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Characteristics and associated factors of kinesiophobia for the patients with chronic neck pain

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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for acceptance of this dissertation entitled, **"Characteristics and associated factors of kinesiophobia for the patients with chronic neck pain"** Submitted by **Khadiza Akter**, for the partial fulfillment of the requirement for the degree of Bachelor of Science in Physiotherapy (BSc. in PT).

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Declaration

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

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Acronyms

ACDF	Anterior Cervical Discectomy and Fusion
CBT	Cognitive Behavioral Therapy
CMP	Chronic musculoskeletal pain
CNP	Chronic Neck Pain
CRP	Centre for the Rehabilitation of the Paralysed
FAM	Fear Avoidance Model
ISAP	International Association for the Study of Pain
JPE	Joint Position Error
NDI	Neck Disability Index
PCI	Percutaneous Coronary Intervention
QOL	Quality of life
ROM	Range of Motion
TSK	Tampa Scale of Kinesiophobia
VAS	Visual Analogue Scale

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Abstract

Background: Long-term neck pain is a familiar condition that mostly contributes to kinesiophobia or fear of movement. It is the fear that can restrain physical activity as well as create some obstacles on the road of recovery. It is worthwhile to know the exact beliefs leading to kinesiophobia so that it can be treated better, however, total scores are employed in most studies. In this research, the researchers investigate the kinesiophobia issues within individuals who have chronic neck pain. **Objectives:** To identify the characteristics and associated factors of kinesiophobia of chronic neck pain patients. **Methodology:** A cross sectional study design was selected to assess 113 chronic neck pain participants using a convenient sampling method at the Musculoskeletal Unit of Physiotherapy Department at Centre for the Rehabilitation of the Paralysed (CRP), Savar, Data collection involved face to face interview through a semi structured questionnaire which include socio demographic questions, pain related questions using modified Dutch Musculoskeletal Questionnaire, pain intensity measurement using visual Analogue Scale, Tampa Scale for Kinesiophobia, Neck Disability Index scale. **Result:** Higher kinesiophobia was 72.6 percent among the 113 participants. Majorities of the participants experienced moderate (56%) and severe (20.4%) neck disability. There was a strong correlation between some of the items of the TSK and certain complaints. As an illustration, the assumption, according to which exercise is associated with the alleviation of pain, was strongly correlated with the inability to stand up and maintain static positions. the signals to stop exercise due to pain were linked with heavy loading, gender and exercise status. There was however no significant association between individual TSK items and general level of pain or disability. An important relationship between disability level and total kinesiophobia level or the intensity of pain was not noted. **Discussion:** The results indicate that kinesiophobia may not associate to a greater degree with total disability or pain measures, rather, fear-based beliefs are strongly linked to certain functional limitations where the limitations concerned lifting, posture tolerance and disturbances in sleep. Such associations based on different beliefs may be used to inform more individualized interventions to assist patients with chronic neck pain.

Key words: *Chronic neck pain, Kinesiophobia, Characteristics, Associated factor*

Chapter- i: Introduction

1.1 Background

Neck pain is a common musculoskeletal ailment defined by discomfort or soreness experienced in the area between the superior nuchal line and the spinous process of the first thoracic vertebra, frequently radiating to the head, trunk, and upper limbs under specific conditions (Fandim et al., 2021). Neck discomfort can be classified as either non-specific or complicated. Non-specific neck pain may arise from mechanical reasons, such acceleration-deceleration injuries in motor vehicle collisions, or from postural mechanisms. Furthermore, complex cervical spine pain may present with neurological symptoms, such as radiculopathy or myelopathy (Berger et al., 2021). Additionally, neck pain can be classified as either acute or chronic. Acute neck soreness may endure for weeks to months; however, it generally diminishes after a few days. Chronic neck pain endures for more than 3 to 6 months and remains unresolved after the acute phase; around 50% to 85% of patients with acute neck pain ultimately develop chronic neck pain (Goode et al., 2010). The etiology of neck discomfort is multifarious. Mechanical neck discomfort is considered to be caused by trauma, neck movements, sustained neck positions (Cohen et al., 2015).

Various risk factors and causes may lead to neck pain, such a s poor posture, female sex, elevated occupational demands, and old age (Kim et al., 2018). Neck discomfort is a common musculoskeletal condition in adults, with a global frequency ranging from 16.7% to 75.1%. This condition possesses a multifaceted etiology, encompassing various factors: ergonomic (strenuous physical activity, exposure to force and vibration, poor posture, repetitive motions), individual (age, body mass index, genetic predisposition, history of musculoskeletal pain), behavioral (smoking and physical activity levels), and psychosocial (job satisfaction, stress, anxiety, and depression) (Genebra et al., 2017). Neck pain symptoms may include general aches and discomfort, perhaps presenting as postural fatigue in the neck, shoulders, and arms, or as chronic pain in the soft tissues surrounding the neck and shoulders (Hakala et al., 2006). Due to their harmful lifestyle, stress, and poor posture while working and studying, individuals frequently assume a forward-bent position

with their heads lowered at their desks, leading to muscle and ligament relaxation and strain, cervical spine instability, cervical nerve compression, reduced blood circulation, and carotid artery stimulation. Individuals with severe disease may encounter cervical degeneration, developmental cervical spinal stenosis, and further symptoms, which affect their academic and professional endeavors (Kazeminasab et al., 2022).

Chronic neck pain, a musculoskeletal illness, is a common condition that results in reduced motor function of the cervical muscles. Impairment in cervical muscle motor output results in reduced strength and endurance, along with morphological changes such as atrophy and fat infiltration, hence affecting cervical muscle function (Blomgren et al., 2018). In individuals with chronic neck pain, muscle tone increases as a defensive response, potentially reducing cervical range of motion (ROM). Alongside limitations, the function of deep and painful muscles declines due to changes in neuromuscular control, whilst superficial muscle activity increases to compensate. Decreased flexor muscle strength and reduced deep extensor muscle activation may affect cervical spine stability and result in pain recurrence (Schomacher et al., 2012). The International Association for the Study of Pain (IASP) categorizes chronic neck pain into three mechanical pain types: nociceptive, neuropathic, or nociplastic. Nociceptive pain arises from actual or potential tissue injury, neuropathic pain stems from a lesion or dysfunction of the nervous system, and nociplastic pain is triggered by changed nociception without tissue damage (Nicholas et al., 2019).

Chronic pain is an unpleasant sensory and emotional experience that can negatively influence an individual's behavior and well-being, greatly affecting their personal and professional life. Furthermore, neck discomfort, akin to any persistent pain, might have a psychological impact that disrupts everyday activities and exacerbates the disease (Elbinoune et al., 2016). Individuals afflicted with chronic neck pain encounter restrictions and a reduced quality of life due to many difficulties pertaining to both physical and mental health, including anxiety and depression. The psychological factors contribute to the persistence of symptoms and may lead to increased discomfort, disability, or fear-avoidance in the individual. The severity of discomfort, in conjunction with the individual's functional capacity, may affect their perception of neck issues (Liu et al., 2018). The point prevalence of neck discomfort rises with age, peaking at 45-49 years for females and 50-

54 years for males (Safiri et al., 2020). A significant proportion of patients (37–47%) continue to feel neck pain one year following the onset of their symptoms (Sterling et al., 2019). In numerous nations, cervical pain is a predominant cause of illness and impairment in both occupational and daily activities (Hoy et al., 2014).

Chronic neck pain (CNP) is a debilitating condition affecting the entire population. Carvalho et al. (2018) assert that it can adversely impact quality of life, diminish productivity, and complicate daily activities. Chronic neck pain impacts 50% to 85% of individuals (Haldeman et al., 2010). Musculoskeletal neck discomfort, affecting 4% to 40% of children and adults, exhibits varying prevalence among the youth. In recent decades, the prevalence of teenagers reporting cervical pain or discomfort has significantly escalated, increasing from 22.9% to 29.5% (Lundberg et al., 2009; Hapidou et al., 2012). Chronic neck pain is a prevalent musculoskeletal condition that causes motor alterations in the cervical region and associated tissues, hence influencing an individual's physical and psychological behavior (Luque-Suarez et al., 2019). Studies on the cervical spine demonstrate that psychological factors, including anxiety, depression, kinesiophobia, and catastrophizing, are associated with chronic neck pain (Hill et al., 2007; Mantyselka et al., 2010).

Fear is a significant element in understanding the progression from acute pain to chronic pain and the continuation of pain and disability after tissue injury has healed (Leeuw et al., 2007; Turk et al., 2010). The intense fear of mobility, known as the fear-avoidance model (FAM), is linked to the development of avoidance behavior, leading to physical deconditioning (inactivity or disuse) and increased impairment. The FAM has clarified the impact of psychological aspects, including kinesiophobia, on the chronicity and disability of musculoskeletal patients (Gerrits et al., 2014; Remes et al., 2016). The fear-avoidance paradigm asserts that acute pain can trigger a cycle of chronic impairment and misery arising from cognitive, emotional, behavioral, and functional reactions (Crombez et al., 2012). Larsen et al. (2016) contend that seeing a painful occurrence as menacing may lead to catastrophic thinking regarding the likelihood of further pain and harm during physical exercise.

Luque-Suarez et al. (2019) define "kinesiophobia" as an irrational and escalating dread of movement and physical activity, stemming from the belief that such actions may lead to injury or re-injury. Individuals with kinesiophobia refrain from engaging in activities that may induce pain or lead to re-injury. Individuals may have apprehension and uncertainty concerning the degree to which the damage may impact their future functioning (Osterberg et al., 2013). Individuals with chronic pain exhibit a kinesiophobia prevalence ranging from 50% to 70% (Larsson et al., 2014). Unpleasant experiences, such as pain or trauma, and social learning, which includes observation and instruction, are the two methods via which it can be acquired. Kinesiophobia may be associated with pain and its related effects, such as disability and quality of life, in several manners. Kinesiophobia initially modifies an individual's gait, likely as a means to evade discomfort. It induces alterations in motor behavior, influencing the execution of tasks related to pain management and control, as well as pain-associated impairments (Karos et al., 2017). Secondly, individuals with chronic musculoskeletal pain may interpret kinesiophobia in relation to their processing of pain and pain-related information (Malfliet et al., 2017). Vlaeyen and Linton (2012) assert that kinesiophobia exacerbates impairment and fosters hypervigilance, hence intensifying the perception of pain.

Individuals suffer with kinesiophobia experience both psychological and physical detrimental effects. Prolonged avoidance or avoidance behaviors might adversely affect rehabilitation outcomes over time, leading to psychological stress, impairment, and disuse (Luque-Suarez et al., 2018; Can et al., 2019). They may adversely affect exercise adherence and rehabilitation motivation (Tan et al., 2023). Avoidance behavior in kinesiophobia may lead to functional impairment, work absenteeism, and restrictions in social and recreational activities, perhaps resulting in generalized withdrawal and depressive disorders that could adversely affect quality of life. The recurrence of cervical discomfort and anomalies in the somatosensory system may be induced by kinesiophobia and catastrophic behaviors (Reddy et al., 2020). These modifications may affect cervical afferent input to the higher centers, potentially impairing cervical proprioception and necessitating a comprehensive investigation (Tedla et al., 2019). Previous research indicates that individuals with chronic neck pain may struggle or be unable to do functional tasks (Lehman et al., 2018; Alahmari et al., 2019). Kinesiophobia may hinder persons' ability to operate normally, hence

diminishing their quality of life (De Vroey et al., 2020; Reddy et al., 2021). Kinesiophobia may lead to decreased functional ability due to exercise avoidance, resulting in reduced mobility and chronic pain (De Vroey et al., 2020).

Vlaeyen and Linton (2012) assert that kinesiophobia exacerbates impairment and fosters hypervigilance, hence intensifying the perception of pain. Researchers have consistently investigated the relationship between neuromuscular control and kinesiophobia, defined as the fear of movement, to elucidate the interplay between psychological and physical aspects of pain. In this context, other concepts have been suggested (Hodges et al., 2015). Alongside alterations in physical activity levels, the precise abnormalities in physical function exhibited by individuals with neck discomfort may be affected by a fear of movement. The clinical trajectory and treatment outcomes are affected by many cognitive, emotional, behavioral, and functional consequences of chronic pain (Linton and Shaw, 2011; Giusti et al., 2020; Varallo et al., 2021). Kinesiophobia may obstruct the recovery process for those with sub-acute neck discomfort. Kinesiophobia was observed to correlate with recovery during physical treatment (Thompson et al., 2010).

1.2 Rationale:

Chronic neck pain usually is considered to be a persistent neck pain, which exceeds a period of three months. It is a debilitating musculoskeletal disorder which often results in disability and impairs the quality of life. Conversely, kinesiophobia; is an irrational, unreasonable and disabling fear of physical movement and exercise due to the fear of painful injury or fear of reinjure. Patients tend to skip physical activity without realizing the reasons of their fear or even realizing that such attitude leads to the development of further stiffness, muscular weakness and permanent disability. The unawareness and low levels of knowledge on the psychological factors of pain that include fear-avoidance beliefs can postpone the correct intervention and healing. Determining the nature of kinesiophobia and the factors related to it is thus critical in having insights as to why, some people develop persistent pain and functional disability even on the absence of serious body injury. The aim of the present study is to examine the characteristics and factors that are associated to kinesiophobia. Through the study of individual beliefs, the research will offer a better understanding of how specific thoughts and fears affect day-to-day operations in the people with chronic neck pains. The necessity of addressing this knowledge gap and to provide the evidence that could be used to enhance screening, prevention, and rehabilitation of patients with chronic neck pain therefore influences the necessity of this study. Additionally, the knowledge of such relationships can also help develop a specific intervention that will involve not only the physical aspects of chronic pain but also its psychological ones. Furthermore, up till now none of the study has been examined to this area in Bangladesh. This is the reason why I have interest in conducting this research.

1.3 Research question:

What are the characteristics and associated factors of kinesiophobia for the patients with chronic neck pain?

1.4 Objectives:

General objectives:

To identify the characteristics and associated factors of kinesiophobia for the patients with chronic neck pain.

Specific objectives:

1.To assess the sociodemographic information.

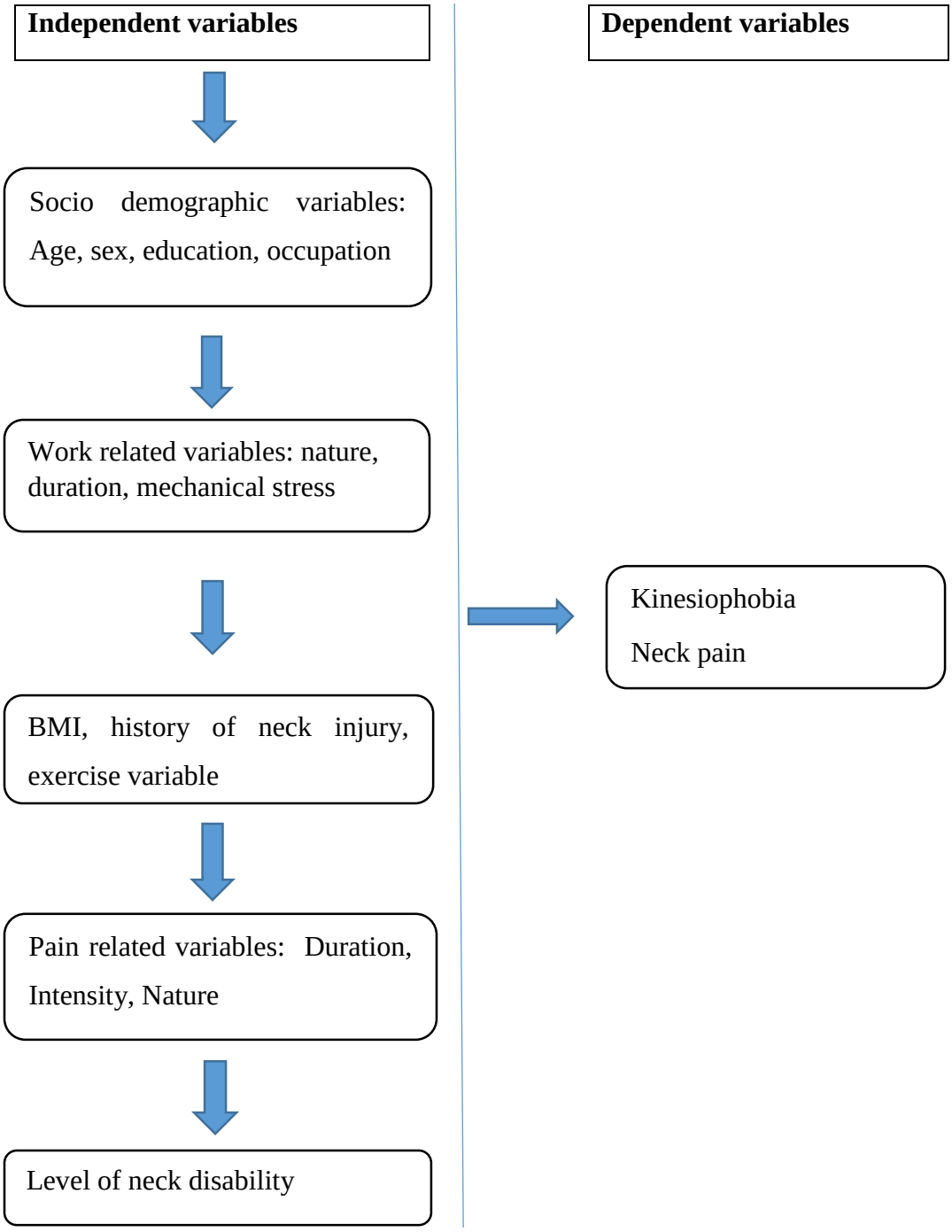
2.To assess the pain intensity, kinesiophobia level and neck disability level.

