



Faculty of Medicine

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**Assessment of Disability and Level of Depression among the Patients
with Cervical Radiculopathy**

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B.Sc. in Physiotherapy

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This work is currently not being offered as a candidate for a degree and has never before been authorized in full for one. A portion of the criteria for the B.Sc. in Physiotherapy degree are being met by submitting this dissertation.

I confirm that I will receive an inadequate rating and be subject to disciplinary action from the appropriate authorities if it is found in my work that I have plagiarized or otherwise cheated. I guarantee that the bound copy of the thesis and the electronic version are the same.

If the results of this project are published in the future, the research supervisor will be very concerned. The physiotherapy department of SAIC College of Medical Science and Technology (SCMST) will provide consent, and the project will be properly recognized as a graduate thesis.

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List of Acronyms

ADLs	Activities of Daily Living
BMI	Body Mass Index
CR	Cervical Radiculopathy
HADS	Hospital Anxiety and Depression scale
ICD	International Classification of Diseases
ICS	International Classification of Shoulder Injuries
IRB	Institutional Review Board
PSI	Pain Severity Index
QuickDASH	Disabilities of the Arm, Shoulder, and Hand
ROM	Range of Motion
SPSS	Statistical Package for Social Sciences
TENS	Transcutaneous Electrical Nerve Stimulation
VAS	Visual Analogue Scale
WHO	World Health Organization

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Abstract

Introduction: Cervical discomfort is a musculoskeletal problem that results from the irritation of the nerve root in the cervical region. The symptoms of cervical radiculopathy are pain, radiation, weakness, and alteration of sensation or sensory deficit. Cervical radiculopathy leading to disability and depression that impacts on quality of life. **Objectives:** The primary objective was to determine the prevalence of disability and assess the level of depression among the patients diagnosed with cervical radiculopathy. **Methodology:** A cross-sectional, observational study was carried out with 130 cervical radiculopathy patients from Semi-structured questionnaires, such as QuickDASH for disability evaluation, HADS for depression evaluation, and the Visual Analog Scale (VAS) for pain, were used to gather data. The data were analyzed using SPSS version 22 using descriptive and inferential statistical tests such as Kruskal-Wallis, Chi-square test, and convenience sampling was used. **Result:** The study found that mild disability was the most common, reported by 45 participants (34.6%). Moderate disability affected 21 participants (16.2%). Severe disability was reported by 26 participants (20.0%). Extreme disability was the least common, reported by 5 participants (3.8%). The Borderline case category included 30 participants (23.1%), In the most severe category, Case, 55 participants (42.3%) were identified. **Conclusion:** This study highlights the significant prevalence of disability and depression among patients with cervical radiculopathy. Utilizing tools like the QuickDASH and HADS scales, the findings reveal that a considerable proportion of patients experience mild to severe disability and clinical levels of depression.

Key words: *Cervical radiculopathy, Disability, Depression.*

1.1 Background:

Musculoskeletal irritation is a common & severe disorder that affects millions of people worldwide, with far-reaching implications for quality of life, productivity, and healthcare expenses. It refers to a variety of muscle, bone, and joint pain diseases, such as osteoarthritis, lower back pain, cervical pain, and other chronic pain syndromes (Mesa-Castrillon et al. 2024, p. 864).

Pinched of the nerve roots in the cervical region causes cervical radiculopathy (CR), a disorder that can cause pain, sensory abnormalities, and motor impairment (Pan et al. 2024, p.e36939). Compression of any nerve roots in the neck can cause cervical radiculopathy, sometimes called "pinched nerve," which causes radiating pain, weakness, and/or numbness. The majority of cervical radiculopathy cases resolve without surgery (Cervical Radiculopathy Pinched Nerve in Neck: Symptoms & Treatment., 2022).

One term frequently used to characterize neck pain that radiates into the arm is cervical radiculopathy (CR) (Thoomes et al. 2013, p. 1073). When the cervical spinal nerve root is compressed or irritated, a collection of symptoms known as cervical radiculopathy (Barbero et al. 2022, p. 3). Cervical radiculopathy is caused by constriction of the neck nerve roots. Cervical radiculopathy symptoms might be caused by a disc rupture or deteriorating osteophytes squeezing the nerve root. The cervical spine is the uppermost section of the vertebral column, located between the skull and the thoracic vertebrae (Sing et al. 2023, p. 103). The most frequent causes are spondylotic abnormalities such as bone spurs or cervical disc herniation, which compresses and/or inflames nerve roots (Thoomes 2016, p. 2). The most frequent causes of CR include osteophyte formation, degenerative spondylosis, and disc herniation, all of which can compress nerve roots. Congenital anomalies, infections, and malignancies are less frequent etiologies (Iyer and Kim 2016, p. 272). Prolonged compression of nerve roots can cause ischemia and inflammation, which exacerbates pain and neurological impairments. Compared to cervical radiculopathy, lumbar radiculopathy is more frequently linked to disc herniation. Disc herniation accounts for just 21.9% of cases of cervical radiculopathy.

In the majority of adult populations, degenerative changes brought on by aging are referred to as cervical spondylosis. Age-related disc degeneration results in foraminal constriction and a reduction in disc height. Increased stresses on the vertebral body and the Luschka intervertebral joints (uncovertebral joints) result from decreased disc height. Bony hypertrophy and osteophyte development result from this. Cervical radiculopathy and foraminal stenosis can result from hypertrophy of the uncovertebral and facet joints (Kang et al. 2020, p. 921). Cervical degenerative radiculopathy occurs when nearby nerve roots are compressed by the protruding nucleus pulposus of the intervertebral disc. These are more prevalent in younger populations and are frequently brought on by repeated mechanical stress or acute trauma. Bone growths are frequently observed in older persons and are linked to degenerative changes in the spine. Because of the foramina's structural constriction, they may result in long-term compression of the nerve roots (Beckworth et al. 2021, p. 561). Cervical radiculopathy and myelopathy are caused by structural alterations known as disc degeneration, facet joint arthropathy, and osteophyte production that occur in the cervical spine. The diagnosis, treatment, and management of these changes are all significantly impacted (Nguyen et al. 2016, p. 276).

Cervical radiculopathy, which is usually brought on by disc herniation, osteophytes, or foraminal constriction, is an irritation of the cervical spinal nerve roots. It is crucial to accurately determine the impacted level, yet this might be challenging because of

Overlapping Dermatomes: Differences in dermatome maps might lead to distinct symptom presentations in different people. Nonspecific Symptoms: Patients frequently have weakness, numbness, or generalized pain, which makes localization challenging in the absence of sophisticated diagnostic equipment. Compensatory Mechanisms: The actual afflicted root may be hidden by adjacent layers compensating for compromised function (Barbero et al. 2022, p. 4). Severe mechanical neck problem is a common ailment that is frequently linked to muscular imbalances, bad posture, and extended cervical spine strain. A major cause of symptoms, which impairs neck stability and functional performance, is the weakness of the deep cervical flexor (DCF) muscles (Suvarnato et al. 2019, p. 915).

Lifestyle and work-related factors are important in addition to anatomical predispositions. Cervical spine biomechanical stress can be made worse by repetitive neck movements, bad posture, and prolonged physical strain, such as that caused by

hard labor or sedentary desk occupations. The risk is increased by smoking, which is known to cause disc degeneration and a decreased blood supply to spinal structures. Furthermore, obesity and a sedentary lifestyle raise the cervical spine's axial loading, hastening the degenerative processes (McCartney et al. 2018, p. 44). The main risk component for upper radicular pain is age-related degeneration of the vertebral column components. The chief causes of nerve root compression are disc herniation and spondylosis, both of which are frequent in older persons. As the spine ages, degenerative processes such as disc height reduction, osteophyte development, and ligamentous thickening constrict the foramina, raising the risk of radiculopathy. Anatomical predispositions, such as congenital spinal stenosis or foraminal constriction, raise the risk even in younger people (Maurer et al. 2019, p. 605).

Radiculopathy occurs with an age-related rate of 83.2 /100,000 people, rising to 202.9 for those between the ages of 50 and 54 (Barbero et al. 2022, p. 3). The incidence rate was 83.2 / 100,000 individuals, peaking in the fifth decade of life and being greater in men (107.3 per 100,000) than in women (63.5 per 100,000) (Beckworth et al. 2021, p. 562). Among 100 patients, 43% experienced pain which is not neurological, 7% had mostly neural pain, and 50% had mixed pain in the cervical area (Cohen and Hooten 2017, p. 358). Over the last 10 years, the frequency of cervical neck discomfort and years spent with incapacity has increased by 18.7% with 18.6%, as well, globally. The frequency of cervical spine radiculopathy is estimated to be between 1.1% and 6.3%, and the annual rate for neck spine pain is between 10.4% and 21.3%. (Mansfield et al. 2021, p. 870).

The World Health Organization mentions that disability is a broad word that includes impairments (difficulties with physical function or structure), activity restriction (problems people may have carrying out activities), and participation inability (difficulties people experience when participating in life situations). Disability is a natural feature of humanity. Currently, an estimated 1.3 billion people, or around 16% of the world's population, live with a noticeable impairment. The population's aging and the rise in non-communicable diseases are contributing factors to this number (WHO 2023). In 2017, more than 100 million people, or 15.9% (14.1–17.8%), had a musculoskeletal disability, making it another common cause of year-living disability worldwide. As a result, many persons who have MSDs experience negative effects on their physical and mental functioning. As the population ages, it is anticipated that the

global illness burden from MSDs will rise (Heikkinen et al. 2019, p. 18). Lower back problem (LBP) was the world's top responsible of years lived with inability, followed by neck region pain in fourth place and other musculoskeletal issue in fifth, according to the 2010 World Health Organization Global Burden of Disease (WHO-GBD) research (Palazzo et al. 2014, p. 633).

The occurrence of all disabilities among particular ability kinds among noninstitutionalized U.S. adults was evaluated by the CDC using data from 2013. The most common forms of disability identified in every state were those related to mobility and cognition. The state-level proportion of each handicap class ranged from 2.7% to 8.1% for vision, 6.9% to 16.8% for mental abilities, 8.5% to 20.7% for range of motion, 1.9% to 6.2% for wellness, and 4.2% to 10.8% for autonomy in life. Generally speaking, adults in Southern states had a higher frequency of any handicap, and women were more likely to have it (24.4%) than males (19.8%). Among older age groups, the prevalence of both mobility impairment and any disability was higher (Courtney-Long et al. 2013, p. 777). Work disability, defined as the incapacity to work owing to health issues, presents considerable challenges for people, companies, and the economy as a whole. The workplace has a significant influence on disability outcomes, since workplace rules, practices, and culture can aggravate or reduce the impact of health issues on job capacity. Multidisciplinary therapies that integrate medical, occupational, and psychological methods are the most successful in lowering job impairment (Young et al. 2016, p. 434).

World Health Organization (WHO) describes that depression is a prevalent mental health illness marked by persistent sorrow, lack of interest in work, and reduced daily functioning (Islam et al. 2020, p. 3). Depression is a common, debilitating, and sometimes deadly disorder. This is a common start to many research papers on depression and it is frequently followed by some depressing data. Depression is thought to afflict approximately thirty million individuals globally, and the WHO rates it as the most common root of global suffering. The number of depressions has risen throughout the last quarter (WHO, 2012, 2014). In comparison to the general public, postgraduate students showed a significantly higher summed rate of depressive symptoms (32.2%) (Guo et al. 2021, p. 835).

The combined prevalences of depressed mood and major depressive disorder were 53% and 27%, respectively. Lower-middle-income nations (60.0%) had a greater rate of depressed mood than high- and upper-middle-income countries (53.0% and 44.0%, respectively). Females had a greater rate of depressed mood (35.0%) than men (19.0%). Factors influencing depression include inadequate income, comorbidities, pain, functional disability, loneliness, number of chronic health issues, social support, activities of daily living, subjective health, autonomy, environment, and physical and psychological health. (Wang et al. 2024, p. 1569).

1.2 Justification:

Cervical radiculopathy represents a musculoskeletal illness that occurs from the pinched nerve root in the cervical region. Symptoms of cervical radiculopathy are pain, radiation, weakness, and alteration of sensation or sensory deficit. The condition is common in those who are around 35-40 years old. Cervical radiculopathy can lead to disability that significantly hamper quality of life. Chronic physical discomfort and impairment have been linked to higher incidence of depression, according to earlier research. Patients with CR may experience increased emotional distress as a result of their ongoing pain, restricted movement, and related impairment. These patients' physical disabilities may worsen if their depression is not identified or addressed. Determine the prevalence of disability and level of depression in individuals diagnosed with cervical radiculopathy is the aim.

Healthcare professionals can better customize therapies and integrate mental and physical health care to enhance treatment success and improve quality of life by determining the depression in patients with CR. The physical limitations and chronic pain associated with CR can lead to functional impairment, decreased social interactions, job absenteeism, and other consequences that contribute to the development of depression. Exploring interconnections between disability and depression is essential for a more understanding of CR and its broader implications on patients' well-being.

By assessing both disability levels and depression, healthcare providers can adopt a more patient-centered approach to treatment. The study creates multidisciplinary treatment plans that involve physical therapy, psychological support, and medical management, all aimed at reducing both the physical and psychological burden of cervical radiculopathy.

1.3 Research question:

What is the prevalence of physical disability and level of depression among the patients diagnosed with cervical radiculopathy?

1.4 Study aim:

The aim of the study was to determine the prevalence of disability and level of depression among the patients diagnosed with cervical radiculopathy.

1.5 Objectives of the study

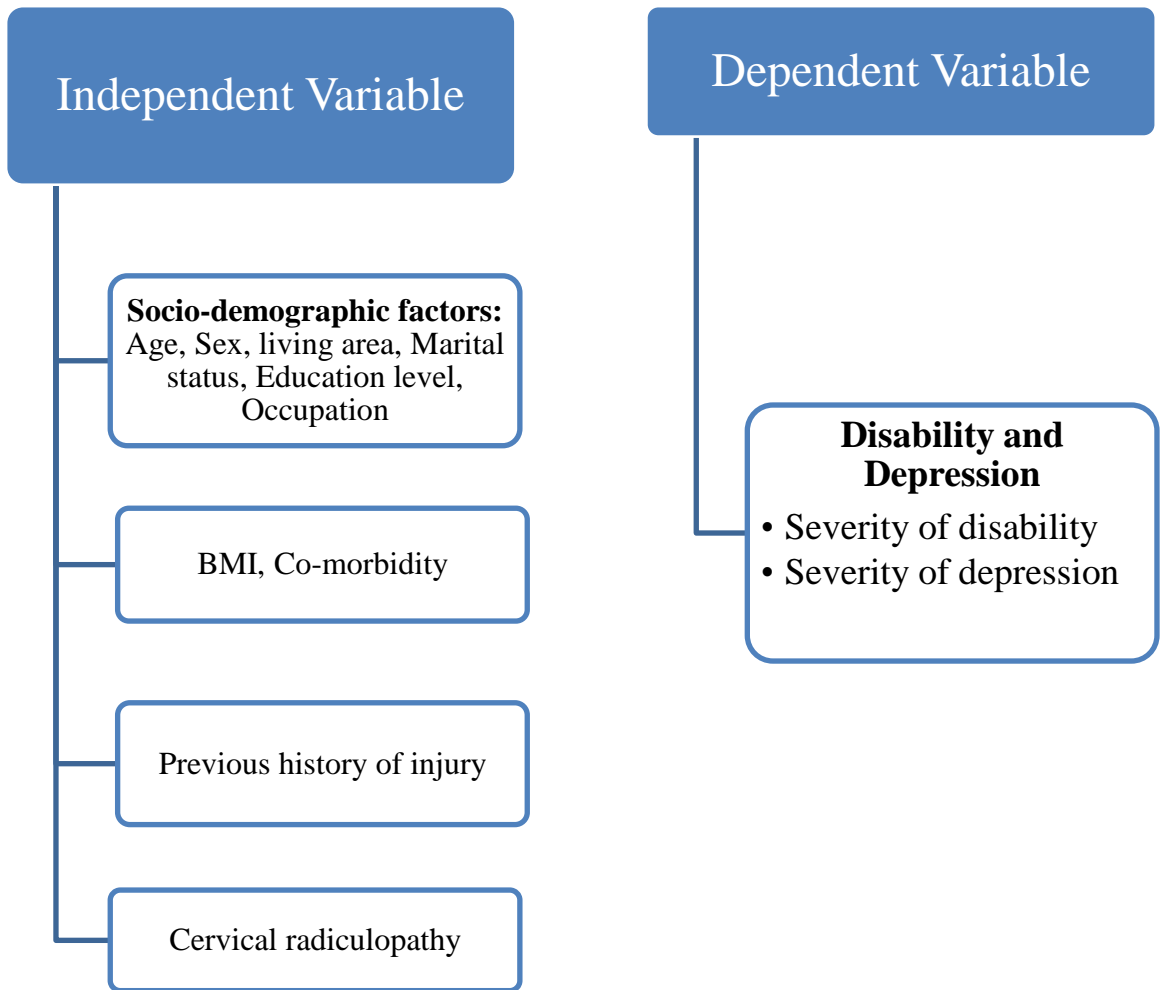
1.5.1 General objective:

To determine the prevalence of disability and the level of depression among the patients diagnosed with cervical radiculopathy in Dhaka city.

