common complications were pain, pressure sores, abnormal muscle tone, and joint stiffness. Associated complications were shortness of breath, postural hypotension, constipation, muscle atrophy, bowel and bladder incontinence, and leg swelling.

The researcher found association between age group and postural hypotension and joint stiffness. Gender is associated with postural hypotension. The study also found an association between types of paralysis and joint Stiffness. The study found an association

among tetraplegic and paraplegic patients with complications pain, pressure sore, abnormal muscle tone, SOB, postural hypotension. The study found no association between educational status, the cause of the lesion, and complications.

Limitations of the Study:

There were some limitations or barriers to considering the study's results, as listed below:

- The initial limitation of the study was its little sample size. only 60 samples were taken.
- This study was allotted supported clinical manifestations, however there was no adequate investigation reports.
- Another necessary limitation was time. The time assigned for doing this study analysis was very shorted.
- As the study was performed at the Centre for the Rehabilitation of the Paralyzed (CRP), the results don't reflect the whole country.

CHAPTER VI CONCLUSSION & RECOMMENDATION

Traumatic or non-traumatic spinal cord injury is a sudden, catastrophic and disabling neurological condition. Every year, millions of people suffer from spinal cord injuries. There is a limitation of information and a reliable data base about spinal cord lesions in Bangladesh. There is no way to know how many spinal injuries there are Bangladeshi people with cord lesions. Bangladesh is a country in the process of evolving. The majority of them live with a low socioeconomic status and a weak educational background. There is also lack of knowledge and awareness about the spinal cord lesion. The researcher identified the common complications at admission of SCI patients.

Among 60 participants, the common age groups were 31-40. The male was more prone rather than female. Most of the participants were in secondary level. Participants who lived in rural area were more affected than who were lived in urban. The common cause of SCI was traumatic. The study also reported that the complications at admission were pain, pressure sore, abnormal muscle tone, joint stiffness, SOB, postural hypotension, constipation, muscle atrophy, bowel and bladder incontinence. The study found a relationship between age group and pain; gender and postural hypotension; type of paralysis and pain; autonomic dysreflexia, SOB, and postural hypotension.

A spinal cord injury is a life-altering, traumatic, and devastating event. Most patients with SCI do not receive specialised care or follow-up care, and as a result, they are more likely to develop complications, which are a primary cause of mortality and morbidity. As a result, only awareness and careful treatment can prevent complications after SCI. Early admission, early onset of complications, and prevention of complications should all be priorities. The recommendation of the study is to take more sample with sufficient time. It is necessary to organise an awareness programme about specialist treatment, hygiene and the avoidance of complications after SCI.