3.To find out the characteristics of kinesiophobia.

4.To identify the association between sociodemographic factors, pain intensity, neck related musculoskeletal complaints and disability with kinesiophobia items.

5.To identify the association among pain intensity, neck disability with kinesiophobia level.

1.5 Conceptual framework:



1.6 Operational definition:

Pain:

The International Association for the Study of Pain evaluated that the definition of pain could be described as being the unpleasant sensory and emotional experience that relates to actual or potential physical damage or arises when such harm occurs. It is categorized in two, acute pain and chronic pain. Acute pain informs the patient of tissue injury by functions of an adaptive warning system that motivates individuals to resolve the cause of pain and develop protective strategies to the area as well as reduce the incidence of similar cases. Chronic pain is persistent pain that lasts three months and longer and it is more complex than the acute pain. The situation of chronic neck pain is ongoing without constant tissue destruction but with many factors of physical and mental conditions.

Neck pain:

The neck pain is any form of discomfort and pain around and within the neck region. Muscles, bones, ligaments, nerves of cervical spine may be affected in the neck pain. It is one of the most widespread issues that cause discomfort together with limited mobility. The causes of neck pain are poor posture, long sitting, standing, any injury or traumatic changes in the neck area, any degenerative pathology, herniation of the disc. This pain may also extend to shoulder or arm and hand.

Chronic neck pain:

In case the pain affecting the neck region persists beyond 12 weeks, it gets referred to as chronic neck pain. Chronic pain involves the presence of constant or recurrent pain in the neck region accompanied by muscle spasm, restricted moving range, tingling, numbness or weakness of the arms and hands in case the nerves are involved. That could have a major effect on everyday living such as sleeping, working, and the quality of life.

Kinesiophobia:

The word kinesiophobia implies that one is terrified of moving or physical action. It usually springs out of a notion that he or she may get injured or re-injured in case they attempt to exercise. It has been mostly noticed in the persons who are recovering after injuries, long-

time pain or surgeries. The fear forms an avoidance behavior that makes an individual physically inactive and slows down the healing process.

Disability:

Disability is physical, mental or emotional impairments, which limits the capability of undertaking daily activities. The impairments associated with chronic neck pain are the restrictions in the movements of the neck and the complication of the lifts and driving or sleep tasks and the reduced involvement in the social or working activities. This aspect is measured with the help of the Neck Disability Index (NDI) measurements provided by health experts.

Chapter-ii: Literature Review

Neck pain is a widespread condition posing significant challenges to diagnosis, prognosis, and management due to which millions of people all over the world are affected. The condition is characterized by the presence of neck discomfort with or without the radiating pain to one or both upper extremities, which persists at least one day (Hoy et al., 2010). The duration of neck pain may be classified as chronic, acute and subacute neck pain. Chronic neck pain is persistent or recurring and lasts at least three months or more. It has an adverse impact on the quality of life, physical and psychological functionality of people, and is the primary cause of disability and commonly hard to treat. It is known that about 67 percent of individuals across the globe will have neck pain at one point in their lives, with 20 percent of them acquiring chronic neck pain (Wang et al., 2022). Acute neck pain may develop into chronic one, and the severity of pain and disability early in the course of illness are associated with critical prognostic signs, whereas different structural features, including angular abnormalities, produce equivocal results (Walton et al., 2013). The factors that contribute to neck pain include overuse of electronic devices, poor posture as well as occupational demands (Alabdulkarim et al., 2022).

Musculoskeletal pain is prevalent in society, primarily encompassing discomfort in the back, neck, and shoulders, with cervical pain ranking as the second most common handicap, while mechanical back pain is the most prevalent. The prevalence of neck pain is steadily increasing, attributed to a sedentary lifestyle (Waqas et al., 2016). Neck pain ranks as the fourth primary cause of disability, with an annual prevalence rate over 30%. The majority of acute neck pain episodes will resolve with or without intervention; however, approximately 50% of individuals will persistently endure some level of discomfort or recurrent episodes (Cohen et al., 2015).

The projected 1-year prevalence of neck pain was 45.5% in office workers and varied from 45.8% to 54.7% in healthcare practitioners. Neck pain can lead to reduced work hours, diminished engagement in recreational activities, and sleep disturbances (Chan et al., 2020). In 50%–85% of patients with neuropathic pain, symptoms do not fully diminish, and 47% of individuals with baseline neuropathic pain may acquire chronic symptoms.

Patients with chronic complaints frequently exhibit a lack of response to treatment, resulting in significant direct and indirect costs (Farooq et al., 2018). In 2016, low back and neck pain ranked top in health care expenditures among 154 conditions in the United States, totaling over $134.5 billion. In 2012, neck pain caused workplace absenteeism for 25.5 million Americans, resulting in an average of 11.4 days of lost work. In 2017, the global age-standardized prevalence and incidence rates of neck discomfort were 3551.1 and 806.6 per 100,000, respectively (Kazeminasab et al., 2022).

Chronic neck pains are a multifactorial disease which in most cases arise as a result of an interaction of both degenerative changes, accidents and psychological issues (Schofferman et al., 2007). CNP does not only cause functional deficiency, i.e., decreased mobility and muscular weakness but also affects respiratory capacity, which requires the introduction of multifactorial approaches that would include both musculoskeletal and respiratory manifestations (Nair et al., 2022). CNP patients display inappropriate pain cognitions as well (fear of movement, pain catastrophizing and hypervigilance). These cognitive factors have been identified in earlier studies, and exist in relation to pain intensity and disability of the patients with CNP. The ability of patients with chronic pain to think is lower than of the normal population, and alterations lay in the emotional components of pain more than actual pain. It has been mentioned in the studies that fear and avoidance of movement remain the most effective variables to forecast chronic musculoskeletal pain in 6 months (Javdaneh et al., 2021).

Kinesiophobia defined as fear of movement by anticipating pain or re-injury is indeed a free issue among people with chronic neck pain (CNP). It is closely associated with more severe neck pain and proprioceptive errors in joint positions, especially in extension and rotation, and unfavorably associated with functional activity, which is indicated by decreased handgrip strength (Asiri et al., 2021). Such fear of movement is not a unique aspect of CNP and it is also found in other conditions like chronic non-specific low back pain (CNSLBP) where it relates to high levels of pain intensity, low self-efficacy and high disability causing avoidance behaviours and poor rehabilitation outcomes (John et al., 2023). Kinesiophobia in the case of Parkinson is associated with reduced exercise, disbalance, and increased fear of falling, which aggravates the management of the disease (Oguz et al., 2023). Kinesiophobia, is considerably linked to a number of factors among

diverse patients. In people with musculoskeletal diseases, the prevalence was noted to be 48.3 percent, where obesity, severity of pain, physical inactivity, anxiety, and depression were reported to be significant factors (Mekonnen et al., 2025). In patients with persistent non-specific low back pain, elevated kinesiophobia was associated with diminished self-efficacy, increased pain intensity, and greater disability (John et al., 2023). Kinesiophobia in heart failure patients was associated with musculoskeletal discomfort, quality of life, sleep quality, and disability, highlighting the complex nature of this fear (Sentandreu-Mano et al., 2024).

Numerous studies have examined the connection between neuromuscular control and kinesiophobia, or the dread of movement, in individuals who are in pain in order to comprehend the interdependence of psychological and physical factors. Various theories have been put out in this regard (Hodges et al., 2015). According to the fear-avoidance model, movement avoidance, deconditioning, and eventually impairment is caused by a fear of movement and catastrophic thoughts. In individuals with neck pain, it has been demonstrated that fear of movement modulates the associations between disability, pain intensity, and catastrophizing; however, it is unclear how movement avoidance and deconditioning may interact (Demirbuken et al., 2016). In addition to the increase and decrease level of physical activities, patients with neck pain commonly have various changes in physical functions such as limited range and speed of motions, variability and smoothness of motions, changes in proprioception and neck muscles strength, which all may be altered due to fear of movement (Devecchi et al., 2022).

Patients with chronic pain tend to have kinesiophobia pre-dominance of between 50 and 70 percent of them and men seem to be affected more than women. It is hardly relevant to every kind of physical activity and only some movements can be considered. We can give an example of such conditions, this is the extension of the neck in patients after whiplash, overload in patients with an impingement syndrome of the shoulder, or forward bending with a patient with low back pain. Although such movements might have induced pain during the subacute stage, the movements are safe to be conducted during the chronic stage. The brain has developed a long-term memory of pain and thus according to this memory will associate these movements or simply the preparation of such movements with danger or threat. Such preventative actions could continue to expect pain to come but not react to

it. Fear of pain or (re) injury thus comes to mediate avoidance of movement and functional activity and the net outcome is disuse and inability (Castanho et al., 2021).

Kinesiophobia has been measured in a variety of patient groups (e.g., chronic low back pain, chronic fatigue syndrome) and it has been found related to greater pain, physical disability, and even psychological disability. Limited experimental evidence indicates that fear of movement and avoidance or kinesiophobia in the context of pain have an ability to develop because of associative learning. Patients with osteoarthritis (OA) need an adequate amount of daily activity in order to manage pain and disability developed with their disease, yet people experiencing kinesiophobia might be reluctant to start or add everyday activity (Kanniappan et al., 2021). The kinesiophobia were significantly positively associated with the pain intensities and proprioceptive JPEs and negatively connected with handgrips strength. Another study revealed that kinesiophobia also played an important role in predicting neck pain, cervical proprioception, and the functional performance of people with CNPs (Asiri et al., 2021).

According to a study, it was noted that the incidences of kinesiophobia in patients with heart diseases were 61% meaning that the patients have a fear of physical exercise, the majority of them over half of the population. This rate is very high in comparison with the rates in the case of other diseases, namely, total knee arthroplasty (24.4%) and chronic low back pain (46.3%) (Liu et al., 2024). In Ethiopia The general incidence of kinesiophobia within the MSD individuals was 48.3 percent (Mekonnen et al., 2025). In another evidence, it was established that kinesiophobia was more prevalent in older adults with osteoporosis (57.01 %) (Lyu et al., 2024). In another study, the majority of the participants showed a large percentage of kinesiophobia in low back pain (92%) (John et al., 2023).

A study has shown a large positive relationship between kinesiophobia and high levels of neck pain (Andersen et al., 2016). In a different research, moderate effects were established to exist between better rates of kinesiophobia and higher intensity of pain and lower quality of life. Also, they found significant evidence of the connection of the measures of the kinesiophobia with the severity of pain and disability. A greater kinesiophobia level predicts the development of impairment with time (Luque-Suarez et al., 2019) It is because of this avoidance behavior that can prove to be harmful in the long term Kinesiophobia is

expected to occur on such patients. They also do not want to engage in activities believed to have a high likelihood of causing an actual or probable injury or reinjury and this causes them to become more inactive. Individuals experiencing musculoskeletal long-term pain can have increased levels of distress, functional disability, and emotional suffering causing the development of fear in carrying out specific movements resulting in a vicious circle that reduces their quality of life (Ghaie and Anand et al., 2024).

The influence on the outcomes of the treatment by kinesiophobia is quite high in various groupings of the patients exposed to treatment, both surgery and chronic care. Cases in post-total knee replacement, moderate and high scores of kinesiophobia affection was associated with higher scores of pain, slower mobility, and lengthier hospital stays, which reveals a poor impact on rehabilitation progress (Yao et al., 2024). In like manner, people with chronic spinal pain demonstrated low response to treatments when the level of kinesiophobia was concentrated during the baseline, which impacted their disability status and mental health, even when treatment procedures were implemented, such as pain neuroscience education (Van Bogaert et al., 2021). In patients with cervical spondylotic myelopathy, it was found that a considerable proportion of patients had kinesiophobia that showed worse recovery outcomes, which highlights the necessity of specific education methods (Chen et al., 2024). Moreover, patients with myocardial infarction who exhibited a higher degree of kinesiophobia had reduced physical activity and quality of life, indicating its presence as a debilitating factor to rehabilitation (Ozalevli et al., 2023). Finally, the results exhibited a high kinesiophobia level in breast cancer survivors, having a negative impact on the physical activity of survivors after treatment, especially in the group with comorbidities (Malchrowicz-Mosko et al., 2022).

Kinesiophobia is a remarkable concern which can be classified as a kind of a result that influences the quality of life destructively and causes excessive disabilities that entail fear of pain during movement. It is hard to continue the daily tasks when there is a disease-related kinesiophobia. Such patients experience reluctance in doing things (Naeem et al., 2023). One of the literature revealed that kinesiphobia does not depend on the degree of disability. Nevertheless, chronic and intense pain was correlated with kinesiophobia in chronic neck pain (Beltran-Alacreu et al., 2018). The studies have indicated that the

intensity of pain and kinesiophobia do not relate with their physical activity level. It was also suspected that kinesiophobia at a higher level lowers the physical activity of the women, but not men (Demirbuken et al., 2016).

Kinesiophobia in total knee replacement surgery (TKR) is linked to poor functional results and lesser range of motions (ROM) extending up to the one-year time period after surgery. The examples of such interventions include home-based functional exercise programs, cognitive behavioral therapy (CBT), and video-based psychological treatments, which demonstrated their effectiveness in decreasing kinesiophobia and enhancing the outcomes of such patients (Brown et al., 2020). In fact, progressive relaxation coupled with slow breathing exercise has been found effective in kinesiophobia reduction in individuals with chronic musculoskeletal pain, implying that the integration of these just mentioned interventions can be conducted safely and practically enough to the enhancement of the outcomes (Fariz et al., 2023). Kinesiophobia is slightly correlated with higher pain levels and moderately correlated with impaired functioning as it is applied to patellofemoral pain (PFP). Two interventions found more successful than classical physical therapy to be able to deal with kinesiophobia are self-controlled workouts and psychobehavioral approaches (Rethman et al., 2023). Also, chronic or new kinesiophobia is linked with less improvement in physical function among military and civilian groups of people during recovery of organs in the lower limbs. This highlights the value of monitoring and managing kinesiophobia in the process of treatment (Chimenti et al., 2022). Detailed intervention programs that combine psychological interventions and specialized training prescriptions to decrease kinesiophobia and enhance rehabilitation compliance are also useful to post-percutaneous coronary intervention (PCI) patients (Ding et al., 2024).

It has been established that kinesiophobia is one of the obstacles to rehabilitation compliance in various types of chronic pain. It is however also believed that it is one of the modifiable factors that can be made to enable an individual to achieve pain relief and functional restoration earlier. In this regard, clinicians must be required to detect the occurrence of kinesiophobia before any intervention is prescribed, such as, exercise therapy since the latter condition might necessitate a distinctive and more specialized mode than general rehabilitation programs. Moreover, people with CMP with a higher level of

kinesiophobia might tend to seek biomedical explanations and reassurance of the existence of their pain disorder (out of fear of performing an exercise or to acquire a biopsychosocial perception of their pain), leading to more disorders comorbidity. Moreover, it may frustrate both the patient and therapist, which harms their therapeutic bond and restricts rehabilitation programs. Hence, the best scenario is that the presence of kinesiophobia would be identified in the initial assessment, in order to design biopsychosocial treatment plans, which are targeted to the very alteration of kinesiophobia. It would be possible to do so by targeting functional goals, educating the maintenance of safe behavior, and graded exposure to feared activities in form of behavioral experiments (Luque-Suarez et al., 2019).

Castanho et al. (2021) stated that 54 percent of the patients attending physiotherapy had severe kinesiophobia. In case half of all the patients with the chronic pain develop kinesiophobia, rehabilitation founded only on the biological pillar is unlikely to positively affect patients. Therefore, it is critical to evaluate the level of kinesiophobia among patients who want to go to therapy. Individuals who experienced high level of kinesiophobia had much higher pain as compared to the individuals with low levels. The existence of such defensive reactions might not be eliminated even when there is no actual physical pain, fear of pain, or reinjury as the brain has a long-term memory of pain, which relates to the feeling of danger or threat (Castanho et al., 2021). An experiment demonstrated that the treatment of LBP, knee and ankle issues with the help of physiotherapy management affects kinesiophobia and QOL. The physiotherapists always overlook the importance of physical functions, kinesiophobia and QOL among the inpatients with LBP, knee and ankle disorders. Management can be effectively enhanced through physiotherapy practice that could develop physical functioning, kinesiophobia, and QOL (Fuhad et al., 2022).