1.5.2 Specific objectives:

- To calculate the percentage of patients with cervical radiculopathy having physical disability.
- To assess the severity of physical disability among the patients with cervical radiculopathy by Quick DASH scale.
- To evaluate the level of depression among the patients with cervical radiculopathy by HADS scale.
- To assess the severity of neck pain by VAS scale among cervical radiculopathy patients.
- To find out the socio-demographic characteristics associated with the cervical radiculopathy patients.

1.6 Conceptual framework:



1.7 Operational definition:

Cervical radiculopathy:

Cervical radiculopathy is a medical condition defined by pressure on the nerves caused by degenerative bone growths or a ruptured disk. Typically, this impingement causes motor issues in the upper part of the body and neck, along with numbness or pain extending throughout the arm.

Disability:

A disability is defined as any physical defect that makes it more difficult for the person with it participate in specific activities (activity limitations) or interact with their surroundings (participation restrictions).

Depression:

Depression is a sort of mood disorder that causes a persistently sad and boring condition. Depressive illness, also known as major depression, is a condition that affects how one feels, thinks, and acts and can lead to a variety of related mental and physical concerns.

One frequent neurological disorder that arises from compression, irritation, or inflammation of a spinal nerve root is called radiculopathy. Pain, sensory abnormalities, and motor deficiencies are among the symptoms that it causes; these symptoms frequently affect the extremities and cause a major impairment in functioning (Mustafa and Kissoon 2021, p. 760). Cervical radiculopathy is estimated to affect 1.21 to 5.8 out of every 1,000 individuals; other research suggests that the frequency is 1.31% in women and 1.14% in men. A Sicilian municipality had a rate of 3.5 per 1,000 (Mansfield et al. 2020, p. 556). Lumbosacral radiculopathy was identified in about 16.67% in the Hadoti district of Rajasthan, India (Meena et al. 2024, p. 65). In the Egyptian governorate of Qena, the prevalence of lumbosacral radiculopathy was 6.6 per 1,000 (Khedr et al. 2018, p. 112). Males are more likely than females to have cervical radiculopathy (107.3 per 100,000), although the prevalence varies (Sing et al. 2023, p. 104). According to Rochester, the yearly incidence of neck radiculopathy peaked between the ages of 50 and 54 and was 107.3 per 100,000 for men and 63.5 per 100,000 for women (Kim et al. 2016, p. 231).

An estimated 30 to 50 percent of adults will have neck discomfort in any given year, indicating the significant incidence of cervical discomfort in the general population. Significantly less frequent is neck pain associated with aberrant neurology, typically cervical radiculopathy, which affects about 100 out of every 100,000 men and 60 out of every 100,000 women (McCartney et al. 2018, p. 44). Geographical location, population factors, and study methods all have an impact on the large variations in cervical radiculopathy prevalence. Females typically exhibit a higher prevalence in community-based surveys, with rates ranging from 0.12% to 6.3%. Because hospital-based studies sample sick individuals specifically, they indicate higher prevalence (Mansfield et al. 2020, p. 556).

Females experienced pain at a consistently higher intensity than males. Hormonal variables, such as decreased pain tolerance linked to estrogen fluctuations, were proposed by the authors as contributory factors. Repetitive physical duties, especially those related to household chores, were frequently linked to chronic pain patterns in females (Apaydin et al. 2024, p. 14).

Comprehend anatomical specificities when treating cervical spine degeneration. In certain situations, targeted spinal injections guided by imaging can effectively relieve pain, especially when conservative approaches are ineffective. The study emphasizes the necessity of treating cervical spine problems with a customized, anatomy-informed strategy. The most common manifestation of cervical radiculopathy is neurological impairment brought on by inflammation and compression of the cervical spine's nerve roots or spinal nerves (Nguyen et al. 2016, p. 277).

The quality of life for both sexes was significantly impacted negatively by cervical radiculopathy. Pain and functional restrictions coupled to cause higher losses in quality of life for women. Females had higher rates of emotional and psychological issues, which further impacted their general well-being (Apaydin et al. 2024, p. 14). The severity of cervical radiculopathy is that patients frequently have numbness or paresthesia in the afflicted dermatomes, as well as sporadic neck pain that radiates to the arms. Although they might exist, mild weakness or sensory deficiencies do not substantially hinder day-to-day functioning. Significant motor impairments, chronic and incapacitating discomfort, and occasionally atrophy of the afflicted muscles are among the symptoms (Corey and Comeau 2014, p. 792).

Depending on the nerve root implicated, reflex alterations may manifest as hyporeflexia in the triceps or biceps. Cervical pain can arise from significant compression, especially from osteophytes or herniated discs, and manifest as problems with balance, walking, and bladder function (Apaydin et al. 2024, p 15). Gender variations in the effects of cervical radiculopathy on functional impairment, pain levels, and quality of life. Women had greater impairment scores, which were explained by anatomical predispositions, ergonomic difficulties, and activity. It's possible that men's greater muscle mass and participation in physically active activities contributed to their comparatively better functional results. Ability Impairment Disability scores on all three scales were substantially greater for females than for males. Hormonal impacts, ergonomic difficulties, and lower levels of physical activity were all linked to greater disability in females. Severity of impairment: The entire cohort had mild-to-moderate impairment. CR hurts functioning and emotions, particularly in women, found by (Sing et al. 2023, p 1002837).

Physical and non-physical elements interacting to determine neck impairment. Higher NDI scores, which reflect disability, were substantially correlated with reduced cervical range of motion and muscle weakness. Despite being evident, sensory impairments had a lower association with disability (Wibault et al. 2014, p. 599). Physical impairments can result from Work capacity and everyday tasks being adversely affected by a limited cervical motion and weakness of muscle, which resulted in impairment. 48 participants (37.8%) had weak workability, 49 participants (38.5%) had moderate workability, 25 participants (19.7%) had fair workability, and 5 participants (3.9%) had excellent workability. Lower workability was linked to physically demanding occupations, especially for patients with chronic pain and functional limitations. Support from the workplace, like flexible scheduling and accommodations, improved work capacity and return-to-work rates (Nguyen et al. 2016, p. 277).

Considerable participants claimed that they experienced weakness, tingling, and neck and arm pain, either at the beginning or as it progressed. Poor workstation arrangements, extended periods of inactivity during the lockdown, and prolonged static postures were blamed for the symptoms. According to the CDI, the participants' disabilities ranged from moderate to severe. Higher disability ratings were substantially associated with higher pain intensity as measured by the NPRS (Macdowall et al. 2017, p. 227). Compared to men, women showed noticeably higher disability scores. Results from NPAD and CNFD showed comparable trends, with women consistently reporting higher levels of disability. All participants in the study had mild-to-moderate disabilities, with women having more severe restrictions. The authors ascribed the increased disability in women to anatomical differences (e.g., softer connective tissue and lower bone mineral density), ergonomic obstacles, and lower levels of physical activity. Moreover, women reported higher psychosocial pressures, which exacerbated their functional deficits (Sing et al. 2023, p. 1002837).

(Kasemsan 2021, p. 12163) Confound the functional capacities of drivers, particularly their ability to carry out work-related responsibilities, were severely compromised by MSP. Those who reported lower back and neck pain had the highest levels of disability, highlighting the significance of these areas for occupational health. Musculoskeletal strain was raised by prolonged periods of static posture during lengthy trips. Inadequate seat design and restricted adjustability led to bad posture and a higher risk of pain. Outside of work, a sedentary lifestyle made musculoskeletal problems worse. The

prevalence of pain and impairment was higher among drivers with more years of service. The most reliable indicator of increased NDI scores. One of the main causes was muscle weakness and decreased cervical range of motion. A higher level of impairment was linked to less physical exercise (Torad et al. 2024, p. 1967).

A third of participants, 35 %, reported having some form of depression. Compared to men, women reported higher levels of stress, anxiety, and sadness (Ramon-Arbues et al. 2020, p. 7001). A frequently occurring musculoskeletal condition that can have significant implications on both physical and emotional health is cervical spine discomfort, with or without radiculopathy. Emotional distress, pain catastrophizing, and mobility anxiety are examples of psychosocial factors that frequently worsen symptoms and functional outcomes. Psychosocial symptoms associated with cervical spine pain were substantially worse for patients, as evidenced by lower quality of life and greater disability scores (Mansfield et al. 2023, p. 235). Comparing patients with radiculopathy to those with non-radicular CSP, the combination of pain and psychosocial variables resulted in more severe mental health problems. Because it is continuous and frequently incapacitating, radicular pain was linked to higher levels of anxiety and sadness. Poorer results were a result of women reporting higher degrees of pain catastrophizing and depression. Stronger fear-avoidance behaviors in younger patients affected their recovery (Bobos et al. 2018, p. 4). Muscle weakness and decreased range of motion were somewhat linked to neck impairment. Disability was strongly correlated with pain severity (VAS), while psychological factors had a role. When it came to NDI scores, which show disability, psychological issues accounted for a greater percentage of the variance than physical health variables comparing patients with radicular cervical spine pain to those without, it is expected that the former will have inferior functional outcomes and greater psychological anguish (Mansfield et al. 2021, p. 871).

Depression was significantly linked to higher pain levels. A major predictor of psychological distress during the pandemic was limited access to medical services. Anxiety or depression were frequent in patients with little social help. Contrast with men, women showed greater prevalence rates of anxiety with or without depression. Perhaps outcome of their increased family and career obligations, younger patients expressed more psychological anguish (Chu et al. 2023, p. 2). Psychological symptoms were compounded by fear of catching the infection and uncertainty about future

medical care. The pandemic's economic difficulties exacerbated financial stress, which in turn deteriorated mental health. Depression symptoms were present in 42% of patients, with 16% having moderate-to-severe symptoms. The most correlation between higher VAS scores and higher depression severity. Psychological distress was more reported by patients who had higher functional disability (NDI scores). Depression usually occurs in women than in men. Social and professional obligations, younger patients showed higher levels of psychological anguish (Sang et al. 2023, p. 283). Depressive symptoms were present in a sizable fraction of patients, and women reported more psychological discomfort than men did. Recovery was significantly hampered by depressive characteristics; individuals who exhibited these attributes reported more severe pain and less desire to improve. Higher psychological discomfort patients were less likely to follow rehabilitation plans, which further delayed their recovery. Women showed a higher susceptibility to depressed symptoms, which led to lower functional results than men (Trivunovic et al. 2018, p. 5).

HADS scores showed that a considerable percentage of individuals had preoperative anxiety and/or depression. In every metric, patients who experienced more mental discomfort before surgery reported lower results. Despite excellent objective clinical outcomes, mental anguish was linked to less felt recovery. Clinical or demographic characteristics like age, sex, or the degree of nerve compression had less of an impact on PROMs than mental anguish. Improvements in irritation, inability, and better quality of life were considerably greater for patients with low preoperative mental anguish than for those with high distress (Skeppholm et al. 2017, p. 791).

More improvements in pain in neck, activity limitation, and meaningful life were reported by patients with better preoperative mental health. Numerous physical factors, such as surgical technique and preoperative neurological severity, were more influenced by mental health status. Poor preoperative mental health was associated with decreased satisfaction, even among patients who experienced considerable neurological benefits after surgery. Potentially as a result of variations in symptom perception and functional expectations, mental health had a somewhat greater impact on patients with radiculopathy than those with myelopathy (Diebo et al. 2018, p. 102). A higher NDI and VAS score, a lower EQ-5D score, and poorer surgical outcomes were all substantially correlated with poor preoperative mental health (high HADS and PCS scores). Even after surgery, patients with poor mental health reported less improvement

in their quality of life, discomfort, and disability (Apaydin et al. 2024, p. 17). Compared to men, women had noticeably higher NDI ratings, which suggested more functional constraints. Patients' average age was 45.59, with 81 (72.98%) being female and 30 (27.02%) being male. The lower levels of physical activity in women, hormonal effects, and ergonomic difficulties could all be factors in greater disability scores. Women reported more acute and ongoing pain, and their pain levels (VAS scores) were higher than men's (Goedmakers et al. 2022, p. 3035).

In many areas, such as role restrictions brought on by physical health, emotional well-being, and physical functioning, females scored lower on the SF-36. Despite having comparable degrees of nerve compression, men rated higher quality of life, indicating that women bear a heavier overall burden from CR. Females were more likely to experience psychosocial problems including worry and sadness, which may have increased their feeling of pain. Women were more likely to say that CR interfered with their everyday activities, including their jobs and domestic duties. NDI scores were significantly correlated with decreased cervical range of motion and muscular weakness. Disability and sensory impairments were significantly but weakly correlated. Among the best indicators of neck impairment were pain catastrophizing, anxiety, and depression. Compared to physical impairments alone, psychosocial factors accounted for a greater percentage in NDI scores. A significant variation in neck impairment was explained by the interaction of lifestyle, psychological, and physical variables. The most significant contributors were found to be psychosocial factors, highlighting their significance in influencing disability outcomes (Wibault et al. 2014, p. 599).

40% of the variance was physical and psychological components of the SF with the HADS scales, which measure pain levels. Patients' impairment levels were described by the SF-12 and the HADS subcategory in 50% of cases. Pain intensity and functional impairment are strongly correlated, as seen by the considerable link between higher VAS scores and greater disability-restricting coping mechanisms and increasing pain perception, making it the most powerful psychological predictor of impairment. Anxiety and depression both showed a substantial correlation with increasing disability, indicating the influence of emotional distress on patient outcomes. Low levels of physical activity and sedentary behavior were linked to greater impairment ratings. Neck discomfort and impairment were also affected by comorbid illnesses, such as other musculoskeletal problems. The importance of psychological elements in treating

CNP was highlighted by the fact that they accounted for a greater percentage of the variance in disability scores than did physical health measurements (Bobos et al.2018, p. 4). The primary line of treatment for mechanical neck discomfort is strengthening and stretching exercises. Recurrence is decreased and function is enhanced by customized rehabilitation programs (Cohen et al.2017, p. 358).

For temporary pain relief, muscle relaxants and NSAIDs are advised. Because of their limited effectiveness and potential for dependency, opioids should be used with caution. Chronic pain can be effectively treated with cognitive-behavioral therapy (CBT), especially when psychosocial issues are involved. Surgical intervention combined with social and psychological assistance can lead to better results. For patients with high depression ratings, cognitive-behavioral treatment (CBT) and counseling may be helpful (Jablonska et al. 2017, p. 89).

First-line treatment for inflammation and discomfort, NSAIDs. Although oral corticosteroids may reduce symptoms temporarily, their long-term effectiveness is not well established, therefore they are not usually advised. Patients with severe nerve-related pain can benefit from gabapentin and pregabalin. Particularly during the acute stage, muscle relaxants help lower muscle spasms. Enhancing posture, neck strength, and flexibility are the main goals of physical therapy. It has been demonstrated that cervical traction relieves symptoms and lessens nerve root compression (Childress 2016, p. 746). Hand Therapy includes joint manipulation and soft tissue mobilization; for best effects, they are frequently paired with exercises. Injections of Epidural Steroids are efficient in lowering inflammation and offering individuals experiencing excruciating radicular pain short-term pain relief. Changes to Activities and Ergonomics. Ergonomic changes along with avoiding activities that worsen symptoms can greatly lessen cervical strain. Neck function was improved and pain was decreased with the use of strengthening exercises, cervical traction, and manual treatment. The results of PT plus instruction and at-home workouts were superior to those of PT alone. In the short run, NSAIDs significantly reduced discomfort. For radicular pain, neuropathic painkillers (such as gabapentin) demonstrated a moderate level of efficacy. Although they were less successful over the long run, epidural steroid injections temporarily relieved excruciating radicular pain. Yoga and acupuncture showed promise, but the data was conflicting and scant. For those with severe or refractory CSR, surgery, cervical arthroplasty, anterior cervical spinal discectomy with fusion

(ACDF) all provide quicker and more substantial symptom alleviation. Most patients with mild-to-moderate symptoms responded well to conservative therapies, highlighting their value as initial treatment (Luyao et al. 2022, p. 18).

Manual Therapy Techniques like manipulation and mobilization probably increase cervical spine mobility, lessen compression of nerve roots, and ease pain. Exercise contributions include posture correction, neck stability, and long-term functional recovery, including stretching and strengthening routines. To provide comprehensive care, multimodal synergy may be useful in addressing both acute symptoms and underlying biomechanical deficits by combining physical therapy with exercise. The first line treatment is physical therapy like mobilization, manipulation, hot/cold application, traction, stretching, strengthening of cervical muscle and surrounding muscle to stabilize (Alshami et al. 2021, p. 9).

3.1 Design of the study:

It was a descriptive type of cross-sectional study carried out to assess disability & depression among the patients with cervical radiculopathy.