CHAPTER VII REFERENCES

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Appendix

সম্মতিপত্র

আসসালামুয়ালাইকুম/আদাব,

আমি জিনাত তাসনিম। আমি ঢাকা বিশ্ববিদ্যালয়ের অধিভুক্ত বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউটের (বিএইচপিআই) অধীনে ফিজিওথেরাপি ডিগ্রিতে ব্যাচেলর অফ সায়েন্সের পরিপূর্ণতার জন্য এই গবেষণাটি পরিচালনা করছি। আমার গবেষণার শিরোনাম হল "মেরুদণ্ডের আঘাতের রোগীদের ভর্তির সময় জটিলতার মূল্যায়ন"। মেরুদণ্ডে আঘাতপ্রাপ্ত রোগীরা কি ধরনের জটিলতা নিয়ে সিআরপিতে ভর্তি হচ্ছে সে সম্পর্কে জানতে চাই। আপনাকে কিছু ব্যক্তিগত এবং জটিলতা সম্পর্কিত প্রশ্নের উত্তর দিতে হবে যা এই ফর্মে উল্লেখ করা হয়েছে। এটি প্রায় 20-25 মিনিট সময় নেবে। আমি আপনাকে অবগত করছি যে, এই গবেষনায় আপনার অংশগ্রহন বাস্তব জীবনে কোন প্রভাব ফেলবে না। আপনি যে সকল তথ্য প্রদান করবেন সেগুলোর গোপনীয়তা বজায় থাকবে। আমি আপনাকে জানাতে চাই যে, এটি একটি সম্পূর্ণরূপে একাডেমিক অধ্যয়নের জন্য যা অন্য কোন উদ্দেশ্যে ব্যবহার করা হবে না। আপনার অংশগ্রহণ স্বেচ্ছায় হবে। আপনার সম্মতি প্রত্যাহার করার এবং যেকোনো সময় অংশগ্রহণ প্রত্যাহার করার অধিকার রয়েছে। আপনি উপকৃত নাও হতে পারেন, কিন্তু ভবিষ্যতে উপকৃত হতে পারেন এবং ক্ষতিকর হবে না। এই প্রকল্প শুধুমাত্র পেশার উন্নয়নের জন্য। এই অধ্যয়নে অংশগ্রহণকারী হিসাবে আপনার অধিকার সম্পর্কে কোন প্রশ্ন থাকলে, আপনি আমাকে জিনাত তাসনিম অথবা/ এবং আমার সুপারভাইজার মোঃ সফিকুল ইসলাম, সহযোগী অধ্যাপক ও ফিজিওথেরাপি বিভাগের প্রধান, বিএইচপিআই, সিআরপি, সাভার, ঢাকা-১৩৪৩-এর সাথে যোগাযোগ করতে পারেন।আমি (অংশগ্রহণকারী) ফর্মের বিষয়বস্তু পড়েছি এবং বুঝেছি। আমি কোনো জোর ছাড়াই গবেষণায় অংশগ্রহণ করতে সম্মত। আমি শুরু করার আগে আপনার কোন প্রশ্ন আছে? তাই ইন্টারভিউ নিয়ে এগিয়ে যাওয়ার জন্য আমি কি আপনার সম্মতি পেতে পারি?

হ্যাঁ ☐ না ☐

অংশগ্রহণকারীর স্বাক্ষর এবং তারিখঃ

ইন্টারভিউয়ারের স্বাক্ষর এবং তারিখঃ

Verbal Consent Statement

Assalamualaikum/Adab,

I am Zinat Tasnim. I am conducting this study for partial fulfillment of Bachelor of Science in Physiotherapy degree under Bangladesh Health Professions Institute (BHPI), which is affiliated by University of Dhaka. My Research title is "Assessment of Complications at Admission of Spinal Cord Injury Patients". I would like to know about the complications of spinal cord injury patients being admitted to CRP. You will answer some personal and complications related questions which are mentioned in this form. This will take approximately 20-25 minutes. I would like to inform you that your participation in this study will not have any effect in your real life. The information you provide will be kept confidential. I would like to inform you that this is a purely academic study and will not be used for other purpose. Your participation will be voluntary. You have the right to withdraw consent and discontinue participation at any time. You might not be benefited, but in future may benefit and would not harmful. This project is only for the development of the profession.

If have any query about the study or your right as a participant, you may contact with, me ZinatTasnim and /or my supervizor Md. Shofiqul Islam, Associate Professor & Head of the Physiotherapy Department, BHPI, CRP, Savar, Dhaka-1343.

Do you have any questions before I start?

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

No ☐ Yes ☐

Signature of the participant and date:

Signature of the Interviewer and date:

English Questionnaire

Part 1: Socio-demographic Information

1	**Date of interview:**
2	**Date of admission:**
3	**Name of participant:**
4	**Age:**
5	**Gender:** **1= Male** **2= Female**
6	**Educational status:** **1= Illiterate** **2= Primary** **3= SSc** **4= HSc** **5= Graduated and above**
7	**Occupation:** **1= Day labour** **2= Farmer** **3= Garments worker** **4= Student** **5= Service** **6=Construction worker** **7= Abroad worker** **8= Shopkeeper**
8	**Family type:** **1=Nuclear Family** **2=Extended Family**
	Residential area:

9	**1=Rural** **2=Urban**
10	**Home district: .....**
11	**Marital status:** **1=Married** **2=Unmarried** **3=Separated** **4=Divorced**

Part 2: Injury related questions

1	**Types of paralysis :** **1=Tetraplegia** **2=Paraplegia**
2	**Cause of spinal cord injury: .....**

Part 3: Complications related Questions

1	**After spinal cord injury, are you suffering from any respiratory complications?** **1=No** **2=Yes**
2	**Are you suffering from shortness of breath?** **1= No** **2= Yes**
3	**Are there any cardiac complications?** **1= No** **2= Yes**

4	**Are you suffering from autonomic dysreflexia?** **1= No** **2= Yes**
5	**Presence of postural hypotension?** **1= No** **2= Yes**
6	**Decrease range of motion of the joint after Sci?** **1= No** **2= Yes**
7	**Presence of muscle tone?** **1=No** **2=Yes**
8	**Type of muscle tone?** **1= Spastic** **2= Flaccid** **3= Normal**
9	**Location of muscle tone are?** **1= Shoulder** **2= Elbow** **3= Wrist** **4= Hip** **5= Knee** **6 = Ankle**
10	**Is there any pain present?** **1= No** **2= Yes**

11	**Area of pain:** **1= Neck** **2= Chest** **3= Shoulder** **4= Elbow** **5= Wrist** **6= Hip** **7= Knee** **8= Ankle** **9= Back**
12	**Presence of pressure sore after sci?** **1= No** **2= Yes**
13	**How many areas affected by pressure sore? …….**
14	**Area of pressure sore?** **1= Back of head and ear** **2= Shoulder** **3= Elbow** **4= Hip** **5= Lower back and buttock** **6= Inner knee** **7= Heels**
15	**Have you any muscle atrophy?** **1= No** **2= Yes**
16	**Location of muscle atrophy:**
17	**Presence of any joint stiffness?** **1= No** **2= Yes**
18	**Location of joint stiffness: .....**

19	**Are there any genitourinary complications?** **1=No** **2=Yes**
20	**Presence of UTI?** **1= No** **2= Yes**
21	**Presence of constipation?** **1= No** **2=Yes**
22	**Have of you any control of bowel and bladder?** **1= No** **2= Yes**
23	**Presence of leg swelling?** **1= No** **2= Yes**
24	**Area of leg swelling: .....**

পার্ট১: সামাজিক -জনসংখ্যাতাত্ত্বিক তথ্যসূত্র

১	সাক্ষাৎকারের তারিখ :
২	ভর্তির তারিখ:
৩	রোগীর নাম :
৪	বয়স:
৫	লিঙ্গ : ১= পুরুষ ২= মহিলা
৬	শিক্ষাগত যোগ্যতা : ১ = অশিক্ষিত ২ = প্রাইমারি ৩ = এস.এস.সি ৪ = এইচ.এস.সি ৫ =স্নাতকবাউপরে
৭	পেশা: ১ = দিনমজুর ২ = কৃষক ৩ = পোষাকশ্রমিক ৪ = ছাত্র/ছাত্রী ৫ = চাকুরি ৬ = নির্মানশ্রমিক ৭ = প্রবাসী ৮= ব্যবসা
৮	পরিবারের ধরন: ১=এককপরিবার ২= যৌথপরিবার
৯	আবাসিকএলাকা : ১=গ্রাম

	২=শহর
১০	জেলা:.....
১১	বৈবাহিক অবস্থা: ১=অবিবাহিত ২=বিবাহিত ৩=আলাদাবসবাস ৪=তালাকপ্রাপ্ত