Fear of pain which have behavioural effects could either be a symptom or the cause of greater avoidance of physical activity in musculoskeletal pain. The assumption is that pain-related experiences, together with kinesiophobia, can be even more disabling as caused by pain. Kinesiophobia degree has been also explored in the population having neck pain using Tampa Scale of Kinesiophobia (TSK) that was designed to evaluate the fear of movement in people with low back pain. Poor physical performance among people with spinal pain had been shown to be related to high fear of movement and/or (re)injury as

measured with the TSK. On the other, one of studies by Pearson et al. revealed that there is no substantial relationship between neck strength and TSK values of the samples with chronic whiplash syndrome. Nederland et al. (2006) also showed that the decrease in the level of muscle activity presupposed the rise of the fear of movement during acute to chronic post traumatic neck pain transition (Demirbuken et al., 2016).

The Tampa Scale on kinesiophobia (TSK) was applied to obtain the subjective rating of kinesiophobia or fear of motion. TSK is applied to investigate the disease that is linked with acute and chronic low back pain, fibromyalgia, and musculoskeletal as well as whiplash injuries. The subjective rating of kinesiophobia is determined using the 17-item TSK questionnaire. The scoring of each item is based on a Likert-type scale of 4 points with answers strongly disagree to strongly agree. After inversion of individual scores of items, a total score is obtained. The overall score is 17 to 68. The greater the total score in TSK, the severer the kinesiophobia, and the higher cut-off level of 37 as a high level of kinesiophobia (Ulug et al., 2016).

The Neck Disability Index (NDI) is a well-known self-reported tool that measures disability because of the neck pain and was initially developed to measure the condition of the whiplash-associated disorders, and it was subsequently validated among other cervical conditions (Sandal et al., 2021). Recent researches point out to the double role of evaluating it not only within the frame of material disability but also within the frame of mental health outcomes especially after surgical treatment such as anterior cervical discectomy and fusion (ACDF). High Pearson correlation relationships have been found between NDI scores and mental health indices, showing that the enhancements of the neck disability can imply the developments of the psychological health (Cha et al., 2022). Moreover, NDI has been correlated positively with other pain evaluation scales proving its value in clinical practice as an indicator of the effectiveness of the treatment (Joseph and Palappallil, 2016).

Chapter-iii: Methodology

3.1. Study design:

A cross sectional study design was selected to conduct this research. A cross-sectional study is an observational study in which the exposure and the outcome are determined at the same time point for each study participant. This study design is generally inexpensive and easy to conduct (Pandis et al.,2014). This approach enables the researcher to gather and examine data from a population of interest at one particular moment in time and assists the researcher in choosing the participants based on clearly stated criteria. Additionally, this includes a large number of variables that enable the researcher identify the traits and contributing aspects of a specific condition.

3.2. Study site:

The data were collected from the Musculoskeletal Unit of Physiotherapy Department at Centre for the Rehabilitation of the Paralysed (CRP), Savar, Dhaka.

3.3. Study duration:

The study were conducted from June 2024 to May 2025.

3.4. Study population:

The sample population were those patients with chronic neck pain attended at the Centre for the Rehabilitation of the Paralysed (CRP), Savar, Dhaka.

3.5. Inclusion criteria:

- Patients with neck pain persisting more than 3 months (Naeem et al.,2023).
- At least 18 years of age (Mendes et al.,2024).
- Mechanical neck pain.
- Both male and female patients.
- Patients who will give consent to participate in the study.

3.6. Exclusion criteria:

- History of cervical surgery (Ghaie et al.,2024).
- History of infectious neurological disorders like meningitis (Ghaie et al.,2024).
- Diagnosed with spinal pathology such as radiculopathy, whiplash, tumor, dislocation, infection, or systemic disease (Jones et al., 2024).
- Mental deficits (Monticone et al.,2015).

3.7. Sample size and calculation:

A sample was a smaller group of individuals that was selected from a larger population to collect data. Samples are mainly act as representative of the population as a whole. From those sample researchers gain knowledge about the entire population.

According to the prevalence of neck pain the estimated sample size was-

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

$$= \frac{(1.96)^2 \times 0.3 \times 0.653}{(0.05)^2}$$

$$= \frac{0.752}{(0.05)^2}$$

$$= 300$$

Where,

n = Sample size

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

p = expected prevalence, 0.3 (Hossain et al.,2024)

q = 1- p (expected non-prevalence)

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

So the determined sample size was 300. As it was an academic research and because of time limitation the researcher collected 113 samples to conduct this research.

3.8. Sampling technique:

For this study, the researcher employed a convenience sample strategy. Convenience sampling is a nonprobability or nonrandom sampling technique in which study participants are selected based on practical criteria, such as ease of access, proximity, availability at a specific time, or willingness to participate (Etikan et al., 2016). This is a simple, affordable approach with easily accessible subjects. Through the convenience sampling approach, the researcher was able to easily obtain those subjects who met the requirements related to the study's goal.

3.9. Method of data collection:

Participants were interviewed in-person using a semi-structured and structured questionnaire to gather data. Direct interaction between the data collector and the subject during a face-to-face interview ensures a high response rate. This aids the researcher in obtaining the appropriate information they require. Participants initially gave the researcher their written consent. They were previously briefed about the purpose of the study. Participants were also given the assurance that no one would disclose their personal information and that they could decline to answer any question they wished.

3.10. Data collection tools:

The required tools for the data collection was a consent form and a structured and semi structured questionnaire which include socio demographic questions, pain related questions using modified Dutch Musculoskeletal Questionnaire, pain intensity measurement using visual Analogue Scale, Tampa Scale for Kinesiophobia, Neck Disability Index scale.

Questionnaire description:

Socio demographic information: Combination of social and demographic factors including age, gender, marital status, occupation, number of family member etc.

Pain related information: Using the modified Dutch musculoskeletal Questionnaire which include questions related to pain like when they first experience pain, does the pain radiate or not, sleep disturbance due to pain etc.

Measurement scale: To measure pain intensity, kinesiophobia level and level of neck disability by-

- Visual Analogue Scale (VAS)
- Tampa Scale for Kinesiophobia (TSK)
- Neck Disability Index (NDI)

Primary outcome measurement:

Assess Kinesiophobia using the Tampa scale for kinesiophobia

Secondary outcome measurement:

The secondary outcome measurement included-

- Pain intensity
- Neck disability level

3.11. Measurement tools:

Visual Analogue Scale:

For both patients and medical experts, pain is a subjective experience. A proper diagnosis depends on using an accurate and reliable scale to measure pain severity. In rehabilitation, the VAS is a commonly used pain intensity assessment instrument that has been shown to be valid and dependable (Crossley et al., 2004). According to a study, VAS correctly depicted the ratios or proportions of pain intensity (Jackson et al., 2014). As the name suggests, the visual analogue scale (VAS) represents a continuous range of values using an analogue format. The scale, which goes from "no pain" to "severe pain," can be either vertical or horizontal. When measuring pain, the most popular method employs a horizontal line that is precisely 10 cm (100 mm) long. According to Johnson et al. (2005),

the patient is asked to mark this line, after which it is measured and documented in millimetres or centimetres (e.g., 37 mm or 3.7 cm).

Dutch Musculoskeletal Questionnaire:

To study about the physical and environmental risk factors, DMQ (Dutch Musculoskeletal Questionnaire) is applied, which identifies groups of workers with high risks who can be exposed to the musculoskeletal disorders risk factors at work. Valid and reliable instrument to assess self-report musculoskeletal workload, treatment of dangerous conditions and the associated symptoms, Dutch Musculoskeletal Questionnaire (DMQ) is used in various work groups. One has the possibility to do a rapid yet inclusive survey with this questionnaire of the work environment. The questions only study the musculoskeletal disorders risk factors but not the discomfort rate brought about by the presence of risk factors. On this questionnaire, one will be able to conduct a rapid yet holistic survey of the work environment (Tahmasebi et al., 2019).

Tampa Scale for Kinesophobia:

At the Ninth Annual Scientific Meeting of the American Pain Society in 1990, Miller, Kori, and Todd coined the term "kinesiophobia" to characterise a condition in which "a patient has an excessive, irrational, and debilitating fear of physical movement and activity resulting from a feeling of vulnerability to painful injury or reinjury." The subjective assessment of kinesiophobia, or the dread of movement, is done using the Tampa Scale for Kinesiophobia (TSK). The scale has been found to be a valid and reliable psychometric measure in a number of investigations (Hudes et al., 2011). The 17 questions of the TSK are scored using a 4-point Likert scale, where 1 represents strongly disagree and 4 represents strongly agree. After reversing items 4, 8, 12, and 16, the final score ranges from 17 to 68. A high level of kinesiophobia is indicated by a high score on the scale. There were two levels of TSK scores: "high kinesiophobia" and "low kinesiophobia." A TSK score of 37 or higher indicates "high kinesiophobia," whereas a score of less than 37 indicates "low kinesiophobia." The Tampa Scale of Kinesiophobia (TSK), created to gauge a patient's dread of movement for low back pain, has also been used to gauge a patient's level of kinesiophobia for neck discomfort. Poor physical performance in individuals with

spinal pain has been linked to a high fear of movement, injury, or reinjury as indicated by TSK (Demirbuken et al., 2016).

Neck Disability Index:

The Neck Disability Index (NDI) is a ten-item questionnaire derived from the Oswestry Low Back Pain Index, designed to evaluate disability related to neck pain and whiplash. It is the most extensively researched and well-established method for measuring neck impairment, evaluating both subjective symptoms and activities of daily living. The assessment has 10 measures, including four pertaining to subjective symptomatology (pain intensity, headache, concentration, sleep) and six associated with activities of daily living (lifting, work, driving, recreation, personal care, reading). Each item has six possible replies, ranging from 0, indicating "no disability," to 5, indicating "total disability." The ten items are aggregated to yield a total score that spans from 0 (indicating optimal function or absence of disability) to 50 (indicating disability). Certain writers translate this score into a percentage (Sterling et al., 2005). Vernon and Mior (1991) state that a score below 4 signifies no disability, 5–14 denotes mild disability, 15–24 reflects moderate disability, 25–34 represents severe disability, and scores beyond 35 indicate complete disability. The NDI is the oldest, most widely used, and most translated questionnaire for neck pain. The "test-retest" reliability has been shown to be substantial. The comparison of the NDI with other pain and disability assessments has further validated the instrument. This approach is clinically effective for evaluating disability associated with neck pain. The NDI serves as a tool for doctors to evaluate functional outcomes in patients experiencing whiplash and cervical discomfort (Howell et al., 2011).

3.12. Data analysis:

The data was analyzed using the Statistical Package for Social Science (SPSS) version 25 and Microsoft Excel 2021. Every questionnaire was carefully reviewed for any unclear or missing information. The variables were labeled in a list and the researcher established a computer based data definition record file that consist of a list of variables in order. The researcher put the name of the variables in the variable view of SPSS and defined the types,

values, decimal, label alignment and measurement level of data. The next step was cleaning new data files to check the inputted data set to ensure that all data has been accurately transcribed from the questionnaire sheet to the SPSS data view. Then the raw data were ready for analysis in SPSS. To determine the association between the variables Chi-Square analysis was used.

3.13. Ethical consideration:

At first an oral dissertation proposal was presented in front of the member of Institutional Review Board (IRB) of Bangladesh Health Professions Institute (BHPI). Then a research proposal was submitted to Institutional Review Board (IRB) for approval. The researcher also followed the Bangladesh Medical Research Council (BMRC) and WHO research guidelines. After getting approval from the review board, the researcher took permission from the department head of BHPI. As the research were being conducted at the musculoskeletal unit of CRP, Savar Dhaka researcher had to obtained permission from there and started to conduct the research. A written consent form was prepared to take consent on participate to the study where the aim of this study was clearly mentioned. The participants were ensured that their personal information will not be published anywhere and if they wish they can withdraw at any time from this study. The participants might not get any direct benefit from the result of this study but in future physiotherapy professionals might get some sorts of benefit from this study in future.

Chapter-iv: Result

Researcher analyzed the data through descriptive analysis and visually represented using graphs, pie charts and tables.

4.1 Sociodemographic information:

4.1.1 Age of the participants:

This study involved 113 participants who have chronic neck pain where the minimum age of the participant was 18 and maximum age of the was 81. Their mean was 37.12 and Standard deviation was 12.690. Among the 113 participants 31% patient were between the age range from 18-28 years, 32% were between 29-38 years, 19% were between 39-48 years, 13% participants were between 49-59 years of age and about 5% patient were above 59 years.

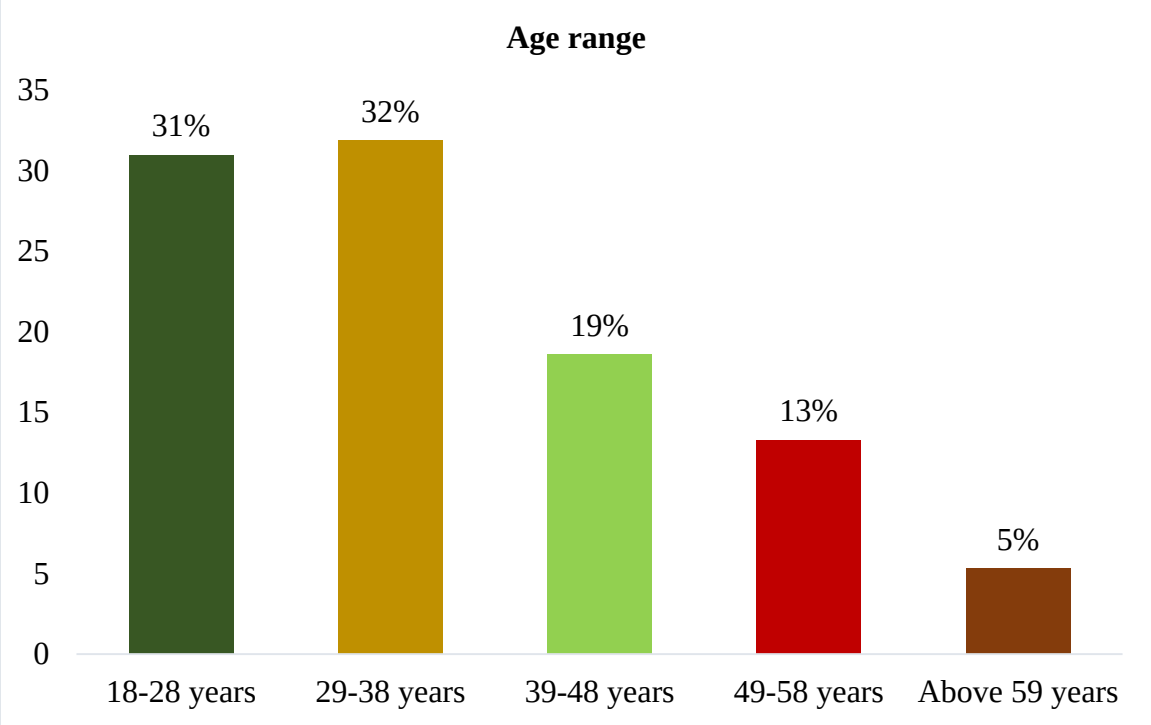


Fig-4.1.1: Age range of the participant

4.1.2 Gender of the participants:

The study sample consisted of 113 people. Of the total, 57% (n = 64) were male, whilst 43% (n = 49) were female.

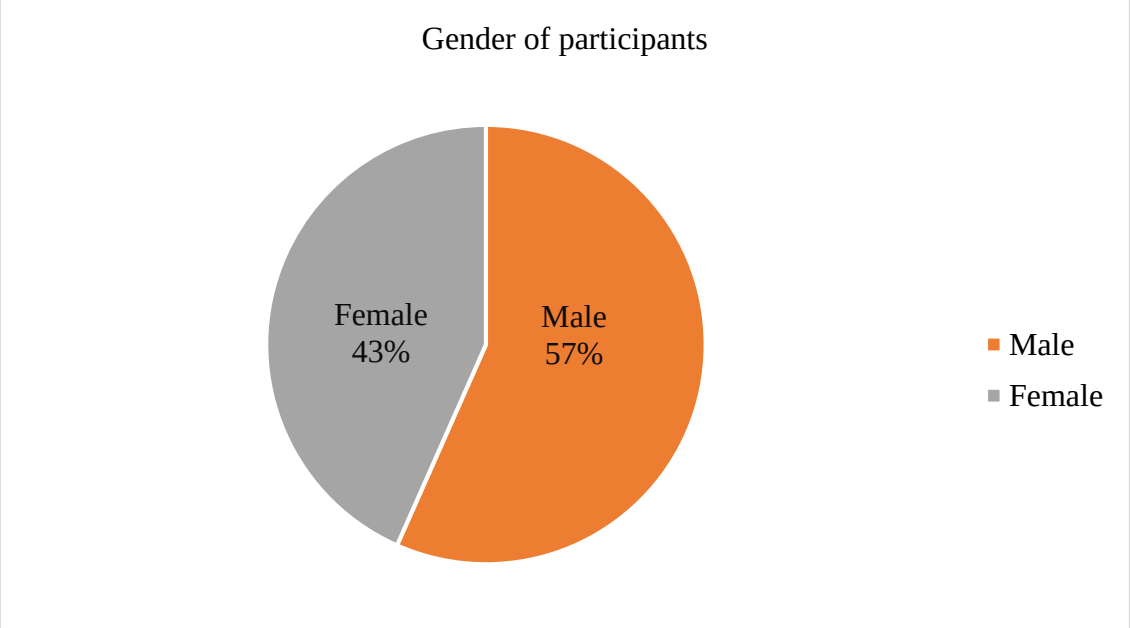


Fig-4.1.2: Gender of the participants

4.1.3 BMI of the participant:

Based on the participants' body weight status, 2% (n = 3) were categorized as underweight, 54% (n = 61) had a normal body weight, 33% (n = 37) were classified as overweight, and 11% (n = 12) as obese.