3.2 Study area:

The data of this study collected from the patients attending at Agrani Specialized Physiotherapy Centre and Ibn sina D-Lab, Keraniganj in Dhaka, Bangladesh.

3.3 Study place:

The study was carried out at Saic College of Medical Science & Technology.

3.4 The study duration:

The duration of the study was September 2023 to August 2024.

3.5 Study population:

The patients diagnosed with cervical radiculopathy constituted the study population for the present study.

3.6 The study Sample:

The sample size for the present study was calculated by using the following statistical formula-

We know that

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

Here,

n = required sample size

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

p is the prevalence taken as 32.7 % (Sang et al., 2023)

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

$$\begin{aligned}n &= \frac{Z^2 p q}{d^2} \\&= \frac{(1.96)^2 \times 0.327 \times (1-0.327)}{(0.05)^2} \\&= \frac{3.8416 \times 0.327 \times 0.673}{0.0025} \\&= \frac{0.8454}{0.0025} \\&= 338\end{aligned}$$

So, the sample size is 338.

So, the aim was to focus on 328 samples following the calculation above initially.

The calculated sample size for this study is 328. This study performed as a partial achievement of academic research project, so there was a time frame restriction, as a higher number of samples was difficult to achieve. So 130 cervical radiculopathy patients are taken as the sample.

3.7 Sampling technique:

The convenience sampling method select sampling unit (patients) was adopted from Agrani Specialized Physiotherapy centre and Ibn sina D-Lab, Keraniganj Hospital in Dhaka, Bangladesh. The convenience method was the simplest, most affordable, and most efficient technique of sample selection. The convenience sampling approach makes it simple to obtain people who meet the requirements for the study's goal.

3.8 Selection Criteria of the Participants:

3.8.1 Inclusion criteria:

- Person who is diagnosed with cervical radiculopathy by a physician or physiotherapist.
- Participants aged above 18 years to 80 years (Mathew et al., 2017, p. 103).
- Patients who provide informed consent to take part in the study.
- People who are experiencing cervical pain severe enough to seek medical attention or report symptoms during the study period.

3.8.2 Exclusion Criteria:

- People with any other medical condition affecting cervical function unrelated to cervical radiculopathy.
- Patients unwilling or unable to provide informed consent.

3.9 Method of data collection:

3.9.1 Technique of data collection:

The required data for the research were collected from the participants by face-to-face formal interviews.

3.9.2 Instrument of data collection:

- A pre-tested semi-structured questionnaire and demographic information chart were used as the data collection instrument.
- Visual analog scale (VAS) scale for rating the intensity of Cervical pain (e.g., 0-10 scale).
- Quick Disabilities of the Arm, Shoulder, and Hand (QuickDASH) scale for measuring the disability of the arm and shoulder due to cervical radiculopathy.
- Hospital Anxiety and Depression Scale (HADS) scale for measuring the level of depression due to physical disability and cervical radiculopathy.
- The English questionnaires were converted into Bengali to ask the participants during interviews.

3.9.3 Tools of data collection:

- Height measuring tape
- Weight machine.

3.9.4 Procedure of data collection:

The researcher submitted his research protocol to the Ethical Review Board of SAIC College of Medical Science and Technology for approval to carry out the study. Permission was granted by the Ethical Review Board in due time. The researcher then visited the Agrani Specialized Physiotherapy Centre and Ibn sina D-Lab, Keraniganj Hospital in Dhaka, Bangladesh and decided to conduct the study there. Permission was obtained from the authority to carry out the research. Following this, cervical

radiculopathy patients attending the Agrani Specialized Physiotherapy Centre and Ibn sina D-Lab, Keraniganj Hospital in Dhaka, Bangladesh were approached by the researcher. The aims and objectives of the study were explained in detail to the participants, and it was clarified that they had the right to refuse to answer any question during the questionnaire. Participants were also informed that they could withdraw from the study at any time. Those who agreed to participate were included in the study. After obtaining written informed consent from the participants, the researcher began the interviews. A cordial environment was maintained during the interviews, and the responses were recorded accordingly. Once the data were collected, the researcher thanked the respondents for their cooperation.

3.10 Management of data:

3.10.1 Data editing:

It was characterized by reviewing and cleaning the collected data to identify and correct errors, inconsistencies, or missing information. The primary goal of data editing is to ensure the accuracy, reliability, and completeness of the data before proceeding with data analysis. Proper data editing helps to produce valid and meaningful research results.

3.10.2 Data entry:

Data entry is the process of converting raw data from various sources into a digital format or a data management system, such as a spreadsheet, database, or data entry software. It is a fundamental step in research, business, and other domains where data needs to be organized, analyzed, and utilized efficiently. Data entry involves carefully inputting information from paper documents, questionnaires, surveys, or other sources into a computer or electronic system.

3.10.3 Data analysis:

Data were analyzed with the Statistical Package for Social Sciences (SPSS) Version 22 software. Descriptive statistics, such as frequency, distribution, range, and percentage, were performed. Inferential statistics was used to analyze the relationship between independent and dependent variables.

3.10.4 Result:

The findings of the study have been presented with the tabulations, charts, graphs and description in the result section of the thesis.

3.10.5 Ethical consideration:

- The research proposal was submitted to the Ethical Review Board (EBR) of SAIC College of Medical Science and Technology (SCMST) and approval was obtained from the Board.
- Bangladesh Medical Research Council (BMRC) and World Health Organization (WHO) guidelines were also followed when conducting the study.
- The aims and objectives of the research were explained to every participant before the interview and asked for their response. The respondents who gave informed verbal consent were included in the study.
- No physical examination or any invasive technique was applied to the participants for the present study. The participant was also informed of his/her right to discontinue at any point of the interview.
- The name, address, and personal information of the participants were kept confidential by the investigator.

This study aims to find out the disability and level of depression prevalence in cervical radiculopathy patients. A total of 130 participants are included in this study who are suffering from cervical radiculopathy. The SPSS 22.0 edition software was used to numerically code and data analyze the data. The results were recorded in Microsoft Excel, calculated as percentages, and shown in tables, bar charts, and pie charts. A variety of tables are utilized to examine the relationships between socio-demographic data, health-related data, participant health condition-related data, and the VAS, Quick DASH, and HADS scales.

4.1 Socio-demographic information:

Table -1: Frequency distribution of the respondents by age category

Variable	Category	Frequency	%
Age	21-30	23	17.7
	31-40	34	26.2
	41-50	31	23.8
	51-60	27	20.8
	61-70	13	10.0
	71-80	2	1.5
Age overall (Mean \pm SD) 44.35 \pm 13.18			

The participants' age distribution was divided into six groups. Participants who were between the ages of 31 and 40 made up the greatest percentage (26.2%). The age group of 41–50 years old came next, accounting for 23.8% of the total. Among participants, 20.8% were between the ages of 51 and 60, while 17.7% were between the ages 21 and 30. The smallest age group, with only 1.5% of participants, was the 61–70 age, which accounted for 10.0%. The participants' average age was 44.35 years, where standard deviation was 13.18 years.

Table - 2: Frequency distribution of the respondents by sex and socio-demographic information

Variable		Sex(N%)		Total(N%)
		Male	Female	
Age category	21-30	22(16.9%)	1(0.8%)	23(17.7%)
	31-40	23(17.7%)	11(8.5%)	34(26.2%)
	41-50	15(11.5%)	16(12.3%)	31(23.8%)
	51-60	9(6.9%)	18(13.8%)	27(20.8%)
	61-70	6(4.6%)	7(5.4%)	13(10%)
	71-80	2(1.5%)	0(0)	2(1.5%)
Living area	Urban	58(44.6%)	37(28.5%)	95(73.1%)
	Semi-urban	13(10.0%)	11(8.5%)	24(18.5%)
	Rural	6(4.6%)	5(3.8%)	11(8.5%)
Marital Status	Married	63(48.5%)	52(39.2%)	114(87.7%)
	Unmarried	14(10.8%)	1(0.8%)	15(11.5%)
	Others	0%	1(0.8%)	1(0.8%)
Education level	Illiterate	2(1.5%)	7(5.4%)	9(6.9%)
	Primary	4(3.1%)	5(3.8%)	9(6.9%)
	Secondary	10(7.7%)	18(13.8%)	28(21.5%)
	Higher-secondary	29(22.3%)	15(11.5%)	44(33.8%)
	Honour's & above	32(24.6%)	8(6.2%)	40(30.8%)
Occupation	Business	18(13.8%)	2(1.5%)	20(15.4%)
	Job	31(23.8%)	8(6.2%)	39(30.0%)
	Worker	8(6.2%)	4(3.1%)	12(9.2%)
	House Wife	0	39(30.0%)	39(30.0%)
	Unemploye	1(0.8%)	0(0%)	1(0.8%)
	Migrant	8(6.2%)	0(0%)	8(6.2%)
	Student	8(6.2%)	0(0%)	8(6.2%)
	Farmer	2(1.5%)	0(0%)	2(1.5%)
	Doctor	1(0.8%)	0(0%)	1(0.8%)

Gender-Based Variable Distribution Analysis The age range of 31–40 years was the most represented among males (17.7%), followed by 21–30 years (16.9%). The majority of females (12.3%) in the 41–50 age, the 51–60 age range coming in second (13.8%). Males were more prevalent (44.6%) in urban areas than females (28.5%). The distribution in semi-urban regions was balanced (10.0% men, 8.5% females). Male and female representation was lowest in rural regions, where 4.6% and 3.8% of the population, respectively, lived. For both sexes, married people made up the majority (48.5% for men and 39.2% for women). The population's percentage of unmarried people was lower (males: 10.8%, females: 0.8%). The largest percentage of males (23.8%) were employed in jobs, whilst 30% of female were housewives. Males were more likely to work in business (13.8%) and as workers (6.2%) than females in most occupations.

4.2 Medical information

4.2.1 BMI category of the participant:

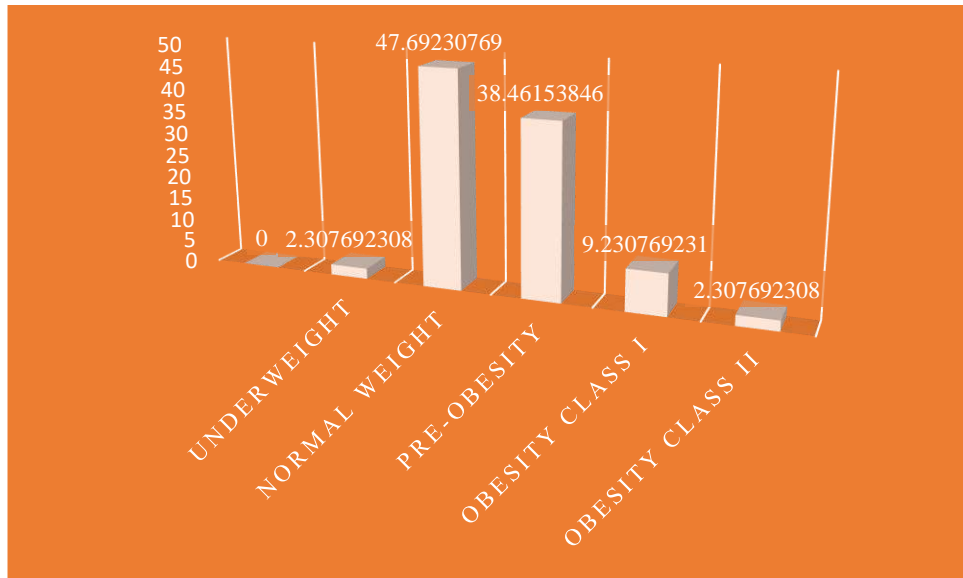


Figure - 1: Frequency distribution of the respondent by BMI category

Approximately half of research participants, 47.7% (62), were classified as normal weight based on their BMI distribution. The second most prevalent category, including 38.5% of the participants (50), was pre-obesity. 9.2% (12) were in the Obesity Class I category, whereas 2.3% (3 individuals) were in the Obesity Class II and underweight categories. These results show that a lower percentage of individuals were underweight or in the higher obesity groups, but the majority had a normal or pre-obesity BMI.

4.2.2 Disability level of the respondent

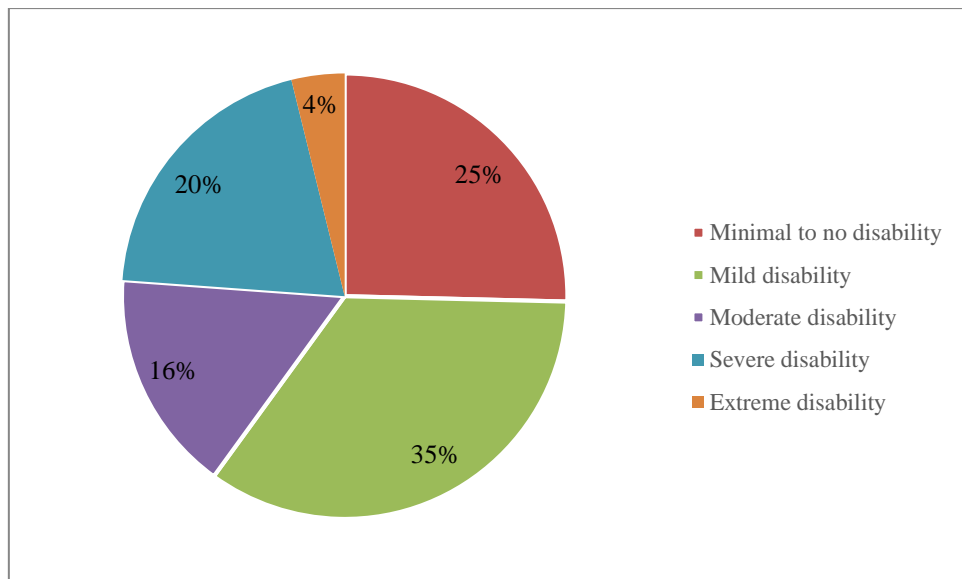


Figure - 2: Frequency distribution of the respondent by disability level

The largest percentage of participants, 34.6% (45), were classified as having "Mild disability" according to the Quick DASH scale data. Following this, 25.4% (33) of subjects were categorized as having "Minimal to no disability." Of the participants, 20.0% (26) had "Severe disability," while 16.2% (21) had "Moderate disability." And "Extreme disability" had the lowest percentage, 3.8% (5).

4.2.3 Depression level of the respondent

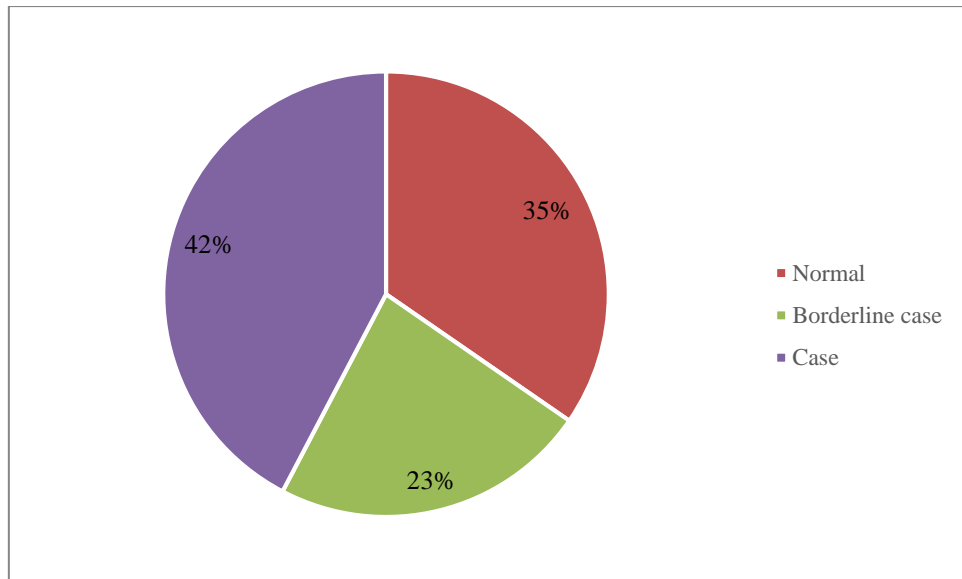


Figure - 3: Frequency distribution of respondent by depression level

34.6% of the individuals (45) were categorized as "Normal," by the Hospital Anxiety and Depression Scale (HADS). A lesser percentage, 23.1% (30), was classified as a "Borderline case," indicating a potential risk of depression. "Case," which denotes clinically severe levels of depression, was the largest group, making up 42.3% (55).