পার্ট২: আঘাত সম্পর্কিত তথ্যসমূহ

১	মেরুদণ্ডে আঘাতের কারন?
২	পক্ষাঘাতের ধরন : ১=টেট্রাপ্লেজিয়া ২= প্যারাপ্লেজিয়া

পার্ট৩: জটিলতা সম্পর্কিত তথ্যসমূহ

১	মেরুদণ্ডে আঘাতের পর,আপনি কি শ্বাসযন্ত্রের কোন জটিলতায় ভুগছেন? ১=না ২=হ্যাঁ
২	আপনার কি শ্বাসকষ্টের সমস্যা আছে ? ১= না ২= হ্যাঁ
৩	আপনি কি কোন ধরনের হৃদযন্ত্রের জটিলতায় ভুগছেন? ১= না ২= হ্যাঁ
৪	আপনার কি অটোনমিক ডিজরিফ্লেসিয়ার সমস্যা আছে? ১= না

	২= হ্যাঁ
৫	আপনার কি পশ্চারাল হাইপোটেনশনের সমস্যা আছে? ১= না ২= হ্যাঁ
৬	জেয়ন্ট রেন্জ অব মোশন কি কমে গেছে? ১= না ২= হ্যাঁ
৭	মাসেল টোন আছে কি? ১= না ২= হ্যাঁ
৮	কি ধরনের মাসেলটোন উপস্থিত? ১= স্পাস্টিক ২= ফ্ল্যাক্সিড ৩= নরমাল
৯	মাসেল টোনের লোকেশন? ১= কাঁধ ২= কনুই ৩= কব্জি ৪= কোমর ৫= হাঁটু ৬= গোড়ালি
১০	আপনিকি কোন ধরনের ব্যাথায় জটিলতায় ভুগছেন? ১= না ২= হ্যাঁ
১১	ব্যাথার স্থান: ১= ঘাড় ২= বুক

	৩= কাঁধ ৪= কনুই ৫= কব্জি ৬= কোমর ৭= হাঁটু ৮= গোড়ালি ৯= পিঠ
১২	চাপজনিত ঘা আছে কি? ১= না ২= হ্যাঁ
১৩	কতগুলো স্থান চাপজনিত ঘা দ্বারা আক্রান্ত?.....
১৪	চাপজনিত ঘা এর স্থান? ১= মাথার পেছনের অংশ এবং কান ২= কাঁধ ৩= কনুই ৪= কোমর ৫=পিঠ এবং নিতম্ব ৬= হাঁটু ৭= গোড়ালি
১৫	আপনার কি কোন মাংসপেশি শুকিয়ে গেছে? ১= না ২=হ্যাঁ
১৬	মাংসপেশি শুকিয়ে যাওয়ার স্হান :.....
১৭	কোন ধরনের জয়েন্টের দৃঢ়তা (শক্তভাব) আছে কি না? ১= না ২= হ্যাঁ
১৮	জয়েন্টের দৃঢ়তা (শক্তভাব) এর স্থান:.....
১৯	কোন ধরনের জেনিটোইউরিনারি সমস্যায় ভুগছেন?

	১= না ২= হ্যাঁ
২০	আপনার কি মূএনালীতে কোন ধরনের সংক্রমণ আছে? ১= না ২= হ্যাঁ
২১	আপনার কি কোষ্ঠকাঠিন্যের সমস্যা আছে? ১=না ২=হ্যাঁ
২২	আপনার কি মূত্রাশ্রয় বা মলাশয়ের কোন নিয়ন্ত্রণ আছে? ১=না ২= হ্যাঁ
২৩	পায়ে কোন ধরনের ফোলা আছে? ১= না ২= হ্যাঁ
২৪	পা ফোলার স্থান:.....

BANGLADESH HEALTH PROFESSIONS INSTITUTE

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

Ref: CRP/BHPI/IRB/02/2022/558

Date: 22/02/2022

Zinat Tasnim
4th Year B.Sc. in Physiotherapy
Session: 2016 – 2017
BHPI, CRP, Savar, Dhaka-1343, Bangladesh.