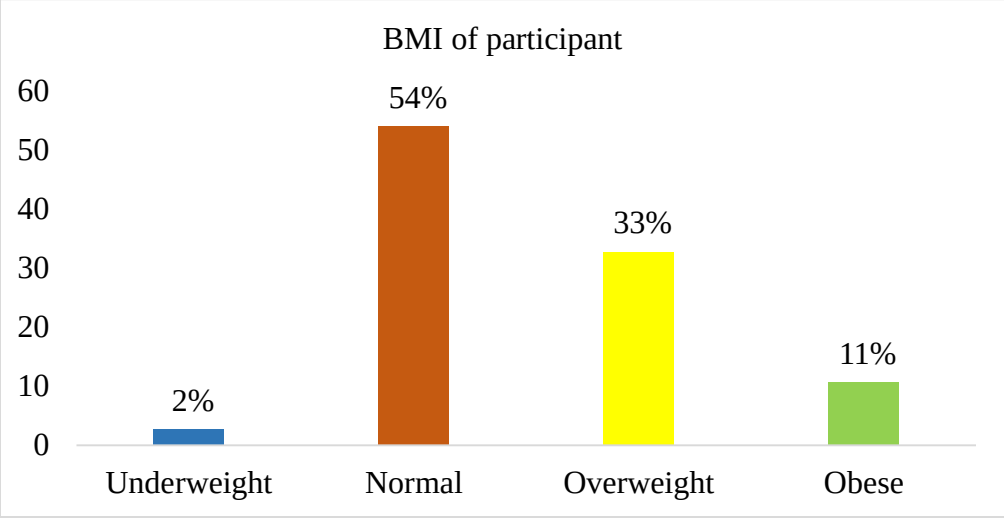


Fig-4.1.3: BMI of the participant

4.1.4 Marital status of participant:

Among the 113 participants, 79% (n = 89) of the participants were married, while the other 21% (n = 24) participants were unmarried.

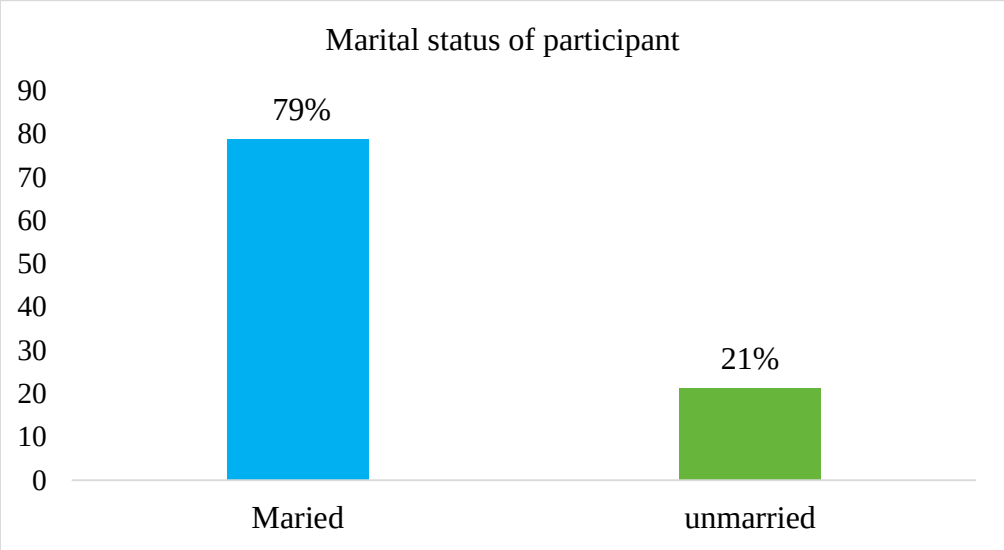


Fig-4.1.4: Marital status of participant

4.1.5 Educational status of participant:

Among the 113 participant's, 6% (n = 7) were illiterate, 18% (n = 20) had completed primary school, 22% (n = 25) had passed secondary school (SSC), and 35% (n = 39) were HSC passed. Furthermore, 13% (n = 15) of participants had finished graduation, and 6% (n = 7) of participants were post graduates.

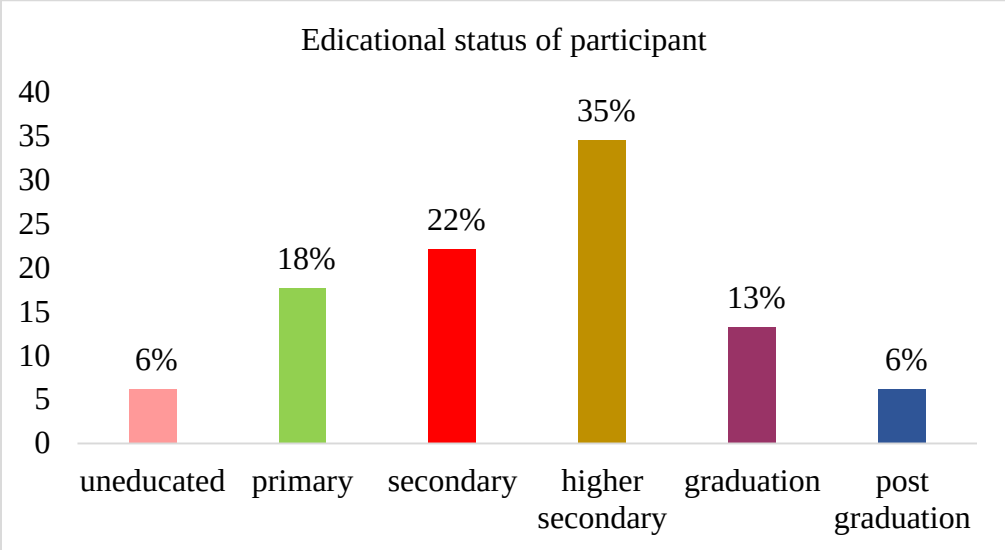


Fig-4.1.5: Educational status of participant

4.1.6 Living areas of participant:

The data indicates about 20% (n = 23) participants are from rural areas, 43% (n = 49) participants are from semi urban areas and 36% (n = 41) participants are from urban area.

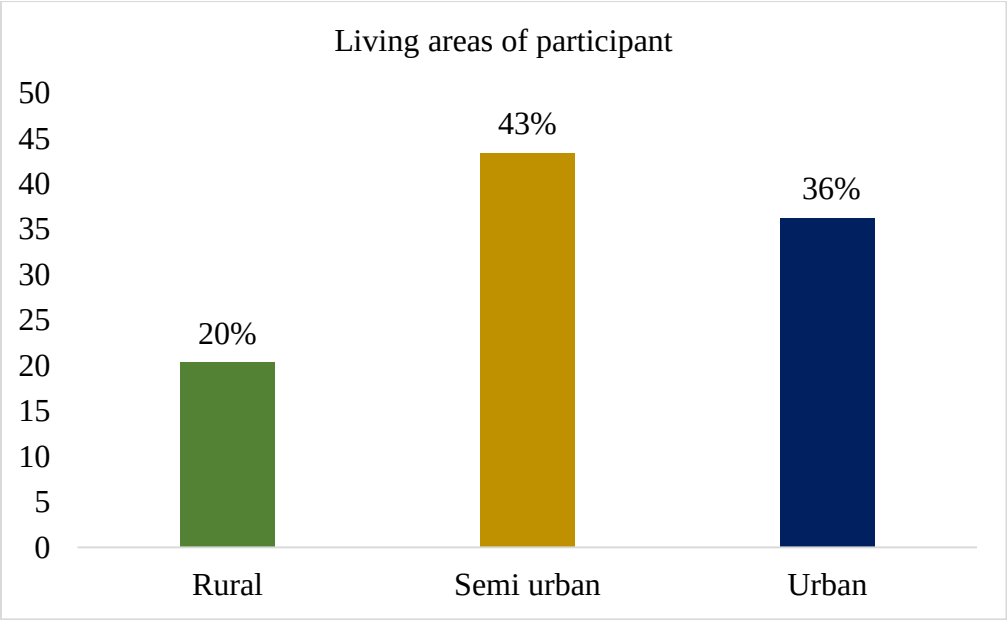


Fig-4.1.6: Living areas of participant

4.1.7 Occupation of the participant:

The bar chart shows about 37.2% (n = 42) were housewife, 1.8% (n = 2) were shopkeeper, 1.8% (n = 2) were shopkeeper, 15% (n = 17) participants were service holder, 10.6% (n = 12) participants were business man, 20.4% (n = 23) participants were student and about 13.3% (n = 15) were from different profession like some participants were immigrant, some was retired, some were garments worker.

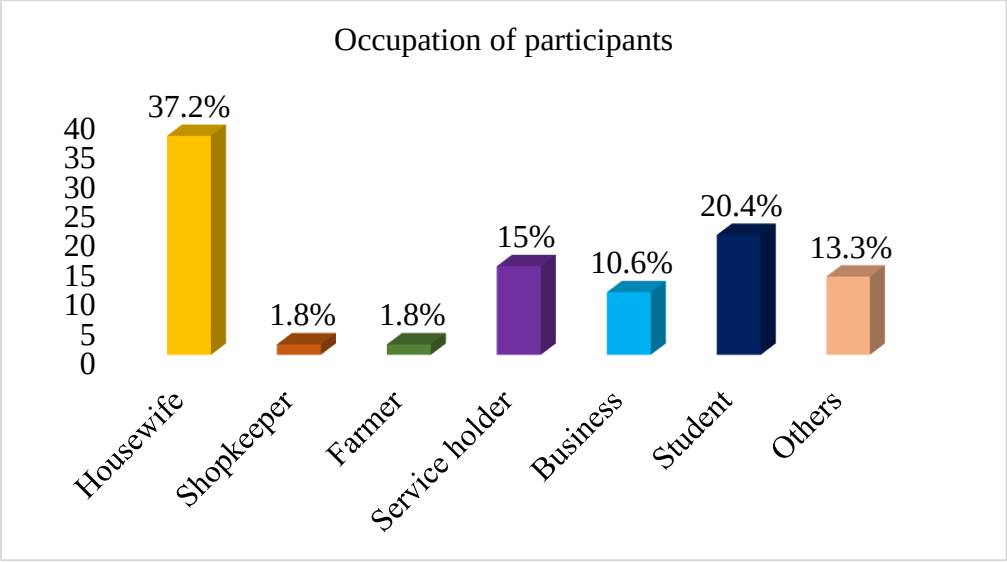


Fig- 4.1.7: Occupation of the participant

4.1.8 Monthly income:

The pie chart shows that about 17% (n = 20) participant's monthly income was in the range of 0-15000 taka, 49% (n = 55) participant's monthly income was in the range of 16000-30000 taka, 17% (n = 16) participants monthly earning was in the range of 31000-45000 taka, 8% (n = 9) participant's earn in the range of 46000-60000 taka & 9% (n = 10) earn more than 60000 taka.

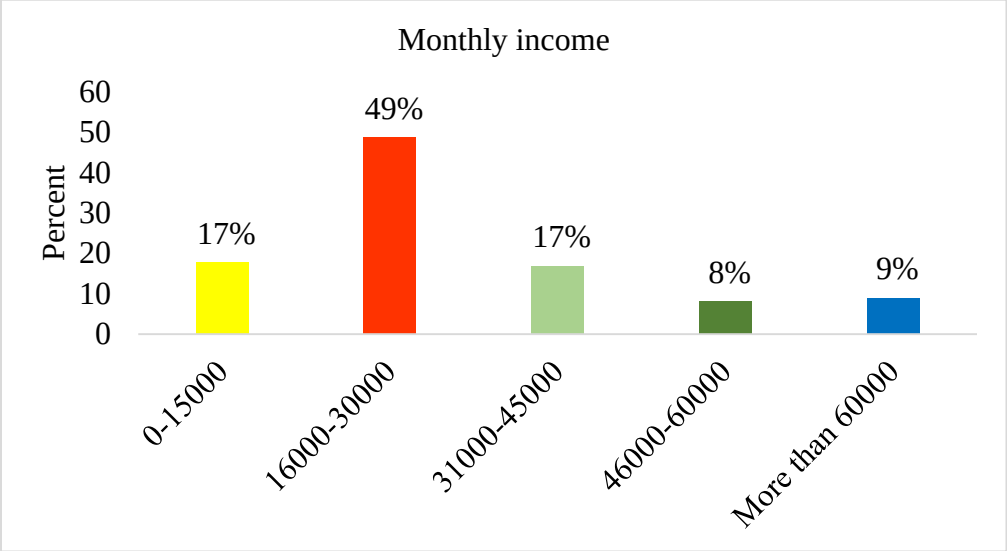


Fig-4.1.8: Monthly income

4.1.9 Working hour:

The study included 113 participants. The number of working hours reported ranged from a minimum of 2 hours to a maximum of 18 hours per day. On average, participants worked approximately 8.26 hours per day. Among the 113 participants, the number of working hours per day ranged from 2 to 18 hours, with a mean of 8.26 hours. When categorized, 42% of participants reported working between 2 and 7 hours per day, 53% worked between 8 and 13 hours, and 5% reported working more than 13 hours daily.

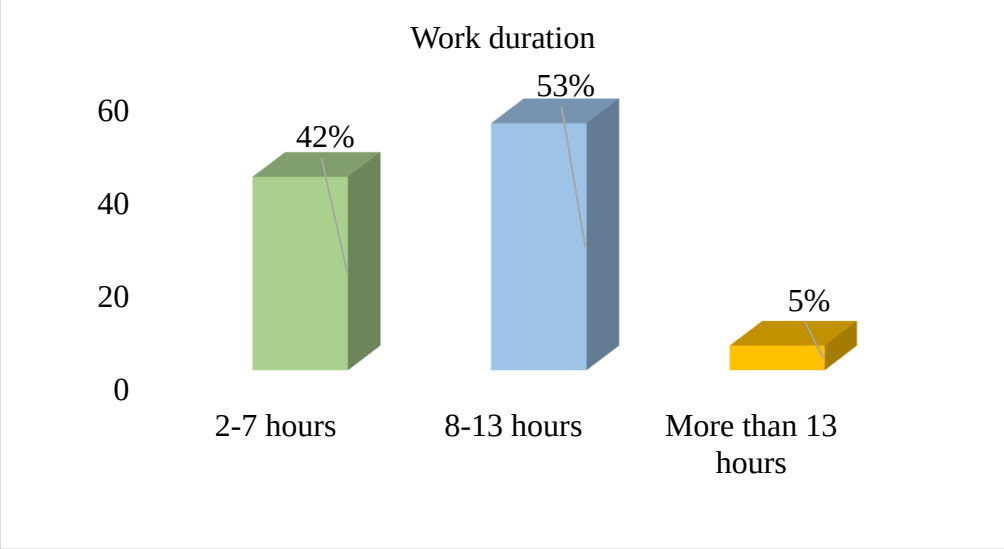


Fig-4.1.9: Working hour

4.1.10 Work- mechanical stress:

In relation to mechanical stress during work activities, 64% (n = 72) of participants reported experiencing stress while sitting, while 36% (n = 41) experienced stress while standing.