Table - 3: Frequency distribution of the respondents by sex and BMI, Co-morbidity

Variables		Sex		Total (N%)
		Male	Female	
BMI	Underweight	3(2.3%)	0(0%)	3(2.3%)
	Normal Weight	43(33.1%)	19(14.6%)	62(47.7%)
	Pre-obesity	27(20.8%)	23(17.7%)	50(38.5%)
	Obesity class I	3(2.3%)	9(6.9%)	12(9.2%)
	Obesity class II	1(0.8%)	2(1.5%)	3(2.3%)
Have other disease	Hypertension	12(9.2%)	9(6.9%)	21(16.2%)
	DM	6(4.6%)	3(2.3%)	9(6.9%)
	Asthma	2(1.5%)	8(6.2%)	10(7.7%)
	Multiple	4(3.1%)	9(6.9%)	13(10.0%)
	I don't know	53(40.8%)	24(18.5%)	77(59.2%)

The most prevalent category for both sexes was normal weight (33.1% for men and 14.6% for women). Males (20.8%) and females (17.7%) were likewise pre-obese. In Obesity Class I, women were more prevalent than men (2.3% vs. 6.9%). The seventh. Males appeared somewhat more likely to have hypertension than females (9.2% versus 6.9%). Women were more probable than men to develop asthma (6.2% opposed. 1.5%). Males were more likely to have unknown conditions (40.8%) than females (18.5%).

4.2.4 Pain Radiation of the respondent

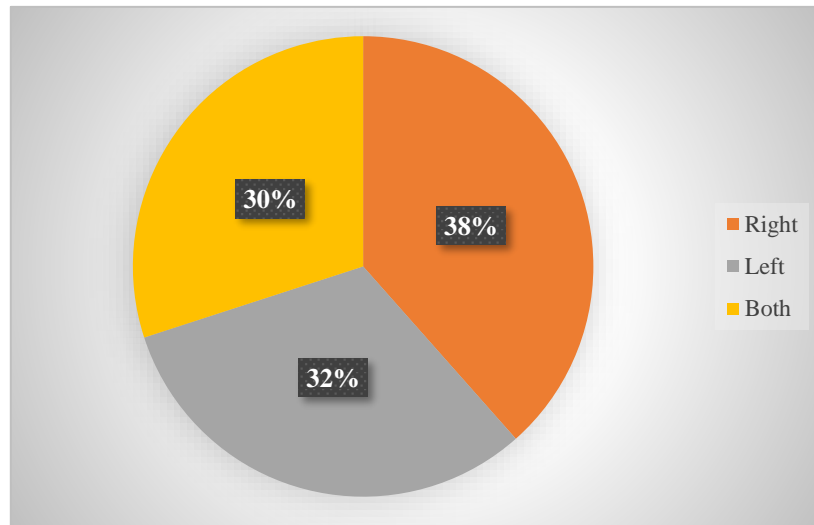


Figure - 4: Frequency distribution of the respondent by pain radiation

According to the participants' pain radiation distribution, 38.5% of them (50 participants) reported that their pain was radiating to their right side. Thirty percent (39 participants) reported pain radiating to both sides, whereas 31.5% (41 participants) felt pain radiating to the left side.

4.2.5 Pain duration of the respondent

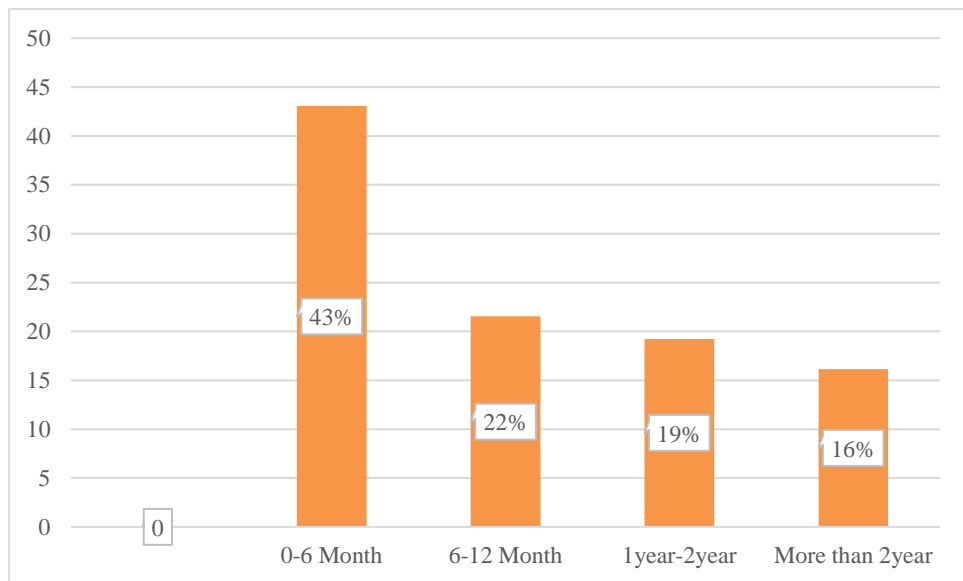


Figure - 5: Frequency distribution of the respondent by duration of pain suffering

Most people (43.1%) said their discomfort lasted between 0 and 6 months, followed by 21.5% who said it lasted between 6 and 12 months, 19.2% who said it lasted between 1 and 2 years, and 16.2% who said it lasted more than two years.

4.2.6 Type of pain of the respondent

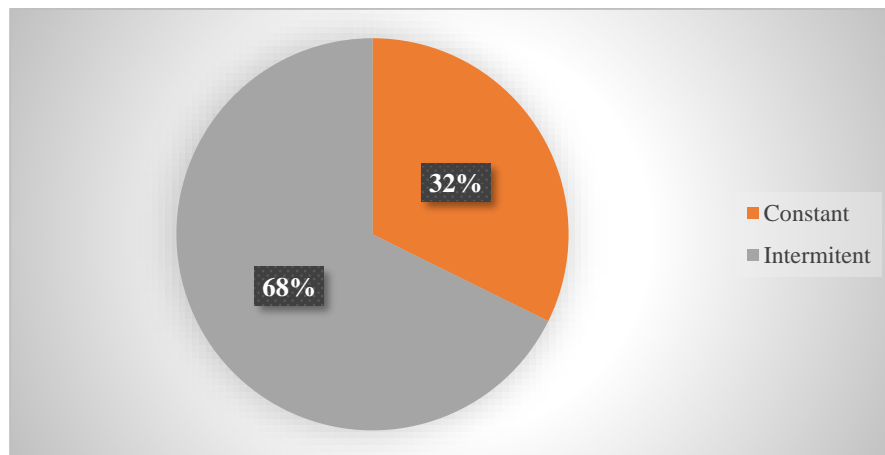


Figure - 6: Frequency distribution of the respondent by type of pain

According to information on the types of pain that 130 people reported, 32.3% reported persistent pain and the majority (67.7%) reported intermittent discomfort.

4.2.7 More pain experience of the respondent

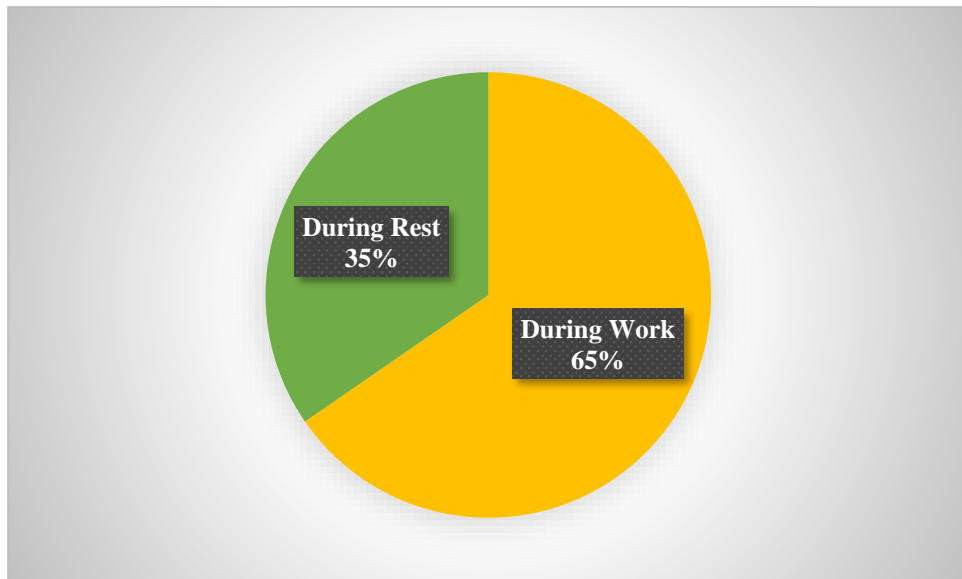


Figure - 7: Frequency distribution of the respondent by more pain experience

Of the 130 participants, 85 (65.4%) felt discomfort at work and 45 (34.6%) reported pain at rest.

4.2.8 Previous history of injury of the respondent

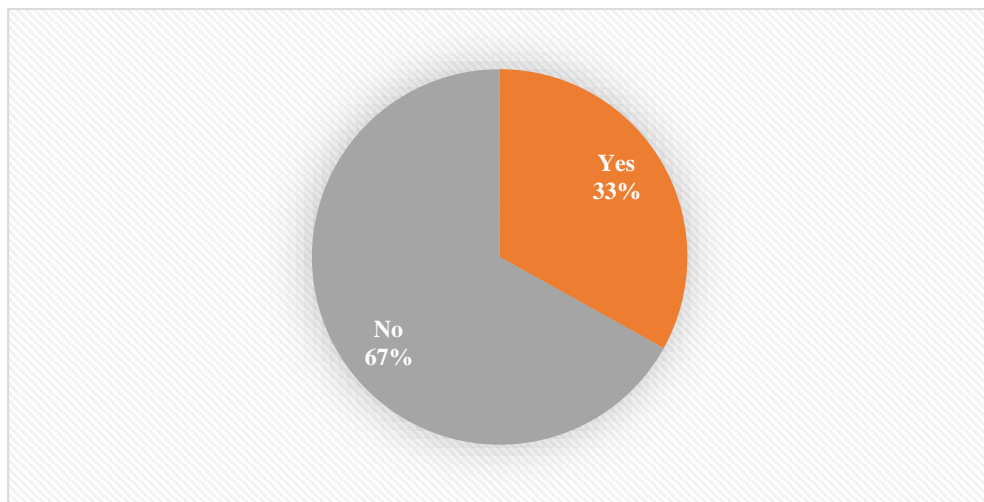


Figure - 8: Frequency distribution of the respondent by history of injury

33.1% (43) of individuals said they had previously been injured, whereas 66.9% (87) said they had never been injured.

Table - 4: Frequency distribution of the respondents by sex and medical-related information

Variable		Sex(N%)		Total(N%)
		Male	Female	
Pain radiation	Right	37(28.5%)	13(10%)	50(38.5%)
	Left	18(13.8%)	23(17.7%)	41(31.5%)
	Both	22(16.9%)	17(13.1%)	39(30.0%)
Duration of Suffering Pain	0-6Months	37(28.5%)	19(14.6%)	56(43.1%)
	6-12Months	18(13.8%)	10(7.7%)	28(21.5%)
	1-2Years	10(7.7%)	15(11.5%)	25(19.2%)
	More than 2Years	12(9.2%)	9(6.9%)	21(16.2%)
Types of pain	Constant	23(17.7%)	19(14.6%)	42(32.3%)
	Intermittent	54(41.5%)	34(26.2%)	88(67.7%)
Previous injury	Yes	22(16.9%)	21(16.2%)	43(33.1%)
	No	55(42.3%)	32(24.6%)	87(66.9%)

Features of Pain and Distribution by Gender. In contrast to girls, who were more likely to report left-side discomfort (17.7%), most males (28.5%) reported right-side pain. 13% of women and 16% of men had bilateral discomfort radiation. The majority of both sexes, 28.5% of men and 14.6% of women, suffered for 0–6 months. Men were more likely than women to experience discomfort lasting longer than two years (9.2% vs. 6.9%). The most prevalent kind of pain, affecting 41.5% of men and 26.2% of women, was intermittent. Less often, 14.6% of women and 17.7% of men reported having constant discomfort. Past Neck Injuries: 16.9% of men and 16.2% of women reported having had past injuries, however, Men were far more probable than women to report no past injuries (42.3%).

4.2.9 VAS Scale of the respondent

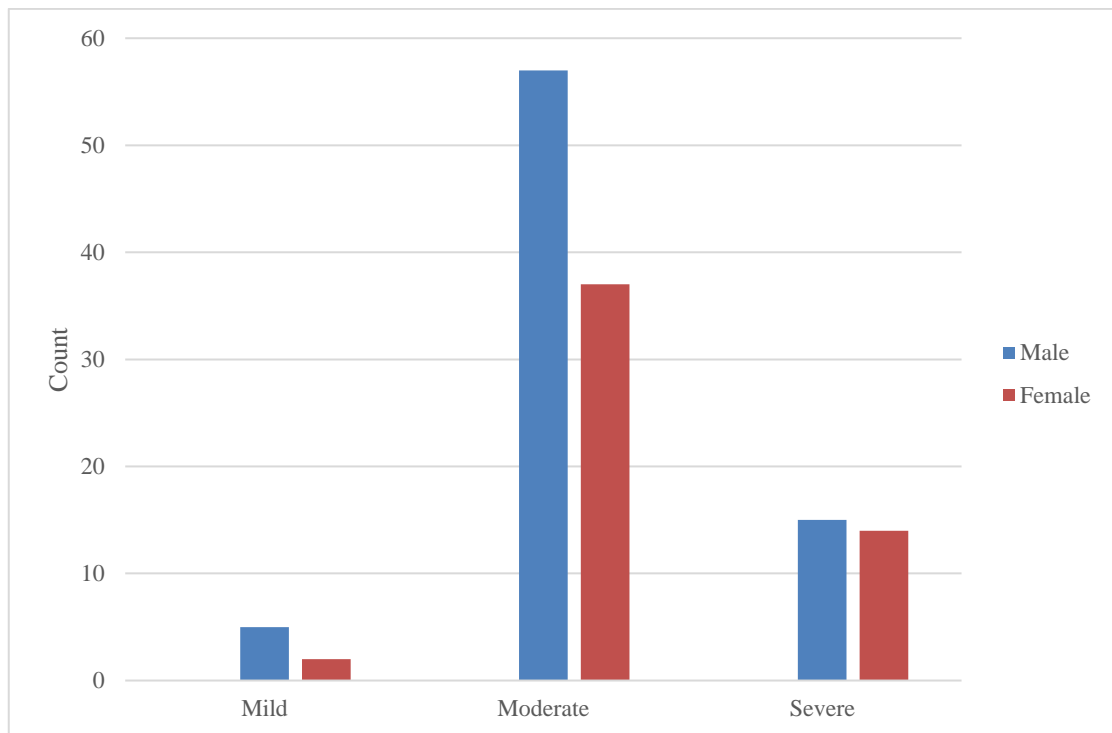


Figure - 9: Frequency distribution of the respondent by pain and sex

Visual Analog Scale (VAS) categories with sex reveal notable trends. Among the total 130 participants, 77 (59.2%) were male, and 53 (40.8%) were female. Most participants (72.3%) reported moderate pain, with males (43.8%) outnumbering females (28.5%). In the severe pain category, which comprised 22.3% of the total, the distribution was nearly equal, with males accounting for 11.5% and females for 10.8%. The mild pain category had the fewest participants (5.4%), with males at 3.8% and females at 1.5%.

4.2.10 Time of experience pain of the respondent

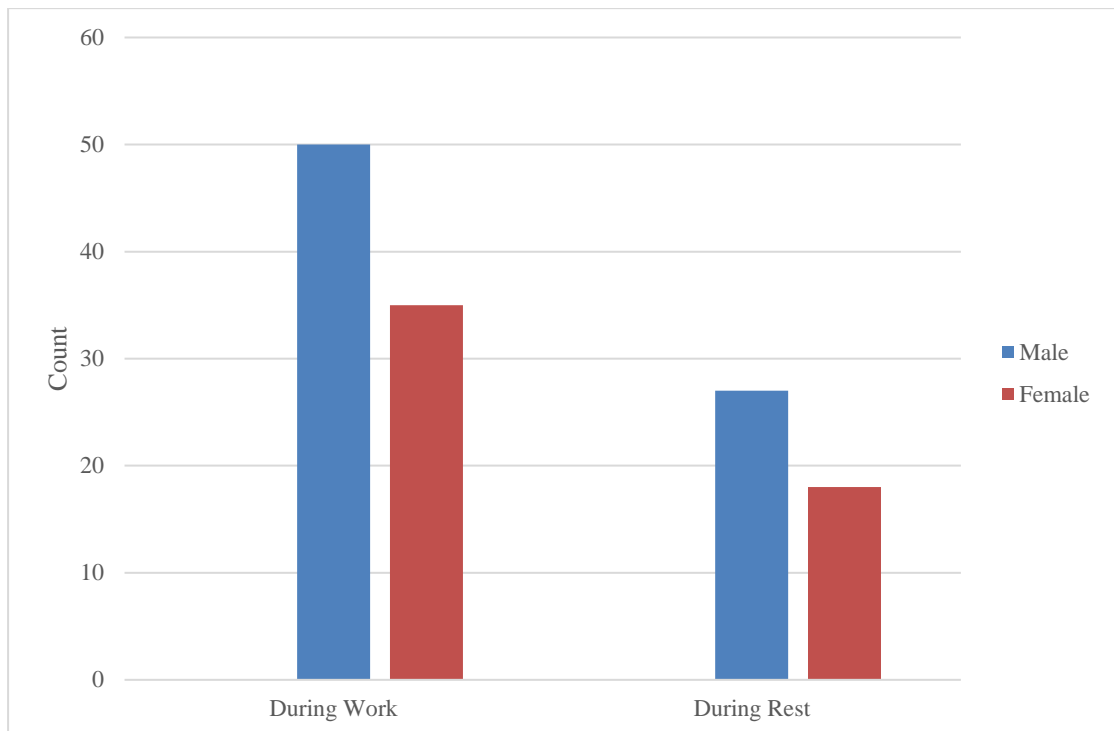


Figure - 10: Frequency distribution of the respondent by more pain experience and sex

Data reveals the relationship between sex and the timing of pain experiences, specifically whether individuals feel more pain during work or rest. Out of the total 130 participants, 85 individuals (65.4%) reported experiencing more pain during work, while 45 individuals (34.6%) experienced more pain during rest. When broken down by sex, 77 males (59.2% of the total) participated in the study, with 50 males (38.5% of the total) reporting pain during work and 27 males (20.8%) reporting pain during rest. Among the 53 female participants (40.8% of the total), 35 females (26.9%) experienced pain during work, and 18 females (13.8%) experienced pain during rest. This suggests that pain during work is more prevalent for both males and females, with a slightly higher proportion of females (66.0%) than males (64.9%) reporting this experience. Conversely, pain during rest is reported by a slightly higher percentage of males (35.1%) compared to females (34.0%).