Subject: Approval of the research project proposal **"Assessment of complications at admission of Spinal Cord Injury Patients" -** by ethics committee.

Dear Zinat Tasnim,
Congratulations.
The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above-mentioned dissertation, with yourself, as the principal investigator and Md. Shofiqul Islam thesis supervisor. The Following documents have been reviewed and approved:

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

The purpose of the study is to gain in-depth insight and understandings from people with spinal cord injury in order to assess the complications at the admission of spinal cord injury patents. Since the study involves questionnaire that takes maximum 20-25minutes and have no likelihood of any harm to the participants, the members of the Ethics committee approved the study to be conducted in the presented form at the meeting held at 09:00 AM on 12October, 2021 at BHPI (30th IRB Meeting).

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

Best regards,

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

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

The Chairman
Institutional Review Board (IRB)
Bangladesh Health Professions Institute (BHPI),CRP
Savar, Dhaka-1343, Bangladesh.

Subject: Application for review and ethical approval.

Dear sir,

With due respect, I am Zinat Tasnim, student of final year B.Sc. in Physiotherapy program at Bangladesh Health Professions Institute (BHPI) the academic institute of Centre for the Rehabilitation of the Paralysed (CRP) under the Faculty of Medicine, University of Dhaka. As per the course curriculum, I have to conduct a research project entitled **"Assessment of complications at admission of Spinal Cord Injury Patients"** under the supervision of Md. Shofiqul Islam, Associate Professor & Head, Department of Physiotherapy, BHPI.

The purpose of the study is to gain in-depth insight and understandings from people with spinal cord injury in order to assess the complications at the admission of spinal cord injury Patients. The study involves face-to-face interview by using questionnaire to assess the complications of people with spinal cord injury at admission time at CRP hospital in Savar that may take 20-25 minutes to fill in the questionnaire and there is no likelihood of any harm to the participants. Related information will be collected from the patient's guide books. Data collectors will receive informed consent from all participants and the collected data will be kept confidential.

Therefore, I look forward to having your kind approval for the research project and to start data collection. I can also assure you that I will maintain all the requirements for study.

Sincerely,
Zinat Tasnim

Zinat Tasnim
Final Year B.Sc. in Physiotherapy
Session: 2016 – 2017,
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Thesis presentation date: 12th October 2021

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

Recommendation from the Supervisor

Md. Shofiqul Islam
Associate Professor & Head
Department of Physiotherapy, BHPI.

PERMISSION LETTER

21th March 2022

To,

The Head of the Physiotherapy Department

Centre for the Rehabilitation of Paralyzed (CRP).

Savar, Dhaka-1343.

Subject: Application for permission of data collection from Spinal Cord Injury Unit of CRP for the research project.

Dear Sir,

I beg most respectfully to state that, I am a student of 4th year B.Sc in Physiotherapy in Bangladesh Health Professions Institute (BHPI) under the University of Dhaka. I am conducting research on "Assessment of complications at admission of Spinal Cord Injury Patients" as a part of our course curriculum, under the supervision of Md. Shofiqul Islam, Associate Professor & Head of the Physiotherapy Department , BHPI. So I need to collect data from Spinal Cord Injury Unit of CRP,Savar.

I, therefore, pray and hope that you would be kind enough to grant me permission to do this Research in your Department and thus oblige thereby.

Sincerely,
Zinat Tasnim
Zinat Tasnim

Final Year B.Sc. in Physiotherapy

Session: 2016 – 2017,

BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Forwarded & Recommended

Shofiq
21.03.2022
Md. Shofiqul Islam
Associate Professor & Head
Department of Physiotherapy
Bangladesh Health Professions Institute (BHPI)
CRP, Chapain, Savar, Dhaka-1343

Allow for data Collection from SCI unit

MUZAFFOR HOSSAIN
Junior Consultant-Physiotherapy & Incharge
Spinal cord injury (SCI) Unit, Physiotherapy Department
CRP Chapain Savar, Dhaka-1343

Approved

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