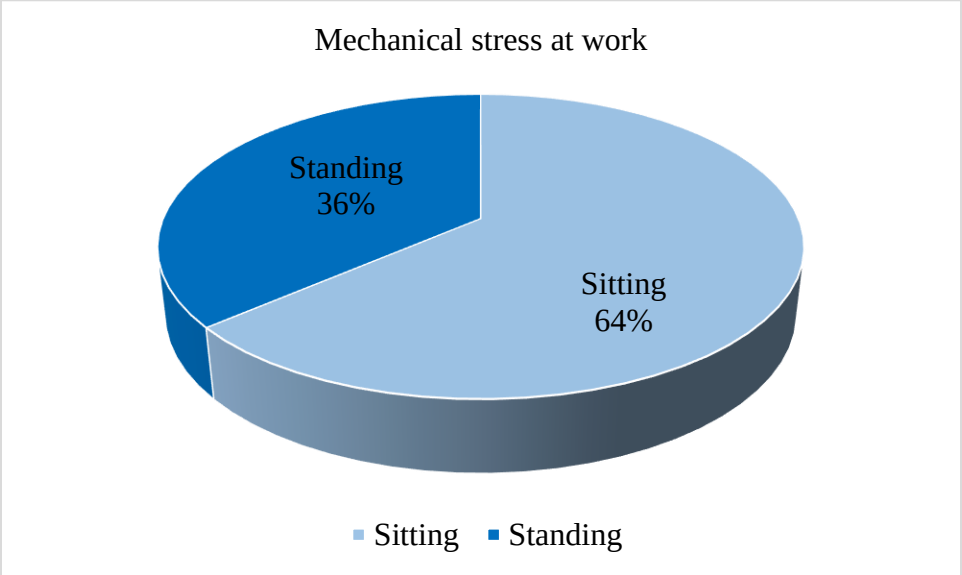
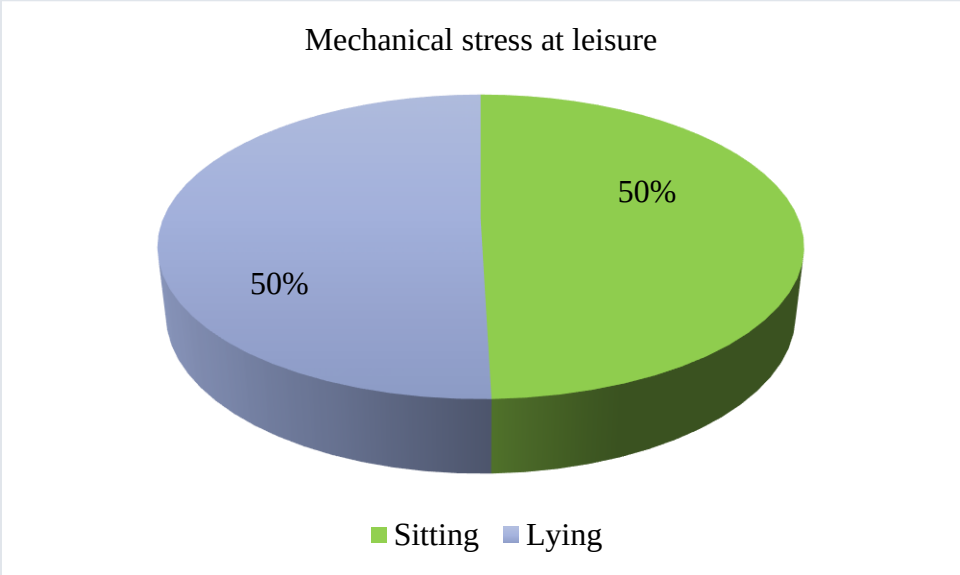


Fig-4.1.10: Mechanical stress at work

4.1.11 Leisure- mechanical stress:

Regarding mechanical stress during leisure activities, 50% (n = 56) of participants reported stress while sitting, and 50% (n = 57) reported stress while lying down.



. Fig-4.1.11: Mechanical stress at leisure

4.1.12 Personal habits:

Regarding personal habits, 21% (n = 24) of participants responded "Yes," indicating the presence of certain personal habits, while 79% (n = 89) responded "No." among 21% participants, 20% (n = 23) reported smoking as a personal habit, while 1% (n = 1) reported having other types of habits.

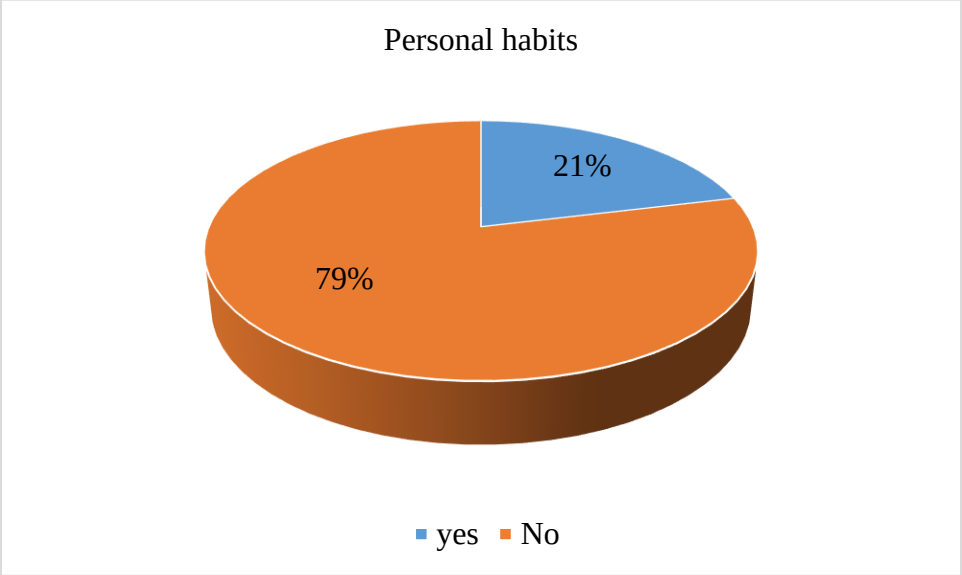


Fig-4.1.12: Personal habits

4.1.13 Exercise status:

Regarding exercise habits, 40% (n = 45) of participants reported engaging in regular exercise, while 60% (n = 68) reported not exercising regularly.

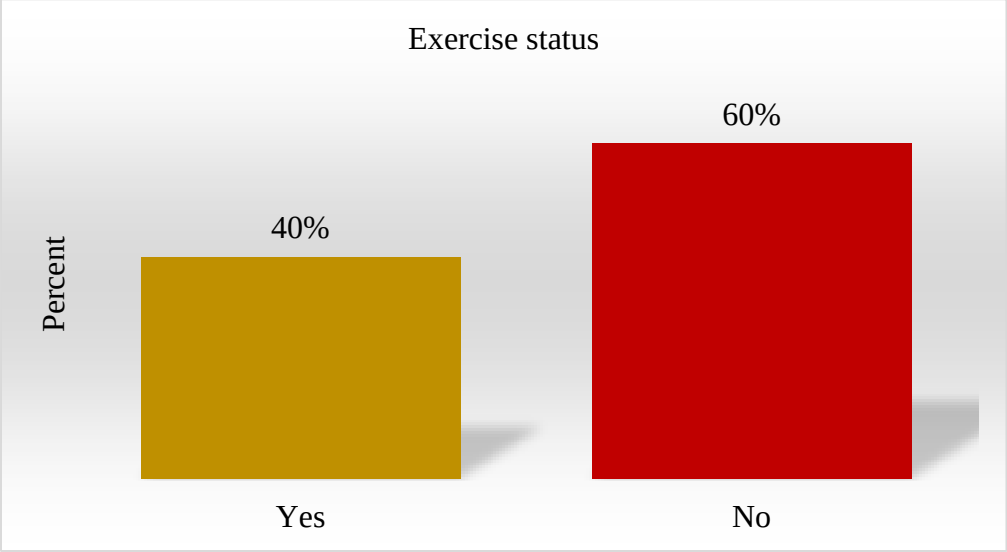


Fig-4.1.13: Exercise status

4.1.14 History of neck injury:

Among 113 participants', 5% (n = 6) of participants reported a history of neck injury, while 95% (n = 107) reported no such history.

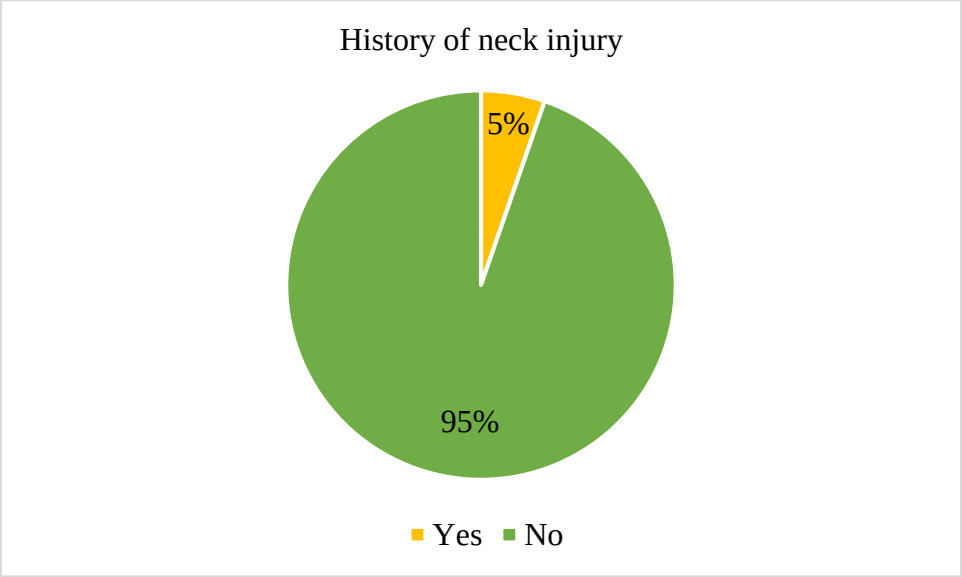


Fig-4.1.14: History of neck injury

4.1.15. Nature of pain:

Among 113 participants, 56% (n = 63) reported constant pain, and 44% (n = 50) reported intermittent pain.

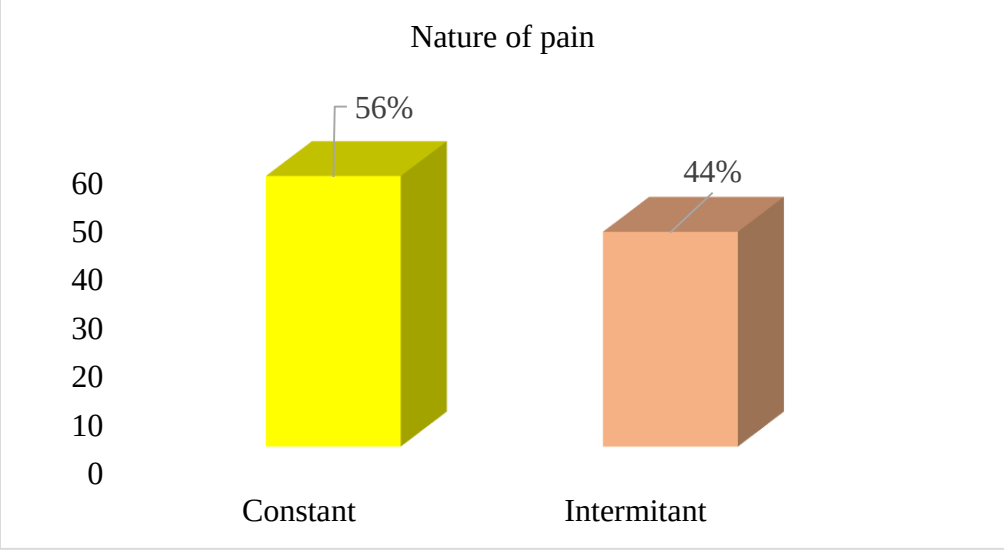


Fig-4.1.15: Nature of pain

4.1.16 Pain intensity:

Among 113 participants the minimum pain intensity was 4, maximum 9, mean value was 6.173 and standard deviation was 1.4425. When these pain intensity was categorized the majority of subjects indicated moderate pain 57.5% (n = 65), followed by severe pain 42.5% (n = 48).

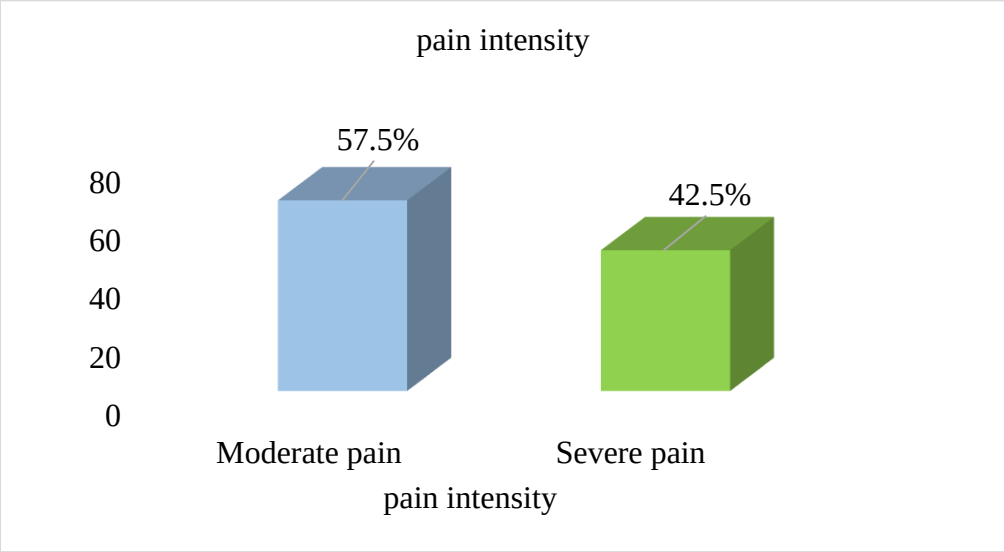


Fig-4.1.16: Pain intensity

4.2 Pain related information: Dutch Musculoskeletal Questionnaire

4.2.1 Age of first neck pain experience:

The minimum and maximum age was 15 and 79 years when they first experienced neck pain. The mean was 35.18 and standard deviation was 12.221.

4.2.2 Separate episodes of neck pain:

The majority of patients encountered neck pain once 41.6% (n=47) or between two to four times 31.9% (n=36). A smaller proportion reported feeling pain 5-10 times 2.7% (n=3) or more than 10 times 1.8% (n=2). Furthermore, 22.1% (n=25) indicated that their symptoms were consistently present.

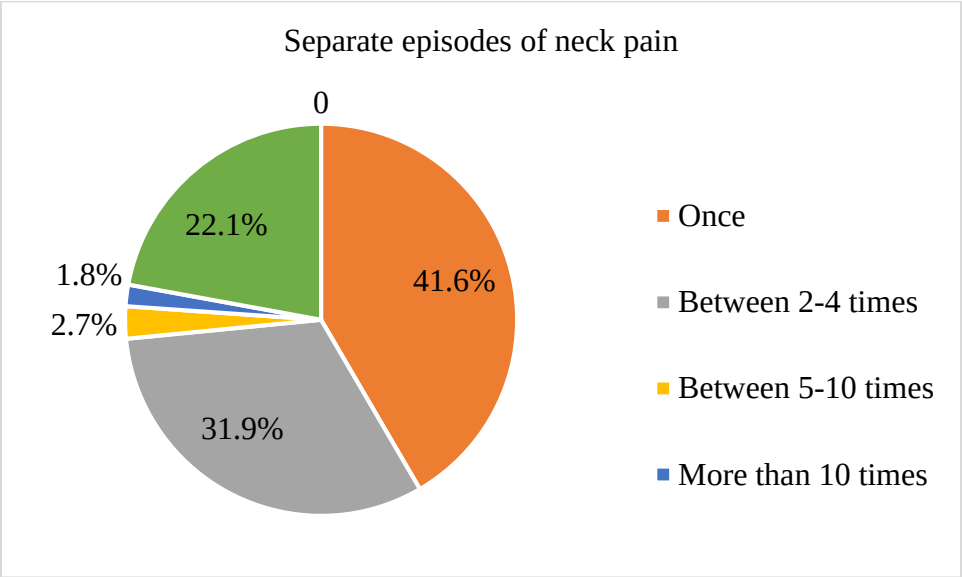


Fig-4.2.2: Separate episodes of neck pain

4.2.3 Days participants were on sick leave:

The majority of participants 59.3% (n=67) did not take any sick leave, while 34.5% (n=39) were on sick leave for 1-7 days. A smaller proportion took sick leave for 8-14 days 3.5% (n=4) or 15-28 days 2.7% (n=3).

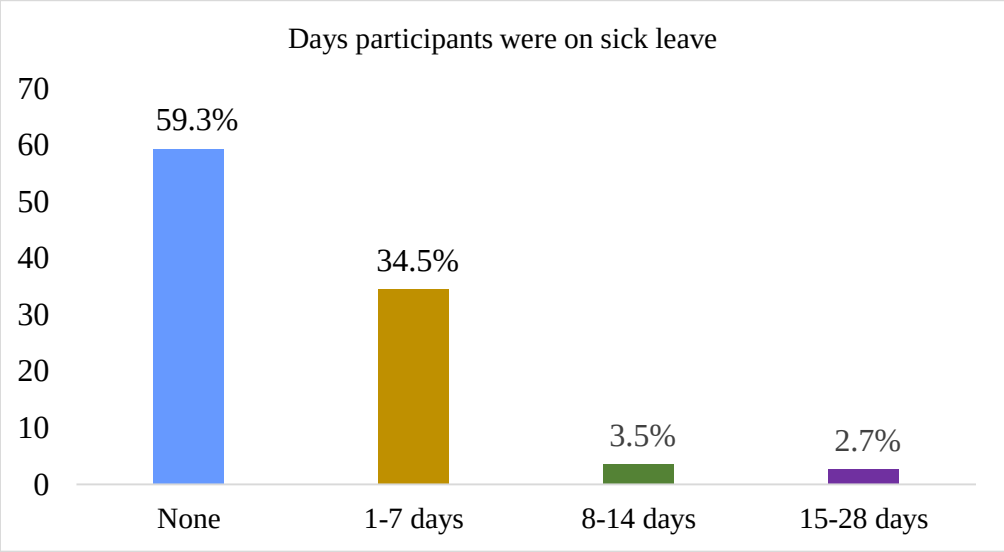


Fig-4.2.3: Days participants were on sick leave

4.2.4 Longest spell of neck pain:

All 113 individuals reported suffering the longest duration of neck pain ranging from 3 to 12 months.