4.2.11 Pain impact on work of the respondent

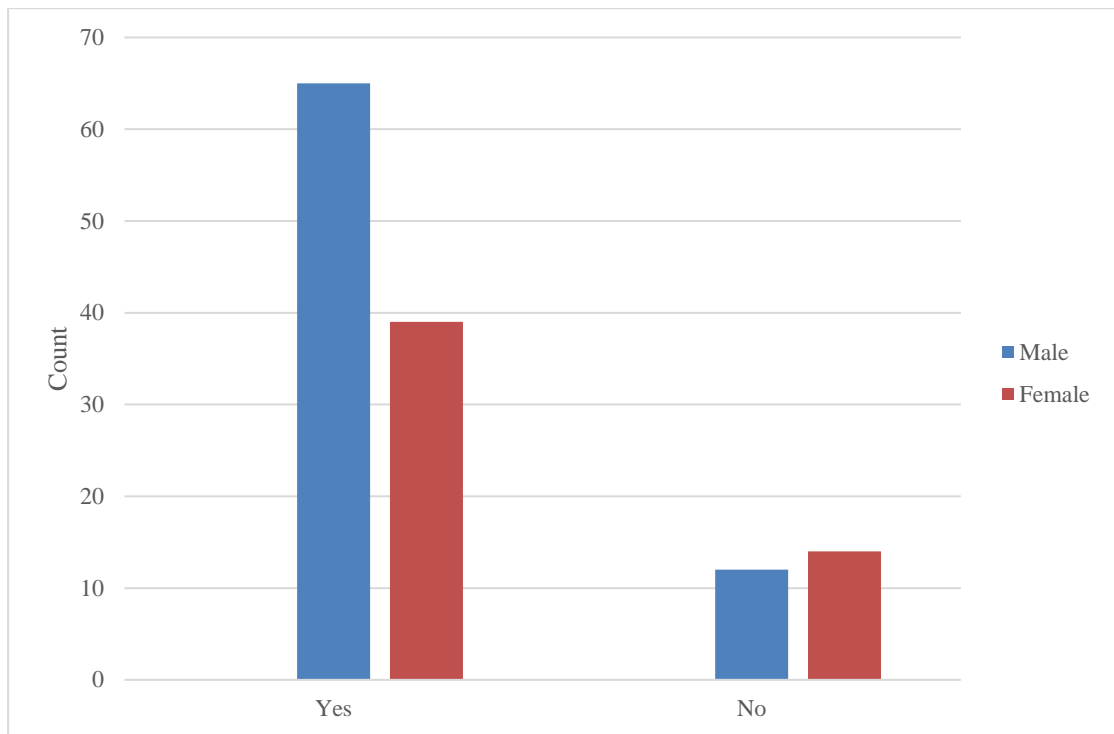


Figure - 11: Frequency distribution of the respondent by pain impact and sex

Data illustrates the relationship between sex and whether individuals feel that pain impacts their work. Out of the total 130 participants, a significant majority of 104 individuals (80.0%) reported that pain affects their work, while only 26 individuals (20.0%) indicated that it does not. Among the 77 male participants (59.2% of the total), 65 males (50.0%) stated that pain impacts their work, whereas 12 males (9.2%) reported no impact. For the 53 female participants (40.8% of the total), 39 females (30.0%) acknowledged that pain affects their work, while 14 females (10.8%) reported no impact. Impact on daily work performance for both males and females, with a slightly higher proportion of males (84.4%) than females (73.6%) experiencing this impact.

4.2.12 Pain impact on ADLs of the respondent

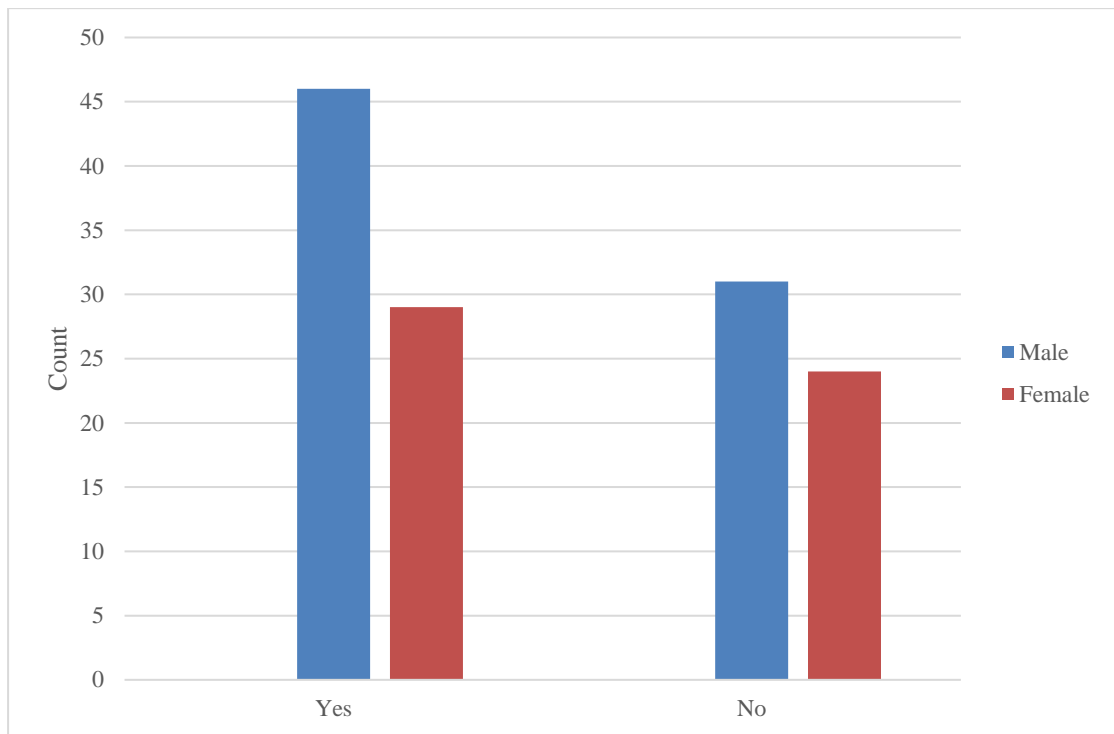


Figure - 12: Frequency distribution of the respondent by impacts on ADL and sex

Data examines the relationship between sex and whether pain impacts individuals' activities of daily living. Out of 130 participants, 75 individuals (57.7%) reported that pain affects their daily activities, while 55 individuals (42.3%) stated it does not. Among the 77 male participants (59.2% of the total), 46 males (35.4%) indicated that pain impacts their daily living, whereas 31 males (23.8%) reported no impact. For the 53 female participants (40.8% of the total), 29 females (22.3%) experienced pain affecting their daily activities, while 24 females (18.5%) did not. These results suggest that pain disrupts daily living for both sexes, this influence was reported by significantly more men (59.7%) than women (54.7%).

4.2.13 Management taken for neck pain by respondent

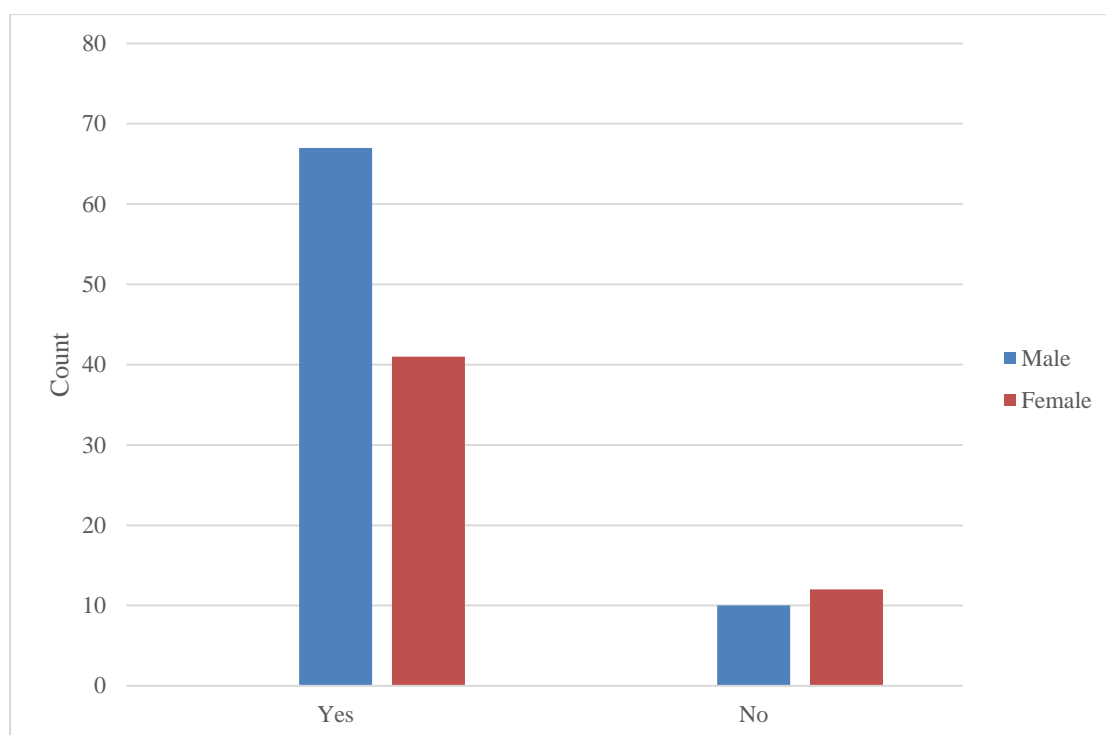


Figure - 13: Frequency distribution of the respondent by management and sex

Data highlights the relationship between sex and whether individuals seek management for neck pain through medication, physiotherapy, or both. Out of 130 participants, a majority of 108 individuals (83.1%) reported using some form of management for their neck pain, while 22 individuals (16.9%) did not. Among the 77 male participants (59.2% of the total), 67 males (51.5%) reported using pain management strategies, whereas 10 males (7.7%) did not. Similarly, among the 53 female participants (40.8% of the total), 41 females (31.5%) sought pain management, while 12 females (9.2%) did not. These findings indicate that most participants, regardless of sex, actively manage their neck pain, with a slightly higher proportion of males (87.0%) than females (77.4%) seeking treatment.

4.2.14 Disability level of the respondent

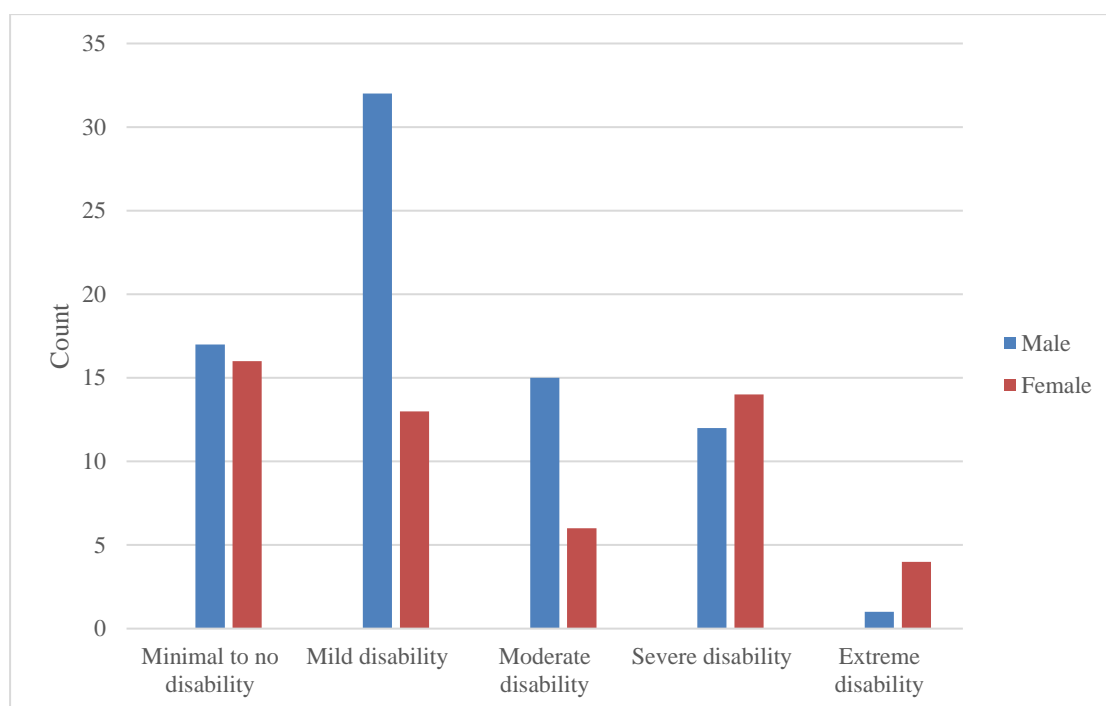


Figure - 14: Frequency distribution of the respondent by disability and sex

Data presents the relationship between sex and the level of disability based on the Quick DASH scale, which measures the severity of upper limb disability. Out of the total 130 participants, 33 individuals (25.4%) reported experiencing minimal to no disability, with 17 males (13.1%) and 16 females (12.3%) falling into this category. Mild disability was the most common, reported by 45 participants (34.6%), consisting of 32 males (24.6%) and 13 females (10.0%). Moderate disability affected 21 participants (16.2%), with 15 males (11.5%) and 6 females (4.6%). Severe disability was reported by 26 participants (20.0%), including 12 males (9.2%) and 14 females (10.8%). Extreme disability was the least common, reported by 5 participants (3.8%), with 1 male (0.8%) and 4 females (3.1%).

4.2.15 Depression level of the respondent

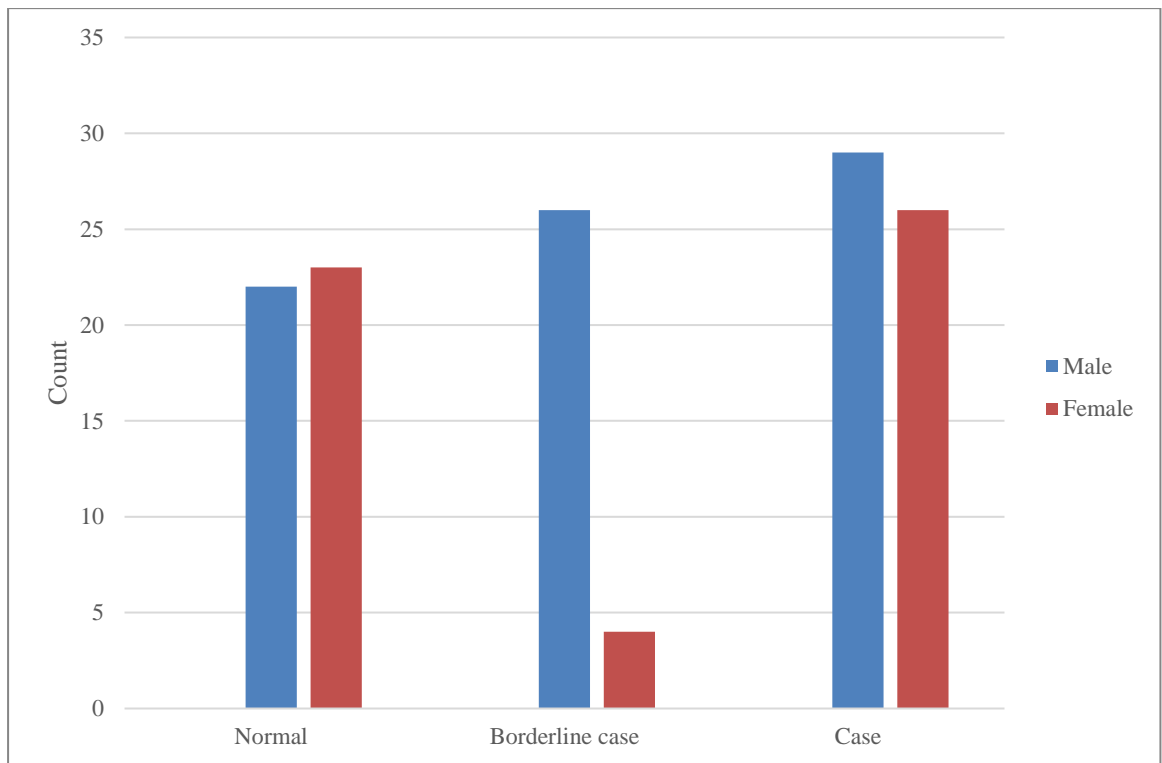


Figure - 15: Frequency distribution of respondent by sex and depression level.

Data shows the relationship between sex and participants' psychological health based on the Hospital Anxiety and Depression Scale (HADS). Total 130 subjects, 45 individuals (34.6%) fell into the Normal category, with a nearly equal distribution of 22 males (16.9%) and 23 females (17.7%). The Borderline case category included 30 participants (23.1%), predominantly males, 26 males (20.0%) compared to only 4 females (3.1%). In the most severe category, Case, 55 participants (42.3%) were identified, with 29 males (22.3%) and 26 females (20.0%).

Table - 5: Frequency distribution of the respondents by pain radiation and VAS, QuickDASH and HADS scale

Variable		Pain Radiation			Total(N%)
		Right	Left	Both	
VAS scale	Mild	4(3.1%)	3(2.3%)	0	7(5.4%)
	Moderate	36(27.7%)	29(22.3%)	29(22.3%)	94(72.3%)
	Severe	10(7.7%)	9(6.9%)	10(7.7%)	29(22.3%)
Quick DASH scale	Minimal/No	13(10.0%)	12(9.2%)	8(6.2%)	33(25.4%)
	Mild disability	19(14.6%)	14(10.8%)	12(9.2%)	45(34.6%)
	Moderate disability	9(6.9%)	5(3.8%)	7(5.4%)	21(16.2%)
	Severe disability	8(6.2%)	8(6.2%)	10(7.7%)	26(20.0%)
	Extreme disability	1(0.8%)	2(1.5%)	2(1.5%)	5(3.8%)
HADS scale	Normal	17(13.1%)	17(13.1%)	11(8.5%)	45(34.6%)
	Borderline case	14(10.8%)	7(5.4%)	9(6.9%)	30(23.1%)
	Case	19(14.6%)	17(13.1%)	19(14.6%)	55(42.3%)

The Relationships Between Pain Radiation and Mental Health, Disability, and Severity
 Participants reported having left-side discomfort (2.3%) and right-side pain (3.1%). Bilateral discomfort, individuals did not report minor pain. The majority reported moderate pain, which was split evenly between bilateral (22.3%), left (22.3%), and right (27.7%) discomfort radiated. Bilateral pain (7.7%), left-side pain (6.9%), and right-side pain (7.7%) all showed comparable amounts.

Disability Level on the Quick DASH Scale: Minimal/No detected primarily in those with left-side pain (9.2%) and right-side pain (10.0%), with fewer instances in those with bilateral pain (6.2%). Participants who experience right-side pain (14.6%) are more likely to have mild disability than those who experience left-side pain (10.8%) or bilateral pain (9.2%). Among individuals, 6.9% reported having right-side pain, 3.8% reported left-side pain, and 5.4% had bilateral pain, indicating a moderate disability.

Individuals with bilateral pain (7.7%), left pain (6.2%), and right pain (6.2%) were equally distributed among those with severe disability. Less prevalent is Extreme Disability, with 0.8% of people experiencing right-side pain and 1.5% of people both bilateral and left-side pain. HADS Scale-Normal Scores: Participants with bilateral pain had somewhat lower scores (8.5%), whereas those with right-side pain (13.1%) and left-side pain (13.1%) were equally frequent. Participants with right-side pain had the highest rate of borderline case (10.8%), followed by those with bilateral pain (6.9%) and left-side pain (5.4%). Case: Participants with bilateral pain (14.6%) and right pain (14.6%) had similar levels, while those with left-side pain (13.1%) had somewhat lower levels.

Table - 6: Frequency distribution of the respondents between pain, disability and depression level

Variable		VAS scale			Total(N%)
		Mild	Moderate	Severe	
Quick DASH scale	Minimal/No disability	3(2.3%)	29(22.3%)	1(0.8%)	33(25.4%)
	Mild disability	3(2.3%)	36(27.7%)	6(4.6%)	45(34.6%)
	Moderate disability	1(0.8%)	14(10.8%)	6(4.6%)	21(16.2%)
	Severe disability	0(0%)	12(9.2%)	14(10.8%)	26(20%)
	Extreme disability	0	3(2.3%)	2(1.5%)	5(3.8%)
HADS scale	Normal	5(3.8%)	35(26.9%)	5(3.8%)	45(34.6%)
	Borderline Case	1(0.8%)	26(20%)	3(2.3%)	30(23.1%)
	Case	1(0.8%)	33(25.4%)	21(16.2%)	55(42.3%)

Pain Severity (VAS Scale) and Mental Health and Disability Association. DASH Disability Scale Quick:(Very little or no disability) most frequently linked to moderate pain (22.3%), mild pain (2.3%), and severe pain (0.8%). The most common category, mild disability, is seen mostly in situations of moderate pain (27.7%), with mild pain (2.3%) and severe pain (4.6%) being less common. Moderate Disability: More common in individuals experiencing moderate pain (10.8%) than in those experiencing severe pain (4.6%) or mild pain (0.8%). The prevalence of severe disability is higher in situations of severe pain (10.8%) and lower in cases of moderate pain (9.2%). Serious handicap was not reported by any subjects who had mild discomfort. Extreme Disability: Seldom documented, with mild pain instances accounting for none, moderate pain for 2.3%, and severe pain for 1.5%. Measure of Hospital Anxiety and Depression (HADS) Normal Scores: Found equally in mild and severe pain cases (3.8%), and mostly in moderate pain cases (26.9%). incidences of borderline pain were primarily seen in people with moderate pain (20%), with mild pain (0.8%) and severe

pain (2.3%) showing fewer incidences. Case: Mild pain contributed minimal (0.8%), whereas moderate pain (25.4%) and severe pain (16.2%) were the most common among subjects.

Table - 7: Frequency distribution of the respondents by depression and disability level

Variable		HADS scale			Total(N%)
		Normal	Borderline Case	Case	
Quick DASH scale	Minimal/No disability	25(19.2%)	7(5.4%)	1(0.8%)	33(25.4%)
	Mild disability	19(14.6%)	18(13.8%)	8(6.2%)	45(34.6%)
	Moderate disability	1(0.8%)	4(3.1%)	16(12.3%)	21(16.2%)
	Severe disability	0	1(0.8%)	25(19.2%)	26(20%)
	Extreme disability	0	0	5(3.8%)	5(3.8%)

Relationship between Mental Health (HADS Scale) and Disability (Quick DASH Scale). Minimal/No Disability: Mostly linked to a normal state of mental health (19.2%). Case was low at 0.8%, while borderline cases made up 5.4%. All HADS categories show mild disability, whereas normal cases (14.6%) and borderline cases (13.8%) had the highest prevalence.6.2% came from case, suggesting some influence on mental health. Moderate Disability: Mostly associated with case (12.3%), with normal cases (0.8%) and borderline cases (3.1%) contributing less.

Severe Disability: Nearly always linked to case (19.2%). There was no significant handicap recorded in normal instances, and borderline cases made up just 0.8% of the total. No examples of extreme disability were connected to normal or borderline case mental health; they were only found in case (3.8%).

Table - 8: Frequency distribution of the respondents by pain and Socio-demographic and Medical related information

Variable		VAS Scale			Chi-square test		
		Mild to no pain	Moderate pain	Severe pain	χ^2	df	P-value
Sex	Male	5(3.8%)	57(43.8%)	15(11.5%)	1.185	2	0.553
	Female	2(1.5%)	37(28.5%)	14(10.8%)			
Type of pain	Constant	2(1.5%)	23(17.7%)	17(13.1%)	11.867	2	0.003**
	Intermittent	5(3.8%)	71(54.6%)	12(9.2%)			
More pain experience	During Work	4(3.1%)	61(46.9%)	20(15.4%)	0.384	2	0.825
	During rest	3(2.3%)	33(25.4%)	9(6.9%)			
History of injury	Yes	2(1.5%)	30(23.1%)	11(8.5%)	0.430	2	0.806
	No	5(3.8%)	64(49.2%)	18(13.8%)			
Impact on work	Yes	3(2.3%)	73(56.2%)	28(21.5%)	11.323	2	0.003**
	No	4(3.1%)	21(16.2%)	1(0.8%)			
Impact on daily living	Yes	3(2.3%)	50(38.5%)	22(16.9%)	5.334	2	0.069
	No	4(3.1%)	44(33.8%)	7(5.4%)			
Take management	Yes	5(3.8%)	77(59.2%)	26(20.0%)	1.658	2	0.436
	No	2(1.5%)	17(13.1%)	3(2.3%)			

0.001=***,0.01=**,0.05=*

The pain severity, as evaluated by Visual Analog Scale (VAS), revealed important findings regarding sex, kind of pain, and pain's influence on work and everyday life. In terms of sex, 43.8% of males and 28.5% of females suffered moderate pain, while 11.5% of males and 10.8% of females reported severe pain. However, the chi-square revealed no statistically significant connection between sex and pain severity ($\chi^2 = 1.185$, $p = 0.553$). There was a significant correlation between pain kind and VAS ratings ($\chi^2 = 11.867$, $p = 0.003^{**}$). Patients experiencing constant pain were more likely to report severe pain (13.1%) than those with intermittent pain (9.2%), whereas moderate pain was reported more frequently in the intermittent pain group (54.6%).

Pain intensity did not change significantly between work and rest ($\chi^2 = 0.384$, $p = 0.825$). Those who reported pain while working showed greater rates of moderate (46.9%) and severe (15.4%) discomfort than those who reported pain when resting (25.4% moderate and 6.9% severe). Similarly, no significant connection was discovered between a history of injury and pain levels ($\chi^2 = 0.430$, $p = 0.806$). Pain intensity was shown to have a significant influence on work ($\chi^2 = 11.323$, $p = 0.003^{**}$). Patients who reported an impact on work had a greater proportion of severe pain (21.5%) than those who had no impact (0.8%). There was a tendency in the impact on daily functioning, with greater rates of severe pain (16.9%) among those reporting a substantial impact, albeit this did not approach statistical significance ($\chi^2 = 5.334$, $p = 0.069$). Pain management methods had no significant relationship with pain levels ($\chi^2 = 1.658$, $p = 0.436$). Patients who sought care had greater rates of moderate (59.2%) and severe (20.0%) pain than those who did not seek treatment.

Table - 9: Frequency distribution of the respondents by BMI and Socio-demographic and Medical related information

Variable	Test Statistic	df	Sig.
BMI between Age group	8.301	5	.140
BMI between sex	9.427	1	.002***
BMI between living area	0.132	2	.936
BMI between marital status	2.762	2	.251
BMI between education level	3.017	4	.555
BMI between occupations	14.909	8	0.61
BMI between any other disease	16.029	4	.003**
BMI between the pain radiation side	.246	2	.884
BMI between duration of pain	2.668	3	.446
BMI between the VAS scale	1.226	2	.542
BMI between the Quick DASH scale	11.797	4	.019*

<0.001=***, <0.01=**, <0.05=*

Both significant and non-significant variations were found in the distribution of BMI across different categories when the Kruskal-Wallis test was used. The distribution of BMI did not significantly differ by age group (BMI = 0.140), dwelling area (BMI = 0.936), marital status (BMI = 0.251), education level (BMI = 0.555), occupation (BMI = 0.061), pain radiation side (BMI = 0.884), duration of pain (BMI = 0.446), or VAS scale (BMI = 0.542). The null hypothesis is not rejected in these instances, as these findings imply that BMI is evenly distributed across these groups.

In several categories, there were notable variations in the distribution of BMI. The test value was 9.427, indicating a significant difference in the BMI distribution between the sexes ($p=0.002$). Significant variations in the distribution of BMI were also linked to the presence of other disorders ($p=0.003$, test statistic = 16.029). Additionally, there was a notable difference in the distribution of BMI among the groups on the Quick DASH scale ($p=0.019$, test statistic = 11.797).

Researcher wanted to determine the prevalence of disability and assess the level of depression among the patients with radiculopathy of the cervical spine. In this investigation of 130 population, the prevalence of disability of cervical radiculopathy patients by QuickDASH. The QuickDASH scale data shows how common and severe upper limb impairment is in people with cervical radiculopathy. 34.6% of individuals reported having a mild disability, which was followed by moderate disability (16.2%), severe disability (20.0%), and extreme disability (3.8%). Of the individuals, 25.4% reported having little to no impairment. According to these results, moderate disability is the most common type of upper limb impairment, however, many people have some degree of it. For cervical radicular pain management, an understanding of the distribution can aid in directing focused therapies and treatment plans. However, when it describes gender, there were significant gender disparities in the distribution of impairment severity. While women were more likely to claim severe (10.8%) and extreme (3.1%) impairments, men were more likely to report mild (24.6%) and moderate (11.5%) difficulties. This implies that, in comparison to men, women often report higher levels of impairment.

By (Moradi et al. 2022, p. 10) comparison, the results with those of patients who have carpal tunnel syndrome (CTS), which investigated the correlation between mental state factors, specifically anxiety, sadness, and discomfort, catastrophizing, and limb dysfunction in patients with cervical region radiculopathy (CR). The QuickDASH questionnaire demonstrated a robust relationship between rising self-reported impairment and higher instances of anxiety, depression, and pain worrying among those with CR. Additionally, there is a noteworthy relation between anxiety and decreased strength and increased pain levels. These results imply that psychological distress has a role in CR patients' reported and objective impairment measurements (Moradi et al. 2022, p. 10). The other case study by (Smith 2022, p. 9) focuses on the treatment for single patient with cervical radiculopathy. Valid instrument for evaluating upper extremity impairment in individuals with cervical radiculopathy is the QuickDASH. A mean score of 47.9 ± 20.5 indicates moderate to severe impairment, according to studies. Moderate association with neck-specific scales and high correlation with the

whole DASH are demonstrated. With a range of 15.91 to 20 points, the least clinically relevant difference (MCID) emphasizes its clinical significance in monitoring patient progress. When it's based on gender "Investigation of Functional Disability, Pain, And Quality of Life in Patients with Cervical Radiculopathy by Gender" by (Apaydin et al. 2024, p. 15) used the Disability Index of Neck (NDI) to measure impairment in patients with neck radiculopathy who are limited functional activity. There were 111 patients in the study, 30 of whom were men (27.02%) and 81 of them were women (72.98%). The results showed that women's quality of life and disability were poorer than men's. In addition, females experienced greater numbness in the upper extremities. Additionally, functional restriction was linked to both pain and activity of life in cervical radiculopathy patients.

In this study, according to the HADS findings, out of 130 subjects, 45 (34.6%) were classed as Normal, 30 (23.1%) as Borderline case, and 55 (42.3%) as cases. According to these results, 42.3% of participants may need therapeutic assistance, indicating that a sizable fraction of them are suffering from high levels of anxiety and despair. In order to treat psychological distress in this population, proactive mental health screening and assistance are necessary, as seen by the high prevalence in the case category. When it is based on gender according to the HADS data, the distribution of males and females within the normal psychological range is comparable. Nonetheless, a greater percentage of men than women are classified as borderline case, suggesting that men experience more mild psychological discomfort. Men and women experience similar rates of severe psychological discomfort (case), however, indicating that both sexes are similarly impacted at more severe levels. This emphasizes the need for focused mental health assistance, especially for men who show early symptoms of anxiety while making sure both sexes receive quality treatment for serious illnesses.

According to the (Ramon-Arbues et al. 2020, p. 7001) research, 18.4% of college students suffer from depression. The MDPI The study found that being under 21 years old, problematic internet use, smoking, sleeplessness, and low self-esteem are all linked to depressive symptoms. Furthermore, there was a substantial correlation between depressed symptoms and not having a stable relationship. Gender and depression, however, did not significantly correlate, according to the research. These results imply that although some characteristics are associated with depression among college students, gender might not be a major predictor of depression in this specific research.