4.2.5 Pain radiation (to the arm):

A majority of participants 65% (n=74) reported experiencing radiating neck pain to the arm, while 35% (n=39) did not. Among 65% participants, 30% (n=34) participants pain radiate to the right arm, 23% (n=26) participant's pain radiate to the left and 12% (n=14) participant's pain radiate to the both arm. In people with pain radiating to the right arm, the most frequently affected regions were the hand 10.6% (n=12) and the upper arm 9.7% (n=11). Pain was observed less commonly in the elbow 6.2% (n=7), wrist 2.7% (n=3), and forearm 0.9% (n=1). Pain radiating in the left arm was most commonly observed in the hand 9.7% (n=11) and upper arm 6.2% (n=7). The elbow 4.4% (n=5), wrist 1.8% (n=2), and forearm 0.9% (n=1) were infrequently impacted. When pain radiation occurred in both arms, it was predominantly reported in the hand 6.2% (n=7), followed by the upper arm 3.5% (n=4). The wrist 1.8% (n=2) and elbow 0.9% (n=1) which was less frequently involved area.

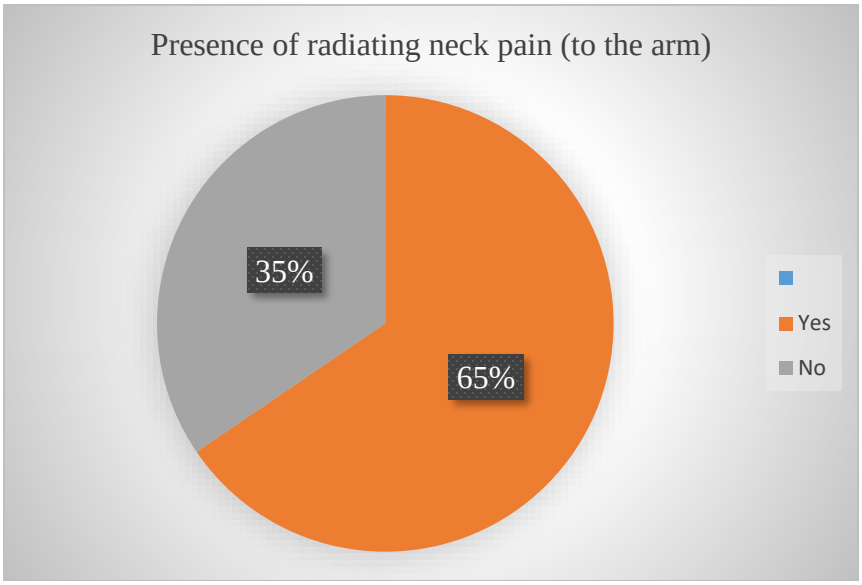


Fig-4.2.5: Pain radiation (to the arm)

4.2.6 Neck pain hinders sleep:

Among participants, 66.4% (n=75) reported that neck pain hindered their sleep, while 33.6% (n=38) did not experience sleep disturbances related to neck pain.

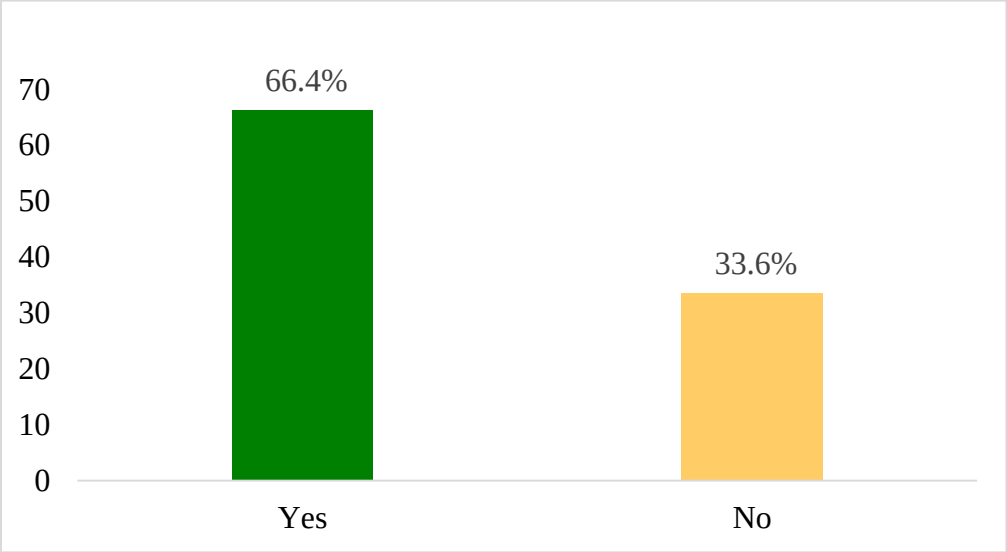


Fig-4.2.6: Neck pain hinders sleep

4.2.7 Neck pain causing trouble when standing for a long period:

Among persons standing for extended durations, 52.2% (n=59) felt minimal discomfort from neck pain, whereas 25.7% (n=29) expressed significant distress. A minority 21.2% (n=24) reported no difficulties, while 0.9% (n=1) claimed they never stood for extended durations.

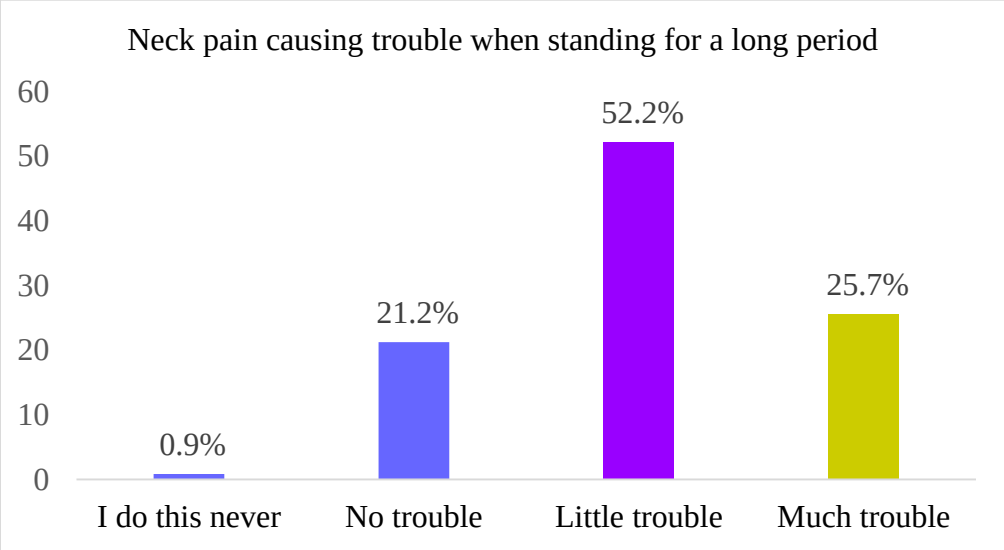


Fig-4.2.7: Neck pain causing trouble when standing for a long period

4.2.8 Neck pain causing trouble when sitting for a long period:

Concerning prolonged sitting, 47% (n=53) of participants reported significant discomfort from neck ache, whereas 46% (n=52) encountered minimal discomfort. Merely 7% (n=8) indicated no difficulties.

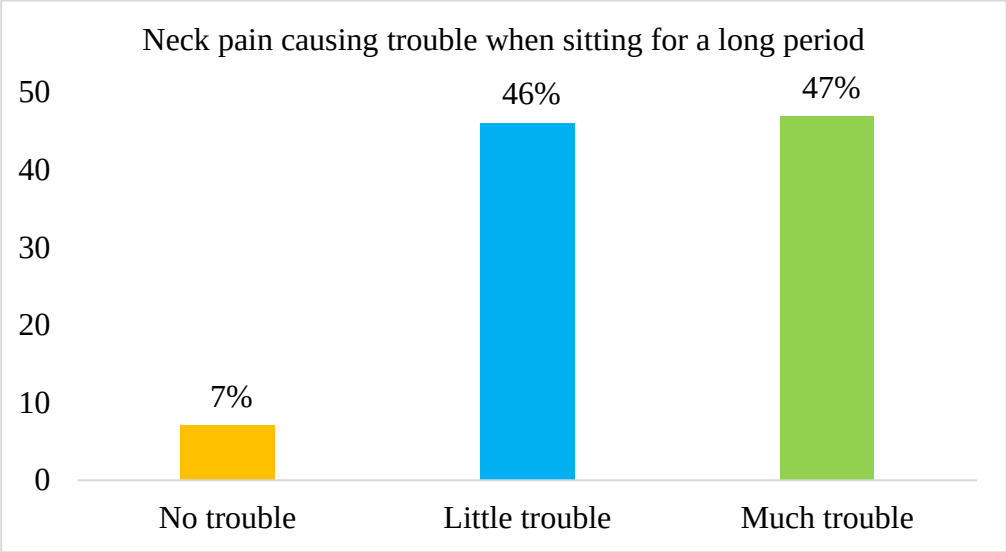


Fig-4.2.8: Neck pain causing trouble when sitting for a long period

4.2.9 Neck pain causing trouble when moving more than 5 kg loads:

When transporting loads exceeding 5 kg, 40.7% (n=46) of respondents reported minimal difficulty owing to neck pain, 38.9% (n=44) reported no difficulty, and 16.8% (n=19) experienced significant difficulty. Merely 3.5% (n=4) reported that they never participate in lifting such weights. The data indicate that although many persons can lift with little or no trouble, a significant number nevertheless encounters obstacles.

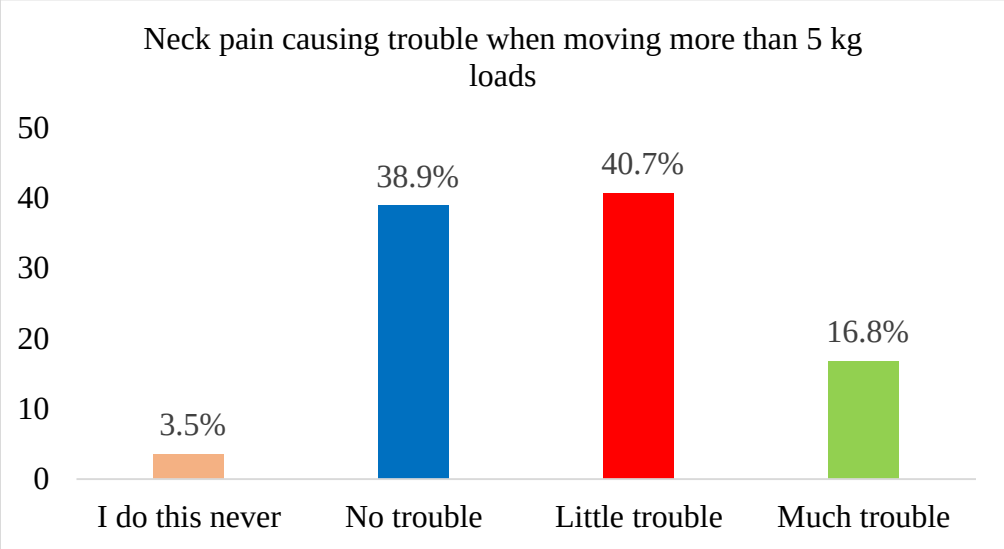


Fig-4.2.9: Neck pain causing trouble when moving more than 5 kg loads

4.2.10 Neck pain causing trouble when moving more than 20 kg loads:

Among those handling loads exceeding 20 kg, 34% (38) reported never participating in such activities, whereas 27% (n=31) encountered minimal difficulty and 25% (n=28) experienced significant difficulty. Merely 14% (n=16) of persons reported experiencing no difficulties, suggesting that carrying excessively high objects is a considerable barrier for many due to neck pain.

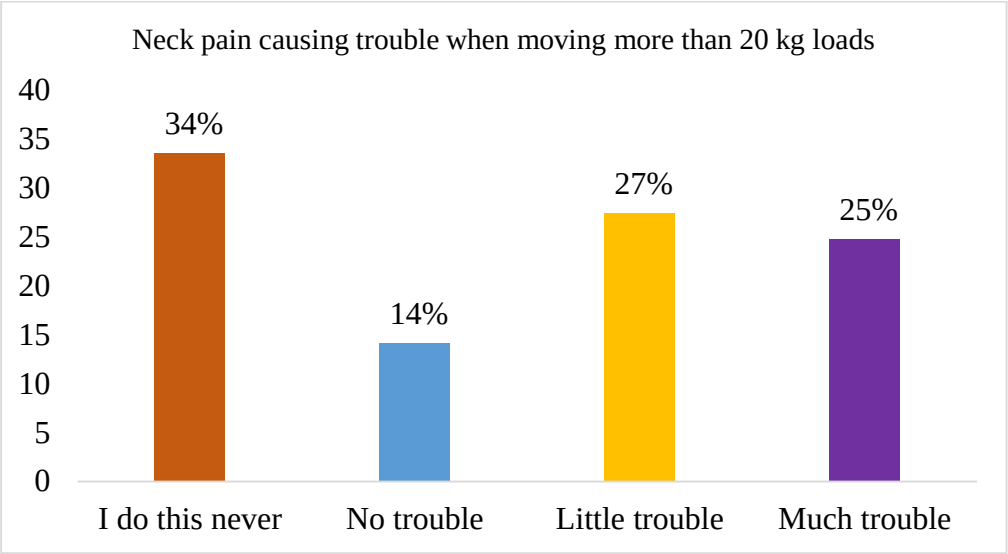


Fig-4.2.10: Neck pain causing trouble when moving more than 20 kg loads

4.2.11 Neck pain causing trouble when working in uncomfortable posture:

When working in uncomfortable postures, 73.5% (n=83) of individuals reported little trouble due to neck pain, while 13.3% (n=15) experienced much trouble. Only 11.5% (n=13) reported no trouble, and 1.8% (n=2) indicated that they never work in such postures. This suggests that a large majority face at least some difficulty with neck pain in uncomfortable postures, with a significant portion reporting minor discomfort.

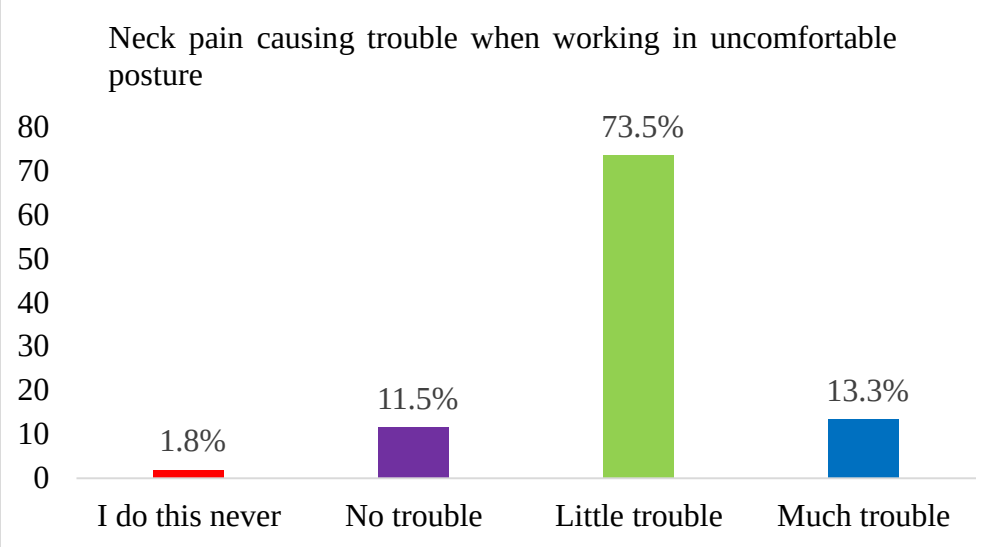


Fig-4.2.11: Neck pain causing trouble when working in uncomfortable posture

4.2.12 Neck pain causing trouble when working in same posture for a long period:

When working in the same posture for long periods, 65% (n=74) of individuals reported little trouble with neck pain, while 32% (n=36) faced much trouble. Only 3% (n=3) reported no trouble at all. This indicates that maintaining the same posture for extended periods is a significant cause of discomfort for most individuals due to neck pain.

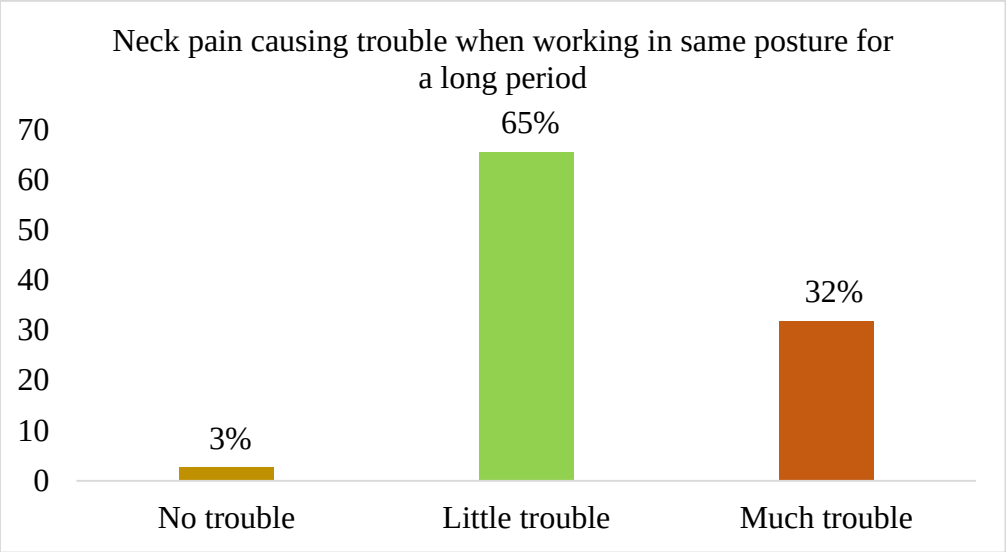


Fig-4.2.12: Neck pain causing trouble when working in same posture for a long period

4.3 Level of Kinesiophobia:

A majority of individuals 72.6% (n=82) reported high kinesiophobia, while 27.4% (n=31) reported low kinesiophobia. This suggests that a significant portion of the population experiences a high level of fear of movement, which may be linked to their pain and physical limitations.

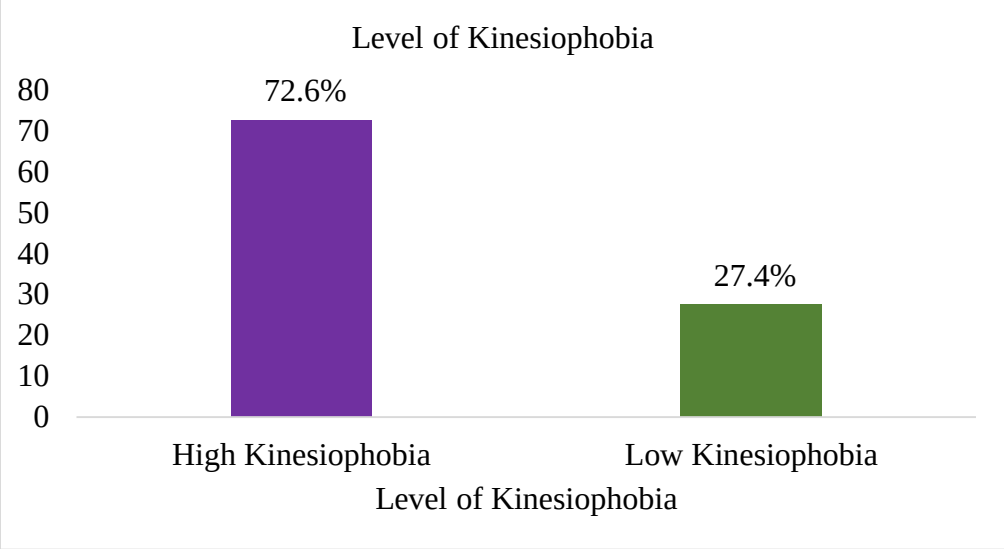


Fig- 4.3: Level of Kinesiophobia

4.4 Level of neck disability:

The majority of individuals 56% (n=63) reported moderate neck disability, followed by 22% (n=25) with mild disability. 20% (n=23) faced severe disability, and 1% (n=1) reported either no disability or complete disability. This suggests that most individuals experience at least moderate limitations due to neck pain.

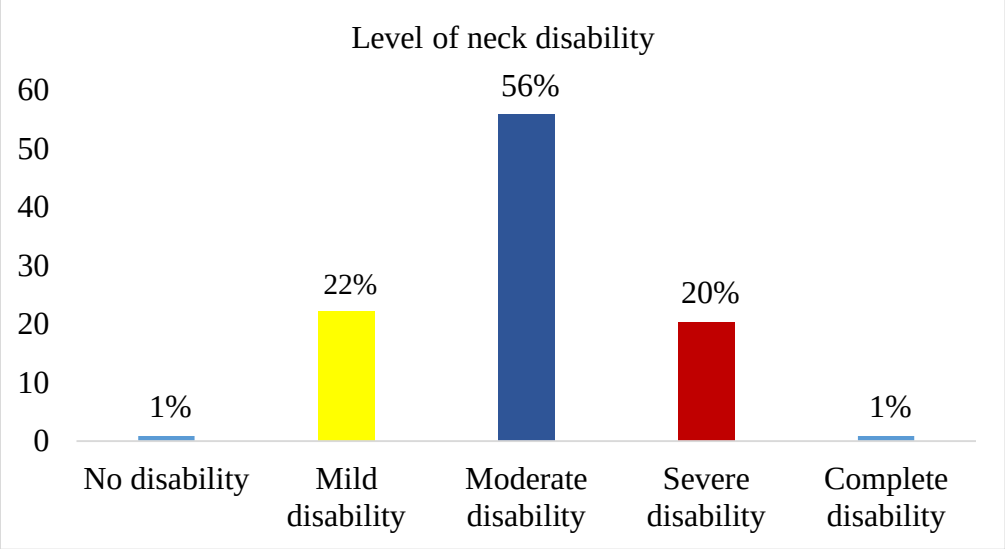


Fig-4.4: Level of neck disability

Table 4.5: Information of kinesiophobia

Variables	Strongly disagree	Disagree	Agree	Strongly agree
Afraid of exercise	33.6% (n=38)	32.7% (n=37)	14.2% (n=16)	19.5% (n=22)
Pain increase if try to overcome	20.4% (n=23)	55.8% (n=63)	13.3% (n=14)	10.6% (n=12)
Body signals something is wrong	22.1% (n=25)	27.4% (n=31)	42.5% (n=48)	8% (n=9)
Exercise relieves pain	2.7% (n=3)	19.5% (n=22)	34.5% (n=39)	43.4% (n=49)
Condition not taken seriously	19.5 % (n=22)	54% (n=61)	23.9% (n =27)	2.7% (n=3)
Accident has put body at risk	28.3% (n=32)	37.2% (n=42)	29.2% (n=43)	5.3% (n=6)
Pain means injured body	37.2% (n=42)	32.7% (n=37)	29.2% (n=33)	0.9% (n=1)
Pain aggravation is not dangerous	18.6% (n=21)	38.9% (n=44)	31% (n=35)	11.5% (n=13)
Afraid of accidental injury	15% (n=17)	38.9% (n=44)	33.6% (n=38)	12.4% (n=14)
Avoid movement to prevent pain	13.3% (n=15)	17.7% (n=20)	48.7% (n=55)	20.4% (n=23)
Pain means danger	11.5% (n=13)	37.2% (n=42)	32.7% (n=37)	18.6% (n=21)
Would be better if physically active	9.7% (n=11)	46.9% (n=53)	16.8% (n=19)	26.5% (n=30)

Pain signals to stop exercise	17.7% (n=20)	32.7% (n=37)	32.7% (n=37)	16.8% (n=19)
Being physically active is not safe	14.2% (n=16)	55.8% (n=63)	15.9% (n=18)	14.2% (n=16)
Can't do normal things	11.5% (n=13)	59.3% (n=67)	16.8% (n=19)	12.4% (n=14)
Pain is not dangerous	7.1% (n=18)	29.2% (n=33)	35.4% (n=40)	28.3% (n=32)
No exercise when in pain	49.6% (n=56)	38.1% (n=43)	6.2% (n=7)	6.2% (n=7)

Participants expressed a variety of beliefs regarding pain and movement. Among the 113 participants about 33.7% disagreed with being afraid of exercise, and 55.8% disagreed that pain increases if they try to overcome it. 42.5% agreed that pain signals something is wrong in the body, reflecting a cautious attitude. A positive belief was seen in 43.4% who strongly agreed that exercise helps relieve pain. Concerning how seriously their condition is taken, only 2.7% strongly agreed that it is not taken seriously. Regarding feelings of vulnerability, 28.3% strongly disagreed that an accident had put their body at risk, and 37.2% strongly disagreed that pain means the body is injured.

When asked about the danger of worsening pain, 38.9% disagreed, However, 33.6% agreed they are afraid of accidental injury. Avoidance behavior was noticeable, as 48.7% agreed they avoid movement to prevent pain. 32.7% agreed that pain means danger, and 46.9% disagreed with the idea that they would feel better if physically active. Responses were split on whether pain is a signal to stop exercise, with 32.7% participants have mixed response about the belief. Most participants, 55.8%**,** disagreed that being physically active is unsafe, and 12.4% agreed that they are unable to do normal activities. A healthy understanding of pain was reflected in 35.4% agreeing that pain is not dangerous. Lastly, a strong portion**,** 49.6%**,** strongly disagreed with avoiding exercise when in pain.

Table-4.6: Association between Kinesiophobia (TSK items) and sociodemographic factors:

Dependent variable	Independent variable	Chi value	P-value
Afraid of exercise	Gender	2.305	0.512
	BMI	2.831	0.971
	Occupation	15.307	0.641
	Work duration	11.169	0.083
	Work-mechanical stress	3.974	0.264
	Exercise status	3.112	0.375
Body signals something is wrong	Gender	5.191	0.158
	BMI	7.938	0.540
	Occupation	23.613	0.168
	Work duration	52.617	0.300
	Work-mechanical stress	5.250	0.154
	Exercise status	6.227	0.101
Exercise relieves pain	Gender	3.198	0.362
	BMI	5.061	0.829
	Occupation	22.351	0.217
	Work duration	5.002	0.544
	Work-mechanical stress	1.793	0.617
	Exercise status	1.198	0.754
Pain means injured body	Gender	2.133	0.545
	BMI	5.641	0.775
	Occupation	17.747	0.472

	Work duration	5.375	0.497
	Work-mechanical stress	1.925	0.588
	Exercise status	4.881	0.181
Avoidance of movement	Gender	1.239	0.744
	BMI	12.259	0.199
	Occupation	19.492	0.362
	Work duration	7.839	0.250
	Work-mechanical stress	1.351	0.717
	Exercise status	14.125	**0.003***
Pain signals to stop exercise	Gender	11.950	**0.008***
	BMI	12.489	0.187
	Occupation	35.879	**0.007***
	Work duration	8.636	0.195
	Work-mechanical stress	1.817	0.611
	Exercise status	8.087	**0.044***

The analysis showed no statistically significant association between the item **afraid of exercise** and sociodemographic factors like gender (chi square value= 2.305, p = 0.512), BMI (chi square= 2.831, p = 0.971), or occupation (Chi square value = 15.307, p = 0.641). Similarly, work duration (Chi square value = 11.169, p = 0.083), mechanical stress at work (Chi square value = 3.974, p = 0.264), and exercise status (Chi square value = 3.112, p = 0.375) were not significantly associated with this item. These findings suggest that fear of injury during exercise, as measured by this item, does not depend on demographic or occupational characteristics among individuals with chronic neck pain.

The relationship between the fear-related belief like **body signals something dangerously wrong** and sociodemographic was explored using Chi-square analysis. The results

demonstrated no statistically significant associations. Specifically, gender (Chi square value = 5.191, p = 0.158), BMI (Chi square value = 7.938, p = 0.540), occupation (Chi square value = 23.613, p = 0.168), and work duration (Chi square value = 52.617, p = 0.300) were not significantly related to this belief. Similarly, no significant associations were found with mechanical stress at work (Chi square value = 5.250, p = 0.154) or exercise status (Chi square value = 6.227, p = 0.101). These findings suggest that the perception of serious bodily harm does not significantly vary by sociodemographic or occupational characteristics in individuals with chronic neck pain.

No significant associations were found between responses to **pain would probably be relieved if exercise** and sociodemographic factors. Chi-square tests showed non-significant results for gender (Chi square value =3.198, p value=0.362), BMI (Chi square value =5.061, p value=0.829), occupation (Chi square value =22.351, p value=0.217), work duration (Chi square value =5.002, p=0.544), work-mechanical stress (Chi square value =1.793, p=0.617), and exercise status (Chi square value =1.198, p=0.754). These results indicate that these variables do not significantly influence beliefs about exercise relieving pain.

The analysis found no significant associations between the **pain always means injured body** and sociodemographic variables. Chi-square tests revealed non-significant results for gender (Chi square test =2.133, p=0.545), BMI (Chi square test =5.641, p=0.775), occupation (Chi square test =17.747, p=0.472), work duration (Chi square test =5.375, p=0.497), work-related mechanical stress (Chi square test =1.925, p=0.588), and exercise status (Chi square test =4.881, p=0.181). These findings suggest that these factors do not significantly influence participants' beliefs about pain indicating bodily injury.

The analysis showed no significant associations between **avoidance of movement** and gender (Chi square value =1.239, p=0.744), BMI (Chi square value =12.259, p=0.199), occupation (Chi square value =19.492, p=0.362), work duration (Chi square value =7.839, p=0.250), or work-mechanical stress (Chi square value =1.351, p=0.717). However, exercise status was significantly associated (Chi square value =14.125, p=0.003), indicating that participants' exercise status influence the belief about movement precautions to prevent pain worsening.

Significant associations were found among Pain **signals to stop exercise** and both gender (Chi square value =11.950, p=0.008), occupation (p=0.007) and exercise status (Chi square value =8.087, p=0.044). No significant associations were found with BMI (Chi square value =12.489, p=0.187), work duration (Chi square value =8.636, p=0.195), or work-mechanical stress (Chi square value =1.817, p=0.611).

Table 4.7.1: Association between Kinesiophobia (TSK items) and pain intensity:

Dependent variable	Independent variable	Chi value	P-value
Afraid of exercise	Pain intensity	6.886	0.076
Body signals something is wrong		3.055	0.383
Exercise relieves pain		2.635	0.451
Pain means injured body		4.659	0.199
Avoidance of movement		3.077	0.380
Pain signals to stop exercise		0.290	0.962

Table 4.7.2: Association between pain intensity and level of kinesiophobia:

Dependent variable	Independent variable	Chi value	P-value
Level of kinesiophobia	Pain intensity	9.348	0.002

There was no significant relationship between any single kinesiophobia item and pain intensity (all $p > 0.05$), meaning individual fear-related statements were not directly linked to how much pain the participants felt. However, when looking at the total kinesiophobia score, a significant association was found with pain intensity (Chi-square = 9.348, $p = 0.002$). So, while separate items didn't show a strong link with pain, the total level of fear did.

Table 4.8: Association between Kinesiophobia (TSK items) and Neck musculoskeletal complaints:

Dependent variable	**Independent variable**	**Chi value**	**P-value**
Afraid of exercise	Radiating pain	1.047	0.790
	Hinder sleep	2.943	0.400
	Trouble when standing	5.901	0.750
	Trouble when Sitting	11.560	0.073
	Trouble when Moving loads (>5 kg)	7.876	0.547
	Trouble when Moving loads (>20 kg	4.776	0.853
	Trouble in uncomfortable postures	6.760	0.662
	Trouble in the same postures	8.674	0.193
Body signals something is wrong	Radiating pain	3.055	0.383
	Hinder sleep	4.036	0.258
	Trouble when standing	23.875	**0.005***
	Trouble when Sitting	5.657	0.463

	Trouble when Moving loads (>5 kg)	7.039	0.633
	Trouble when Moving loads (>20 kg	11.663	0.233
	Trouble in uncomfortable postures	7.751	0.559
	Trouble in the same postures	3.269	0.774
Exercise relieves pain	Radiating pain	2.578	0.461
	Hinder sleep	1.123	0.772
	Trouble when standing	18.372	**0.031***
	Trouble when Sitting	10.545	0.103
	Trouble when Moving loads (>5 kg)	9.896	0.359
	Trouble when Moving loads (>20 kg	6.879	0.650
	Trouble in uncomfortable postures	8.975	0.440
	Trouble in the same postures	14.228	**0.027***
	Radiating pain	6.330	0.097

Pain means injured body	Hinder sleep	2.690	0.442
	Trouble when standing	8.209	0.513
	Trouble when Sitting	3.857	0.696
	Trouble when Moving loads (>5 kg)	23.934	**0.004***
	Trouble when Moving loads (>20 kg	9.660	0.379
	Trouble in uncomfortable postures	16.573	0.056
	Trouble in the same postures	10.887	0.092
Avoidance of movement	Radiating pain	7.450	0.059
	Hinder sleep	11.086	**0.011***
	Trouble when standing	11.410	0.249
	Trouble when Sitting	4.352	0.629
	Trouble when Moving loads (>5 kg)	12.095	0.208
	Trouble when Moving loads (>20 kg	12.946	0.165

	Trouble in uncomfortable postures	6.746	0.644
	Trouble in the same postures	6.834	0.336
Pain signals to stop exercise	Radiating pain	5.052	0.168
	Hinder sleep	0.880	0.830
	Trouble when standing	16.153	0.064
	Trouble when Sitting	5.958	0.428
	Trouble when Moving loads (>5 kg)	14.346	0.111
	Trouble when Moving loads (>20 kg	23.963	**0.004***
	Trouble in uncomfortable postures	13.558	0.139
	Trouble in the same postures	9.659	0.140

Chi-square analyses revealed that the item **Afraid of exercise** did not show statistically significant associations with any of the neck musculoskeletal complaints ($p > 0.05$). These results suggest that functional musculoskeletal limitations are not significantly associated with the fear of injury during exercise in patients with chronic neck pain.