(Mansfield et al. 2023, p. 235) explore a comprehensive review of studies that evaluated depressed symptoms in patients with cervical spine pain, whether or not they had radiculopathy. According to the review, People accompanied neck discomfort or neck soreness with radiculopathy, who also experienced depressed symptoms, had poorer health outcomes. In particular, six research studies revealed no significant correlation, but seven low-quality studies claimed this association. The overall classification of the evidence as 'poor quality' was based on the significant risk of bias and the heterogeneity of the studies. These results imply that, although the evidence is weak, depressed symptoms may have a detrimental effect on health outcomes for people who experience cervical spine discomfort. Because there are many variables affecting patient presentations, clinicians should take these possible correlations into account within a thorough evaluation framework.

HADS was used in the study by (Cabanillas-Barea et al. 2022, p. 2398) to measure psychological distress in female patients suffering from mechanical chronic neck pain (MCNP), tension-type headache (TTH), and cervicogenic dizziness (CGD). A popular tool for identifying patients' anxiety and depressive states is the HADS. According to the study, patients with CGD had greater depression levels than those with TTH and MCNP. In particular, the mean depression score for the CGD group was 6.16 (± 3.82), whereas the mean values for the MCNP and TTH groups were 3.95 (± 3.19) and 4.12 (± 3.12), respectively. Female patients with CGD have greater levels of depressive symptoms than those with MCNP and TTH, according to these statistically significant differences.

In this study based on sex and socio-demographic information, according to the findings, the most of the subjects are between the ages of 31 and 40 (26.2%) and 41 and 50 (23.8%). While women are more prevalent in the 51–60 age group (13.8%), men are more prevalent in the 21–30 age group (16.9%). Male participants (44.6%) exceed female participants (28.5%), and the majority (73.1%) reside in metropolitan regions. With a small male preponderance, a sizable share (87.7%) are married. While girls have greater rates of secondary education (13.8%) and illiteracy (5.4%), males have higher educational attainment in upper-secondary (22.3%) and honors & above (24.6%) levels. While a sizable portion of women (30%) are housewives, men are mostly involved in business and employment.

A investigation by (Shahid et al. 2020, p. 1720) found the prevalence of cervical radiculopathy in individuals in Lahore, Pakistan, who had persistent neck discomfort. In this study, which included 196 patients, the prevalence was greater in girls (68.9%) than in males (31.1%). Age-wise, the group aged 20–30 years had the highest frequency (38.3%), followed by those aged 31–40 years (33.2%) and those aged 41–50 years (28.6%). When the VAS Scale was used to evaluate pain severity, 23.5% of patients said they had no pain, 73.5% said they had severe discomfort, and 3.1% said they had intolerable agony. The Spurling Test revealed that 42.9% of patients tested negative for cervical radiculopathy, whereas 57.1% tested positive. Cervical radiculopathy indicates serious illness that primarily affects women and younger individuals who have persistent neck discomfort.

In this study according to the statistics, the majority of participants (47.7%) fell into the normal weight group, and there were more men (33.1%) than women (14.6%). Obesity was less prevalent (11.5%), mostly in women, but pre-obesity affected 38.5%. In terms of medical illnesses, women were more likely to have multiple diseases (10%) and asthma (7.7%), whereas men were somewhat more likely to have diabetes (6.9%) and hypertension (16.2%). Interestingly, 59.2% of participants, mostly men, did not know their current state of health. A study by Wilson et al., (2017) called "Impact of Elevated Body Mass Index and Obesity on Long-Term Surgical Outcomes for Patients with Degenerative Spinal Myelopathy at the neck. Analysis of a Combined Prospective Dataset" looked at how patients with degenerative cervical myelopathy fared surgically. 757 people with an average BMI of 27.3 kg/m² (± 5.7) were included in the analysis. 3.5% of patients were underweight, 35.8% were normal weight, 36.3% were overweight, and 24.4% were obese, according to the distribution of BMI categories.

According to the findings, a greater BMI was linked to a higher incidence of perioperative issues such dural rips and wound infections. Additionally, hospital expenses and length of stay were greater for obese individuals. The study concluded that, with proper perioperative treatment, obese individuals might still have good surgical results in spite of these obstacles. To improve outcomes for obese patients undergoing spinal surgery, the authors suggested a multidisciplinary strategy that includes bariatric experts, dietitians, and spine surgeons to assist preoperative weight loss plans. On the other hand, in co-morbidities (Nouri et al. 2020, p. 253) study,

patients with cervical radiculopathy frequently had a number of comorbidities, such as hypertension, diabetes mellitus, and hyperlipidemia. When it comes to surgical care and results, these comorbidities are crucial factors. Furthermore, anemia was found in 26.6% of the patients and was strongly linked to worse neurological outcomes. Preoperative neurological function was worse in anemic individuals, and anemia may exacerbate postoperative outcomes or cause recovery delays. The results emphasize that in order to maximize surgical outcomes for patients with cervical spine diseases, thorough preoperative examinations are necessary, including treating comorbidities and anemia.

In this study, regarding pain features and prior injuries, the study discovered significant variations between male and female patients with cervical radiculopathy. While females suffered more protracted pain, especially in the 1-2 year duration group, men reported greater right-sided pain radiated and a higher percentage of short-term discomfort (0-6 months). Intermittent pain was reported by both males and females more often than persistent pain. 33.1% of patients reported having suffered an injury in the past, with somewhat more men than women doing so. Overall, these results point to the necessity for individualized treatment strategies by indicating that male patients often had shorter and more right-sided pain durations, whereas female patients have longer pain durations.

Based on radiating pain by (Wibault et al. 2014, p. 601) the significant of objects (95%) were right-hand dominant, which is consistent with hand dominance trends in the general population, and 92% of the patients had unilateral symptoms, which emphasizes the localized clinical presentation of cervical radiculopathy. These features provide a clear picture of the typical patient profile for cervical radiculopathy and serve as a foundation for customized surgical procedures and rehabilitation plans. Compared with another study in (Hansen et al. 2019, p. 71) investigated the association between the range of pain and several variables in people with long-term neck pain, examples include disability, mental health issues, and neck muscular function. One important finding was that among individuals with non-traumatic chronic neck pain as opposed to those with traumatic chronic neck pain, the degree of discomfort, especially pain radiating to the hand, was more significantly correlated with disability, psychological distress, and reduced neck muscle function. According to the findings, the degree of pain, especially when it spreads to distant places like the hand, maybe a sign of how

severe functional and psychological deficits are. This emphasizes how crucial it is to thoroughly assess pain distribution as it offers vital information about the underlying processes and directs focused treatment approaches. Referring to the entire study is advised for a thorough understanding.

In this study among 130 participants (59.2% male, 40.8% female), most (72.3%) reported moderate pain, with males (43.8%) outnumbering females (28.5%). Severe pain was reported by 22.3%, with similar distribution between men (11.5%) and women (10.8%). Mild pain was the least common (5.4%), with males at 3.8% and females at 1.5%. Overall, males were more prevalent across all Visual Analog Scale (VAS) categories, pain, and moderate pain was the most frequently reported level for both sexes. The VAS validated for use in measuring pain in individuals with cervical spine diseases in the research by (MacDowall et al. 2017, p. 227).

The researchers discovered that higher scores on the Hospital Anxiety and Depression Scale (HADS) and female sex were associated with measurement noise in VAS-neck and VAS-arm scores. Depending on the calculation technique, the minimal clinically significant difference (MCID) for VAS-arm varied from 1.1 - 29.1 mm and for VAS from 4.6 - 21.4 mm. Because it took measurement variability into account, the study found that the minimal detectable change (MDC) technique produced the most accurate MCID results. Another study found that, according to studies, individuals with cervical radiculopathy frequently report high pain VAS levels. A mean baseline VAS score of 6.5, for example, was observed in one study to indicate moderate to severe pain levels before therapy (Tahir et al., 2021). A mean VAS score of 7 during particular provocative movements was observed in another study, underscoring the severity of pain these individuals endured (Anekstein et al. 2012, p. 2568).

Analysis of the relationship between mental health (HADS scale) and disability (DASH scale) and pain severity (VAS scale) shows some interesting patterns. The most prevalent group is moderate pain, which is frequently associated with mild (27.7%), moderate (10.8%), normal mental health (26.9%), and borderline case instances (20%) disorders. Despite being less common, extreme discomfort has an immense effect on psychological as well as physical health, as seen by its substantial correlation with severe impairment (10.8%) and clinical mental health concerns (16.2%). In most cases, mild discomfort is associated with minor impairment and normal mental health. With

moderate pain linked to mild to moderate impairment and severe pain linked to more significant disability and psychological distress, these findings highlight the interaction between pain severity, functional impairment, and psychological health. The outcome highlights the significance of all-encompassing pain treatment techniques that take into account both psychological and functional factors. Individual characteristics linked to neck impairment in patients with CR slated for surgical process were examined by (Wibault et al. 2014, p. 604). They measured pain levels using the Visual Analog Scale (VAS) as part of their investigation. According to the study, increased neck regional impairment shows higher VAS pain levels. This result emphasizes how the degree of pain in this patient population contributes to functional limits.

Also, a study found that between pain severity and disability, in the study by (Wibault et al. 2014, p. 604), Patients with radiculopathy of the neck who had an appointment for a procedure had their pain levels assessed using the Visual Analog Scale (VAS). The results showed a strong correlation between increasing neck impairment and higher VAS scores, which implies greater pain intensity. The effect of pain intensity on functional limits in this patient population is shown by this association. When it comes to depression from pain severity, the Analog Visual Scale (VAS) was used in the study by (Diebo et al. 2018, p. 103) to measure the degree of pain experienced by patients having surgery for cervical upper myelopathy. Individuals with worse mental health had higher preoperative VAS pain levels, which may imply that their pain was more intense. Compared to patients with superior mental health, these individuals continued to have higher VAS scores after surgery, suggesting that mental health status had a major impact on both preoperative and postoperative pain perceptions.

Limitations:

- The study sample consisted of 130 participants, which might limit the generalizability of the findings to broader populations. Larger, more diverse samples could improve the representativeness.
- The study focuses on depression using the HADS scale but does not comprehensively assess other mental health issues such as anxiety or stress, which could also affect disability and pain perception.
- The study was conducted in a specific region, and cultural or contextual factors influencing pain perception and mental health were not explicitly addressed.
- The study does not examine the long-term effects of cervical radiculopathy or the effectiveness of different management strategies on disability and depression, which are critical for comprehensive care recommendations.
- The research person was a fourth-professional B.S.C physiotherapy student. His first work was this thesis. The student's knowledge of techniques and strategies in the research team was inadequate. Therefore, the thesis has several shortcomings.

6.1 Conclusion

Highlights the significant prevalence of disability and depression among patients with cervical radiculopathy. Utilizing tools like the QuickDASH and HADS scales, the ultimate outcome reveal that considerable amount of patients experience mild to severe disability and clinical levels of depression. Gender-specific differences were observed, with women reporting higher levels of disability and severe psychological distress compared to men. These findings emphasize the multifaceted impact of cervical radiculopathy, not only on physical functioning but also on mental health.

The link between pain intensity, impairment, and depression highlights the importance of taking a complete approach to cervical radiculopathy management. The interplay between physical and psychological factors suggests that addressing only one aspect may not yield optimal outcomes. These results call for proactive screening and multidisciplinary interventions tailored to the specific needs of patients.

6.2 Recommendation:

- Healthcare providers should adopt an integrated care model that combines physical rehabilitation, psychological counseling, Medical care concentrates on both the psychological and physical components of cervical radiculopathy.
- Given observed on gender differences, tailored interventions for women experiencing severe disability and psychological distress should be prioritized.
- Regular assessment for anxiety as well as depression with tools like the HADS scale should be incorporated into the care pathway for cervical radiculopathy patients to facilitate early detection and intervention.
- Educating patients about the relationship between pain, disability, and mental health can empower them to engage in self-management and seek timely care.
- Future study will assess the long-term efficacy of integrated therapies on functional and mental wellness aspects in cervical radiculopathy sufferers.
- Rehabilitation programs should involve physiotherapists, psychologists, and medical practitioners to provide holistic care and improve patient outcomes.

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Consent Form

Assalamuaalaikum/ Namashkar,

I am Md Mizanur Rahman, a 4th year student of B.Sc. in Physiotherapy, SAIC College of Medical Science and Technology (SCMST), affiliated with the Faculty of Medicine, University of Dhaka. For the partial fulfillment of my bachelor's degree, I have to conduct a research project and it is a part of my study. My Research title is “**Assessment of Disability and Level of depression among the Patients with Cervical Radiculopathy**”

I do expect that the interview will take 15-20 minutes. I also offer to ask any questions when you feel it is necessary to get insight.

I would like to inform you that this is a purely academic study and will not be used for any other purposes. I assure you that all the data will be kept confidential. Your participation will be voluntary. You may have the right to withdraw your consent and discontinue the study at any time. You also have the right not to answer any other question you dislike about this questionnaire.

If you have any queries about the study, you may contact me (01612967969) or my supervisor Mr. Dr. Shahidul Islam (01671107350), Assistant Professor (Physiotherapy) of Saic College of Medical Science & Technology, Mirpur 14, Dhaka.

So, may I have your consent to proceed with the interview? Yes....., No.....

Signature of the participant & Date.....

Signature of the researcher & Date.....

Signature of the witness & Date.....

Assessment of Disability and level of depression among the patient with cervical radiculopathy

Questionnaire

Part 1: Personal information

1.1 Patients name	
1.2 Address	
1.3 Mobile number	

Part 2: Socio-demographic information

Question	Answer
2.1 Age (In years)
2.2 Sex	Male =0 Female =1
2.3 What is your Living Area?	Urban =0 Semi-urban = 1 Rural =2
2.4 What is your marital status?	Married =0 Single =1 Others =2
2.5 What about your education level?	Illiterate =0 Secondary =1 H.S.C =2 Graduation & above =3
2.6 Occupation

Part 3: Medical information

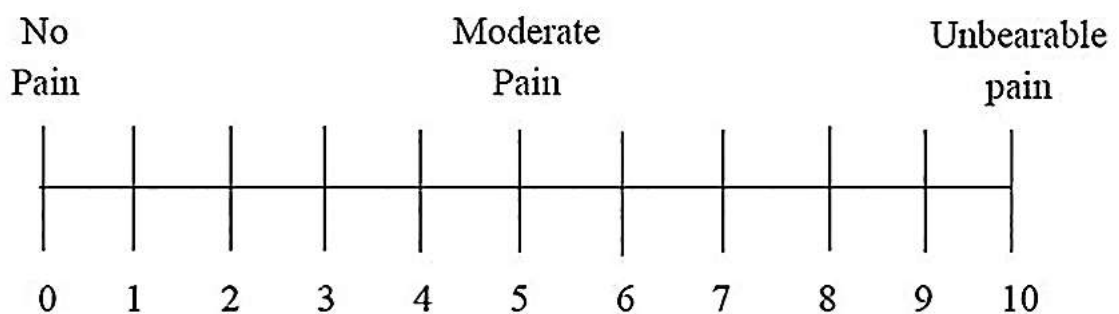
3.1 What is your Height?cm
3.2 What is your Weight?kg
3.3 BMI	0 = Underweight 1 = Normal weight 2 = Overweight 3 = Obesity
3.4 Comorbidities	0 = Hypertension 1 = Diabetes mellitus 2 = Asthma 3 = Don't know

3.5 Have your neck pain?	0 = Yes 1 = No
3.6 Does the pain radiate?	0 = Right 1 = Left 2 = Both
3.7 How long have you been suffering from this pain?	0 = 0- 6 months 1 = 6 months - 1 year 2 = 1- 2 years 3= More than 2 years
3.8 What is the type of pain?	0 = Constant 1 = Intermittent
3.9 When do you experience the pain more?	0 = Working 1 = Rest
3.10 Do you have a history of previous neck injury?	0 = Yes 1 = No
3.11 Is the pain an impact on your work?	0 = Yes 1 = No
3.12 Does the pain impact your activity of daily living?	0 = Yes 1 = No
3.13 Do you take any management for neck pain (medication, physiotherapy, or both)?	0 = Yes 1 = No

3.14 Visual Analogue Scale (VAS)

How severe is your pain on the VAS Scale?

0-10 Vas Numeric Pain Distress Scale



3.15 Quick DASH Scale

	No difficulty	Mild difficulty	Moderate difficulty	Severe difficulty	Unable
3.15.1 Open a tight or new jar.	0	1	2	3	4
3.15.2 Do heavy household chores (e.g., wash walls, and floors).	0	1	2	3	4
3.15.3 Carry a shopping bag or briefcase.	0	1	2	3	4
3.15.4 Wash your back.	0	1	2	3	4
3.15.5 Use a knife to cut food.	0	1	2	3	4
3.15.6 Recreational activities in which you take some force or impact through your arm, shoulder, or hand (e.g., golf, hammering, tennis, etc.).	0	1	2	3	4

	Not at all	Slightly	Moderately	Quite a bit	Extremely
3.15.7 During the past week, to what extent has your arm, shoulder, or hand problem interfered with your normal social activities with family, friends, neighbors, or groups?	0	1	2	3	4

	Not limited at all	Slight limited	Moderately limited	Very limited	Unable
3.15.8 During the past week, were you limited in your work or other regular daily	0	1	2	3	4

activities as a result of your arm, shoulder, or hand problem?					
--	--	--	--	--	--

Please rate the severity of the following symptoms in the last week. (circle number)	None	Mild	Moderate	Severe	Extreme
3.15.9 Arm, shoulder, or hand pain.	0	1	2	3	4
3.15.10 Tingling (pins and needles) in your arm, shoulder, or hand.	0	1	2	3	4
	No difficulty	Mild difficulty	Moderate difficulty	Severe difficulty	So much Difficulty that I Can't sleep
3.15.11 During the past week, how much difficulty have you had sleeping because of the pain in your arm, shoulder, or hand? (circle number)	0	1	2	3	4

3.16 Hospital Anxiety and Depression Scale

Tick the box beside the reply is closest to how you have been feeling in the past week.

Don't take too long over your replies: your immediate is best

Score		Remark
	1. I still enjoy the things I used to enjoy:	
0	Definitely as much	
1	Not quite so much	
2	Only a little	
3	Hardly at all	
	2. I can laugh and see the funny side of things:	
0	As much as I always could	
1	Not quite so much now	
2	Definitely not so much now	
3	Not at all	
	3. I feel cheerful:	
3	Not at all	
2	Not often	
1	Sometimes	
0	Most of the time	
	4. I feel as if I am slowed down:	
3	Nearly all the time	
2	Very often	
1	Sometimes	
0	Not at all	
	5. I have lost interest in my appearance:	
3	Definitely	
2	I don't take as much care as I should	
1	I may not take quite as much care	
0	I take just as much care as ever	
	6. I look forward with enjoyment to things:	
0	As much as I ever did	
1	Rather less than I used to	
2	Definitely less than I used to	
3	Hardly at all	
	7. I can enjoy a good book or radio or TV program:	
0	Often	
1	Sometimes	
2	Not often	
3	Very seldom	

সম্মতি পত্র

আসসালামু আলাইকুম/ নমস্কার,

আমি মোঃ মিজানুর রহমান , ৪র্থ বর্ষের একজন ছাত্র, সাইক কলেজ অব মেডিকেল সাইন্স এন্ড টেকনোলজির, যা ঢাকা বিশ্ববিদ্যালয়ের চিকিৎসা অনুষদের অন্তর্ভুক্ত। আমার স্নাতক ডিগ্রীর আংশিক পরিপূর্ণতার জন্য আমাকে একটি গবেষণা প্রকল্প পরিচালনা করতে হবে এবং এটি আমার অধ্যয়নের একটি অংশ। আমার গবেষণার শিরোনাম "সার্ভিক্যাল রেডিকুলোপ্যাথি রুগীদের মধ্যে অক্ষমতা এবং বিষন্নতা স্তরের মূল্যায়ন" আমি আশা করি যে সাক্ষাৎকারটি ১০-১৫ মিনিট সময় নেবে। আমি আরও প্রস্তাব দিচ্ছি যে, যখন কোন প্রশ্ন গোপনীয় মনে হবে তা আমাকে জানাবেন।

আমি আপনাকে জানাতে চাই যে এটি একটি সম্পূর্ণরূপে একাডেমিক অধ্যয়নের জন্য এবং অন্য কোন উদ্দেশ্যে ব্যবহার করা হবে না। আমি আপনাকে আশ্বাস দিচ্ছি যে সমস্ত তথ্য গোপন রাখা হবে। যে কোন সময় আপনার সম্মতি প্রত্যাহার এবং সাক্ষাৎকার বন্ধ করার অধিকার থাকবে। এই প্রশ্নাবলী সম্পর্কে আপনার অপছন্দের যে কোনো প্রশ্নের উত্তর না দেওয়ার অধিকারও আপনার আছে। গবেষণা সম্পর্কে আপনার কোন প্রশ্ন থাকলে, আপনি আমার সাথে (০১৬১২৯৬৭৯৬৯) অথবা আমার তত্ত্বাবধানকারী জনাব ডাঃ শহীদুল ইসলাম (০১৬৭১১০৭৩৫০), সহকারী অধ্যাপক (ফিজিওথেরাপি), সাইক কলেজ অব মেডিকেল সাইন্স এন্ড টেকনোলজি, মিরপুর-১৪, ঢাকা, এর সাথে সাথে যোগাযোগ করতে পারেন।

তাহলে, সাক্ষাৎকারটি এগিয়ে যেতে আমি কি আপনার সম্মতি পেতে পারি? হ্যাঁ..... না.....

অংশগ্রহণকারীর স্বাক্ষর এবং তারিখ:

আইডি নং:.....

গবেষকের স্বাক্ষর এবং তারিখ:.....

সাক্ষীর স্বাক্ষর ও তারিখ:.....

"সার্ভিক্যাল রেডিকুলোপ্যাথি রুগীদের মধ্যে অক্ষমতা এবং বিষন্নতা স্তরের মূল্যায়ন"

প্রশ্নাবলী

অংশ ১: ব্যক্তিগত তথ্য

১.১ রোগির নাম	
১.২ ঠিকানা	
১.৩ মোবাইল নম্বর	

অংশ ২ : সামাজিক ও ভৌগলিক তথ্য

প্রশ্ন	উত্তর
২.১ বয়স (বয়স)
২.২ লিঙ্গ	পুরুষ=০ মহিলা =১ অন্যান্য=২
২.৩ আপনি কোথায় বসবাস করেন ?	শহর=০ মফস্বল = ১ গ্রাম=২
২.৪ আপনার বৈবাহিক অবস্থা ?	বিবাহিত =০ অ-বিবাহিত=১ অন্যান্য=২
২.৫ আপনার শিক্ষাগত অর্জন ?	কোন শিক্ষা নেই =০ মাধ্যমিক =১ উচ্চমাধ্যমিক =২ সম্মান & অন্যান্য =৩
২.৬ পেশা	

অংশ :৩ চিকিৎসা বিষয়ক তথ্য

৩.১ আপনার উচ্চতা কত?সেঃমিঃ
৩.২ আপনার ওজন কত?কেজি
৩.৩ বি এম আই(BMI)	০= কম ওজন ১= স্বাভাবিক ২ = বেশি ৩= স্থূলতা
৩.৪ অন্যান্য রোগ/কো-মরবিডিটিস	০ = উচ্চরক্তচাপ ১= ডায়াবেটিস ২ =হাপানি ৩=জানিনা
৩.৫ আপনার কি ঘাড়ে ব্যথা আছে ?	০= হ্যা ১= না
৩.৬ ব্যথা কোন দিকে ছড়ায়?	০ = ডানে ১= বামে ২ = উভয়

৩.১৫.৩ একটি শপিং ব্যাগ বা ব্রিফকেস বহন করতে।	০	১	২	৩	৪
৩.১৫.৪ আপনার পিঠ ধুয়ে নিতে।	০	১	২	৩	৪
৩.১৫.৫ খাবার কাটার জন্য একটি ছুরি ব্যবহার করতে।	০	১	২	৩	৪
৩.১৫.৬ বিনোদনমূলক ক্রিয়াকলাপ যেখানে আপনি আপনার বাহু, কাঁধ বা হাত দিয়ে কিছু শক্তি বা প্রভাব নেন (যেমন, গল্ফ, হাতুড়ি, টেনিস, ইত্যাদি)।	০	১	২	৩	৪

	একেবারেই না	সামান্য	পরিমিত ভাবে	খুব সামান্য	অনেক বেশি
৩.১৫.৭ গত সপ্তাহে, আপনার বাহু, কাঁধ বা হাতের সমস্যা কতটা পরিবার, বন্ধুবান্ধব, প্রতিবেশী বা গোষ্ঠীর সাথে আপনার স্বাভাবিক সামাজিক কার্যকলাপে হস্তক্ষেপ করেছে?	০	১	২	৩	৪

	মোটের উপ সীমাবদ্ধ নয়	সামান্য সীমিত	মাঝারি সীমিত	খুব সীমিত	অক্ষম
৩.১৫.৮ গত সপ্তাহে, আপনার বাহু, কাঁধ বা হাতের সমস্যার ফলে আপনি কি আপনার কাজ বা অন্যান্য নিয়মিত দৈনন্দিন কার্যকলাপে সীমাবদ্ধ ছিলেন?	০	১	২	৩	৪

গত সপ্তাহে নিম্নলিখিত লক্ষণগুলির তীব্রতা অনুগ্রহ করে রেট করুন। (বৃত্ত নম্বর)	না	হালকা	পরিমিত	গুরুতর	অত্যন্ত বেশি
৩.১৫.৯ বাহু, কাঁধ বা হাতে ব্যথা।	০	১	২	৩	৪
৩.১৫.১০ আপনার বাহু, কাঁধ বা হাতে টিংলিং (পিন এবং সঁচ) অনুভূত হওয়া।	০	১	২	৩	৪

	কোন অসুবিধা নেই	হালকা অসুবিধা	মাঝারি অসুবিধা	গুরুতর অসুবিধা	এত কষ্ট যে আমি ঘুমাতে পারি না
৩.১৫.১১ গত সপ্তাহে, আপনার বাহু, কাঁধ বা হাতে ব্যথার কারণে আপনার ঘুমাতে কতটা অসুবিধা হয়েছে? (বৃত্ত নম্বর)	০	১	২	৩	৪

৩.১৬ হাসপাতালের উদ্বেগ ও বিষন্নতার স্কেল (HADS Scale)

উত্তরের পাশের বাক্সে টিক দিন। আপনি গত সপ্তাহে কেমন অনুভব করছেন তার সবচেয়ে কাছাকাছি।
আপনার উত্তরগুলির জন্য খুব বেশি সময় নেবেন না: তৎক্ষণাৎ উত্তরই সেরা

স্কেল	আমি এখনো উপভোগ করি যা আগেও করতাম	চিহ্ন (✓)
০	অবশ্যই অনেক বেশি	
১	খুব বেশি না	
২	সামান্য	
৩	মোটাইনা	
	আমি হাসতে পারি এবং মজার বিষয়গুলি দেখতে পারি	
০	পর্যাপ্ত যা সবসময় করি	
১	খুব বেশি না	
২	অবশ্যই খুব বেশি না	
৩	মোটাইনা	
	আমি প্রফুল্ল অনুভব করি	
৩	মোটাইনা	
২	খুব কম সময়	
১	মাঝে মাঝে	
০	বেশিরভাগ সময়	
	আমার মনে হয় যেন আমি ধীরগতির হয়ে গেছি	
৩	বেশিরভাগ সময়ই	
২	খুব মাঝে মাঝেই	
১	মাঝে মাঝে	
০	মোটাই না	
	আমি আমার চেহারাতে আগ্রহ হারিয়ে ফেলেছিঃ	
৩	স্পষ্টভাবে	
২	যতটা যত্ন নেয়া উচিত ততটা করিনা	

১	যতটা যত্ন নেয়া উচিত এর বেশি না	
০	আমি আগের মতই যত্ন নেই	
	আমি উপভোগ করার বিষয়গুলোর দিকে অগ্রসর হচ্ছিঃ	
০	আগের মতই যথেষ্ট পরিমাণে	
১	আগের তুলনায় কম	
২	আমি আগে থেকেই স্পষ্টভাবে কম	
৩	কঠোরভাবে কম	
	আমি একটা ভাল বই, রেডিও বা টিভির অনুষ্ঠান উপভোগ করতে পারিঃ	
০	প্রায়ই	
১	মাঝে মাঝে	
২	প্রায়ই না	
৩	খুব কদাচিৎ	

04-07- 2024

To

The unit incharge (Physiotherapy),

Ibn sina D-Lab, Keraniganj

House: Maa Plaza, Kadamtoli , Keraniganj, Dhaka-1310.

Subject: Prayer for permission to collect data from Ibn sina D-lab, Keraniganj to conduct a research project.

Sir,

With due respect and humble submission to state that, I am a student of B.Sc. in Physiotherapy at SAIC College of Medical Science and Technology, Mirpur-14, Dhaka. As a part of our course curriculum, we have to conduct a research project for the degree of B.Sc. in Physiotherapy. My research title is "Assessment of Disability and Level of Depression among the Patients with Cervical Radiculopathy" and the aim of the study is to assess the disability and depression level in individuals diagnosed with cervical radiculopathy. This is a cross-sectional study under the supervision of Md. Shahidul Islam, Assistant professor of Saic college of Medical Science and Technology, Mirpur-14, Dhaka-1216. I have chosen sina D-lab, Keraniganj as a site for data collection.

So, I, therefore, pray and hope that you would be kind enough to give permission for data collection that will help me to complete my study.

Yours Faithfully

Md. Mizanur Rahman

Student of B.Sc. in Physiotherapy

Session: 2018 -2019

Reg No: 10437

SAIC College of Medical Science and Technology (SCMST)

Mirpur-14, Dhaka 1216, Bangladesh.

Azadika
4-7-24
Wazed Arif Siddiki
Unit Incharge
Ibn Sina D-Lab, Keraniganj
Ahmed

14-07- 2024

To

The Managing Director

Agrani Specialised Physiotherapy Center

House:U-64, Norjahan Road,Mohammadpur, Dhaka-1207

Subject: Prayer for permission to collect data from Agrani Specialised Physiotherapy Center to conduct a research project.

Sir,

With due respect and humble submission to state that, I am a student of B.Sc. in Physiotherapy at Saic College of Medical Science and Technology ,Mirpur-14, Dhaka. As a part of our course curriculum, we have to conduct a research project for the degree of B.Sc. in Physiotherapy. My research title is "**Assessment of disability and level of depression among the patients with cervical radiculopathy**" and the aim of the study to assess the disability and depression level in individuals diagnosed with cervical radiculopathy. This is a cross sectional study under the supervision of Dr. Md. Shahidul Islam (PT),Assistant proffesor of Saic college of Medical Science and Technology,Mirpur-14,Dhaka-1216.I have chosen Agrani Specialised Physiotherapy Center as a site of data collection.

So, I therefore pray and hope that you would be kind enough to give permission for data collection that will help me to complete my study.

Yours Faithfully

Md. Mizanur Rahman

4th Year Student of B.Sc. in Physiotherapy

Session: 2018 -2019

Saic College of Medical Science and Technology (SCMST)

Mirpur-14, Dhaka 1216, Bangladesh.

Allow

[Signature]

21/08/24.
Dr. Sapia Akter (P.T)
BSPT, MScPT-CRP (DU)
(Cyriax Concept) Belgium,
Diploma in Orthopedic Manipulation Therapy
Pain & Manipulation Therapy Specialist

SCMST-BPT/IRB/.....05-23/029

To
Md. Mizanur Rahman
4th Year Student of B.Sc. in Physiotherapy
Session:2018-2019, Reg No:10437
SAIC College of Medical Science & Technology (SCMST)
Mirpur-14, Dhaka-1216, Bangladesh

Subject: Approval of the thesis proposal “Assessment of Disability and Level of Depression among the patients with Cervical Radiculopathy” by the ethics committee.

Dear Md. Mizanur Rahman
Congratulations.

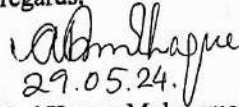
The Institutional Review Board (IRB) of SCMST has reviewed and discussed your application to conduct the above-mentioned dissertation, with you, as the principal investigator. The following documents have been reviewed and approved:

Sr. No.	Name of the Documents
1	Dissertation Proposal
2	Semi-structured questionnaire (English and Bangla version)
3	Information sheet & consent form.

The purpose of the study to assessment of disability and level of depression among the patients with cervical radiculopathy. The study involves face-to-face interviews using a semi-structured questionnaire assessment of disability and level of depression among the patients with cervical radiculopathy that may take 30 to 40 minutes to fill in the questionnaire and there is no likelihood of any harm to the participants. The Ethics committee members have approved the study to be conducted in the presented form at the meeting held at 09.00 AM on 28th September 2023 at SCMST.

The institutional Ethics committee expects to be informed about the progress of the study, any changes occurring during 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 according to the Nuremberg Code 1947, the World Medical Association Declaration of Helsinki, 1964 - 2013, and other applicable regulations.

Best regards,


29.05.24.

Dr. Abul Kasem Mohammad Enamul Haque
Principal, SCMST & Chairman, Institutional Review Board (IRB)
SAIC College of Medical Science & Technology (SCMST)
Mirpur-14, Dhaka-1216, Bangladesh

Appendix- D

Gant Chart

Activities/ months	Sep 23	Oct 23	Nov 23	Dec 23	Jan 24	Feb 24	Mar 24	Apr 24	May 24	June 24	July 24	Aug 24
Proposal presentation												
Introduction												
Literature review												
Methodology												
Data collection												
Data Analysis												
Result												
1st progress presentation												
Discussion												
Conclusion And Recommendation												
2nd progress presentation												
Communication with supervisor												
Final submission												