The item **Body signals something** is wrong showed a statistically significant association with trouble when standing for a long time (chi square value = 23.875, $p = 0.005$),

indicating that individuals who experience greater difficulty standing for extended periods are more likely to perceive their pain as a sign of something seriously wrong in the body. On the other hand, radiating neck pain (Chi square value = 3.055, p = 0.383), neck pain hindering sleep (Chi square value = 4.036, p = 0.258), and difficulties related to sitting**,** lifting**,** working in uncomfortable or static postures**,** did not show significant associations (all p > 0.05).

The item **Exercise relieves pain** demonstrated statistically significant associations with two neck musculoskeletal complaints. A significant association was found with trouble when standing for a long time (chi square value = 18.372, p = 0.031) and with trouble in the same postures (chi square value = 14.228, p = 0.027). Although trouble when sitting showed a relatively high chi-square value (chi square = 10.545), the association did not reach statistical significance (p = 0.103). No significant associations were observed for radiating pain (p = 0.461), hinder sleep (p = 0.772), trouble when moving loads >5 kg (p = 0.359), trouble when moving loads >20 kg (p = 0.650), or trouble in uncomfortable postures (p = 0.440).

The item **Pain means injured body** was significantly associated with trouble when moving loads >5 kg (chi square value = 23.934, p = 0.004), suggesting that individuals who equate pain with physical injury were more likely to experience difficulty lifting moderate weights. No significant associations were observed for hinder sleep (p = 0.442), trouble when standing (p = 0.513), trouble when sitting (p = 0.696), or trouble when moving loads >20 kg (p = 0.379). Overall, these findings suggest that individuals who believe pain signals actual bodily harm may have greater difficulty with physical tasks, particularly those involving moderate lifting, possibly due to protective or avoidance behaviors.

The item **Avoidance of movement** showed a statistically significant association with hinder sleep (chi square = 11.086, p = 0.011), indicating that individuals who tend to avoid movement due to fear of pain were more likely to report sleep disturbances caused by neck complaints. Other variables, including radiating neck pain, postural difficulties, and challenges with lifting or standing/sitting for long periods, did not show significant

associations (all $p > 0.05$), radiating neck pain also approached non significance (Chi square value =7.450, p=0.059).

The item **Pain signals to stop exercise** showed a statistically significant association with trouble when moving loads >20 kg (chi square = 23.963, $p = 0.004$), suggesting that individuals experiencing greater physical strain may be more likely to adopt protective beliefs about pain and activity. All other items including radiating pain, sleep disturbance, standing or sitting difficulties, lifting lighter loads, and posture-related issues showed no significant associations ($p > 0.05$). This indicates that such protective beliefs may be more strongly influenced by high-load physical tasks than by general or postural discomfort.

Table 4.9.1: Association between Kinesiophobia (TSK items) and level of neck disability:

Dependent variable	Independent variable	Chi value	P-value
Afraid of exercise	Disability level	11.921	0.452
Body signals something is wrong		8.201	0.769
Exercise relieves pain		7.968	0.788
Pain means injured body		11.748	0.466
Avoidance of movement		17.012	0.149
Pain signals to stop exercise		13.477	0.335

Table 4.9.2: Association between level of disability and level of kinesiophobia:

Dependent variable	Independent variable	Chi value	P-value
Level of kinesiophobia	Level of disability	2.059	0.725

There was no significant association between any kinesiophobia items and disability (all $p > 0.05$). The overall kinesiophobia level also showed no significant association with disability (Chi-square = 2.059, $p = 0.725$), indicating fear of movement was not related to disability in this sample.

Chapter-v: Discussion

The purpose of the study was to identify the characteristics and associated factors of kinesiophobia. As most of the former researches took the total TSK (Tampa Scale for Kinesiophobia) score, the proposed research included the item-wise analysis of TSK, which helps to comprehend individual fear-related beliefs in a more refined manner. The helped in the finding of how exact fears and perceptions are related to clinical complaints.

The current research included 113 persons who had chronic neck pain. These included 57% (n = 64) male and 43% (n = 49) female. Among the participants, 72.6 % (n = 82) of the participants had high levels of kinesiophobia as opposed to 27.4 % (n = 31) having low levels of kinesiophobia. These results are rather close to the study obtained by Nayeem et al. (2023), where among 170 participants, 84.7% (n = 144) of participants had high scores of kinesiophobia and only 15.3% (n = 26) had low numbers. Both research recommend that the fear of movement is very prevalent in patients who are affected by chronic neck pain.

In terms of the pain intensity, 57.5% (n = 65) of the respondents of the present study reported moderate and 42.5% (n = 48) of them reported severe pain. Interestingly, all the participants failed to report on mild or the absence of pain and this is an indication that the level of intensity of pain in this group of people experiencing chronic neck pain is quite high. In comparison, Nayeem et al. (2023) found, among 170 respondents, 61.2% of severe pain were reported, 30% of mild pain, 8.2% of severe pain, and 1% of absence of pain. The variations imply that the subjects enrolled in the given study experienced a relatively higher level of pain.

Statistically significant association was identified in the current study between the intensity of pain and the magnitude of kinesiophobia ($p = 0.002$), which indicates that the people who experience stronger pain are likely to have a higher fear of movement. The results can be compared to those of Naeem et al. (2023), who examined a sample of 170 people (48.8% male and 51.2% female), with an average age of 31.31 ± 4.06 years. They also found a significant relationship between the kinesiophobia and the severity of pain in patients with chronic neck pain ($p = 0.01$), which can be supported by the result of Asiri et al. (2021)

too, who established a strong positive association between the degrees of kinesiophobia and neck pain intensity ($p < 0.001$). meaning that individuals with a higher intensity of pain also have a higher fear of motion. But, the current result is not similar to those of Demirbuken et al. (2016) who studied the case of 99 participants (34 males and 65 females) with chronic neck pain. In their study, the association between the kinesiophobia and pain intensity turned out not to be statistically significant ($p = 0.246$). Notably, none of the individual TSK items in this study showed a significant relationship with pain intesnsity (p value > 0.05).

Among 113 participants with chronic neck pain in the study, majority (56%) were reported having a moderate level of disability followed by 22% with mild disability, 20% with severe disability and 1% as having no or total disability. These results imply that a majority of patients having chronic neck pains are subjected to either moderate or severe functional limitations. But no significant association was found between kinesiophobia and disability ($p = 0.725$). This implies that in this sampled population, the fear of movement could not be strongly associated with the level of physical limitation evoked by neck pain. Such finding contrasts with the results indicated by Saavedra-Hernandez et al. (2012), a cross-sectional study, which examined 97 patients (28 men and 69 women, mean age 39.3 years) who had chronic mechanical neck pain where they observed an association between kinesiophobia and disability ($p = 0.02$).

However, the results of this study are in line with those of Thompson et al. (2010) and Dimitriadis et al. (2015), who found no evidence of a significant correlation between kinesiophobia and impairment or disability in their respective populations of individuals with chronic neck pain. These investigations cast doubt on the commonly accepted theoretical view that kinesiophobia is a major factor in the development of disability in chronic musculoskeletal pain disorders. Particularly, Thompson et al. pointed out that their results run counter to the initial theory that kinesiophobia is a major psychological component that worsens pain and functional impairment in those with chronic neck pain.
The current study used item-level analysis, which may provide different insights and emphasize more subtle patterns, in contrast to the mentioned studies, which relied on overall TSK scores. Interestingly, there was no significant correlation found between the

total impairment level and any of the individual TSK elements in this study. This could imply that complex interactions including pain, psychological distress, coping strategies, and behavioral reactions rather than isolated fear-based beliefs are what lead to perceived handicap in chronic neck pain. The findings indicated that the majority of sociodemographic characteristics, including gender, BMI, employment, and duration of work, had no significant correlation with specific TSK items. Nevertheless, several exceptions were observed. Specifically, "avoid movement to prevent pain" demonstrated a significant association with exercise status ($p = 0.003$), indicating that persons with lower physical activity levels may be more inclined to avoid movement due to pain-related apprehension. Furthermore, the association between "pain signals to cease exercise" and variables such as gender, exercise status, and occupation was statistically significant. This indicates that the interpretation of pain-related signals during physical exercise is shaped by both behavioral patterns and social as well as demographic circumstances. This data corresponds with Demirbuken et al. (2016), who indicated that women with neck discomfort demonstrated significantly elevated levels of kinesiophobia compared to males, highlighting a gender-based disparity in fear-related beliefs. This is consistent with the findings of Castanho et al. (2021), who noted a greater incidence of kinesiophobia in men, and corresponds with the investigations by Panhale et al. (2022) and a 2019 study, both of which found no significant correlation between gender and kinesiophobia ($p = 0.39$). (Bilgin et al., 2019).

The exercise findings did not support the results of Vernon et al. (2010), who determined that kinesiophobia levels were not significantly associated with physical activity ($p = 0.097$). Demirbuken et al. (2014) similarly found no association between kinesiophobia and physical activity levels ($p = 0.197$), indicating that fear-induced avoidance behavior did not influence physical activity in individuals with chronic neck pain.

Although most individual TSK items did not show associations with pain intensity or disability, some were significantly associated with specific physical complaints. For instance, the item "Body signals something is wrong" was significantly associated with difficulty standing for prolonged periods, suggesting that individuals with this belief may interpret musculoskeletal discomfort as a sign of serious bodily damage. Likewise, the

belief "Exercise relieves pain" was significantly associated with difficulty standing and maintaining the same posture, indicating that those experiencing postural difficulties may view physical activity as a pain-relieving strategy. The belief "pain means injured body" was connected to difficulty lifting moderate loads, highlighting that fear of injury may limit functional capacity during tasks requiring physical effort. In addition, the belief "Avoid movement to prevent pain" was significantly associated with sleep disturbances caused by neck pain, which may indicate that fear-avoidant behavior contributes to discomfort or stiffness during rest. Finally, the item "Pain signals to stop exercise" was associated with difficulty lifting heavy loads. These findings suggest that this particular belief is more prevalent among individuals who are exposed to greater physical strain. These findings show that while fear-related beliefs may not always translate into overall disability scores, they are very much tied to specific physical complaints. This supports the use of item-wise analysis to identify the exact beliefs influencing daily function and movement behavior in patients. Nevertheless, there is no study investigating the association among kinesiophobia and musculoskeletal complaints that we can compare with our results.

A major strength of this study is its item-level approach, which allows for more precise identification of fear-related thoughts that correlate with clinical complaints. This suggests that kinesiophobia, when measured at the item level, may affect very specific behaviors or activities rather than general health status. It also supports the idea that relying solely on total scores might overlook critical beliefs that influence daily function. Together, these findings reinforce the value of using item-wise assessment to explore how specific fear-based thoughts affect particular movement behaviors. This approach could be especially useful in personalized rehabilitation planning, allowing clinicians to challenge and reframe only those beliefs that directly limit function rather than applying generalized fear-reduction strategies. Tailoring interventions to challenge these beliefs through pain neuroscience education, or cognitive-behavioral therapy could enhance rehabilitation outcomes.

Limitation: Sample size was limited to 113 participants, below the calculated requirement. Therefore, short academic timeframe constrained participant recruitment. Additionally, the study did not examine other psychological factors such as anxiety, depression, or pain catastrophizing, which are frequently linked to fear-avoidant behaviors and may have influenced the relationships observed. Also data from a single site (CRP, Savar) may limit broader relevance.

Chapter-vi: Conclusion and recommendation

6.1. Conclusion:

This study looks at kinesiophobia in people with chronic neck pain. It focuses on how people's fear-related beliefs (TSK items) connect to the severity of their pain, their handicap, and their specific neck-related complaints. This study looked at the specific beliefs that affect functional constraints using item-wise analysis, which is different from most previous studies that employed overall TSK scores. There were 113 people with chronic neck discomfort who were tested among them 57% (n = 64) were male and 43% (n = 49) were female. The Visual analogue scale was used to measure the intensity of the pain and reported that 57.5% of the participants (n = 65) had a moderate pain and 42.5% of them (n = 48) experienced severe pain. On determination of the level of kinesiophobia, 72.6% (n = 82) participants were found to have high kinesiophobia and only 27.4% (n = 31) had low kinesiophobia. Moderate disability was discovered among the majority of the people (55.8%), and following it is mild disability in 22.1% of the people, severe disability in 20.4%, and no or complete disability in 0.9% of the people. The findings revealed that majority of participants showed high level of kinesiophobia. A strong relationship was identified between total kinesiophobia and pain, which indicates that fear of movement mainly appears in participants with more severe pain. However, no significant association was observed between kinesiophobia and overall disability levels. This indicates that fear-related beliefs may not always translate to general disability but may be linked to particular complaints. Several individual TSK items were significantly associated with specific neck-related issues. Beliefs like “body signals something is wrong” and “exercise relieves pain” were related to difficulty standing or maintaining posture. Similarly, the belief that “pain means injury” was associated with trouble lifting, and “avoid movement to prevent pain” was linked to sleep disturbance. Some demographic and behavioral factors, like gender and exercise status, were also found to be related to certain beliefs. These insights can help physiotherapists and clinicians design more focused interventions by addressing the exact fear or belief affecting a patient’s function. In conclusion, item-wise analysis provided a deeper understanding of kinesiophobia’s role in chronic neck pain.

6.2. Recommendation:

This study examined characteristis and associated factors of kinesiophobia in individuals with chronic neck pain participants. Despite these limitations, the study provided valuable insights for further research. This study only had a small number of participants due to time constraints and resource limitations. More participants from diverse backgrounds should be included in future research to improve the accuracy and utility of the findings. To determine which beliefs were associated with various complaints, this study used each TSK item independently. This approach should be used in future studies to better understand which fear-related thoughts influence day-to-day actions. Long-term research is also advised to observe how kinesiophobia evolves over time.

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Appendix

Appendix 1

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

Ref: CRP-BHPI/IRB/12/2024/1011 Date: 15/12/2024

To
Khadiza Akter
4th Year B.Sc. in Physiotherapy
Session: 2019-2020, Student ID: 112190502
BHPI, CRP, Savar, Dhaka-1343, Bangladesh.

Subject: Approval of the thesis proposal "Characteristics and associated factor of kinesiophobia for the patients with chronic neck pain" by the ethics committee.

Dear Khadiza Akter,
Congratulations.
The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above-mentioned dissertation, with you, as the principal investigator and Md. Ershad Ali, Lecturer, Department of Physiotherapy, BHPI as thesis supervisor. The following documents have been reviewed and approved:

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

The purpose of the study is to explore the characteristics and factors associated with kinesiophobia for the patients with chronic neck pain. The study involves the use of Visual Analogue Scale (VAS), Tampa scale of kinesiophobia (TSK), Neck Disability Index (NDI) questionnaire to explore the pain severity, kinesiophobia level, level of neck disability and self-structured questionnaire for sociodemographic information that may take 20 to 30 minutes to answer the questionnaire. There is no likelihood of any harm to the participants and participation in the study may benefit the participants or other stakeholders. The members of the Ethics Committee have approved the study to be conducted in the presented form at the meeting held at **9 AM on 15 July 2024 at BHPI (44th IRB Meeting).**

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

Best regards,

Muhammad Millat Hossain,
Associate Professor & Course Coordinator, MRS
Member Secretary, Institutional Review Board (IRB)
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

সিআরপি-চাপাইন, সাভার, ঢাকা-১৩৪৩, বাংলাদেশ। ফোন: +৮৮ ০২ ২২৪৪৪৫৪৬৪-৫, +৮৮ ০২ ২২৪৪৪১৪০৪, মোবাইল: +৮৮ ০১৭৩০ ০৫৯৬৪৭
CRP-Chapain, Savar, Dhaka-1343, Bangladesh. Tel: +88 02 224445464-5, +88 02 224441404, Mobile: +88 01730059647
E-mail : principal-bhpi@crp-bangladesh.org, Web: bhpi.edu.bd

Appendix 2

Date: December 24, 2024

To

Head

Department of Physiotherapy

Centre for the Rehabilitation of the Paralysed (CRP)

Chapain, Savar, Dhaka-1343

Through: Head, Department of Physiotherapy, BHPI

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

Sir,

With due respect and humble submission to state that I am Khadiza Akter, student of 4th year B.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI). The Ethical committee has approved my research project entitled: **"Characteristics and associated factor of kinesiophobia for the patients with chronic neck pain"** under the supervision of Md. Ershad Ali, Lecturer, Department of Physiotherapy, BHPI, CRP, Savar, Dhaka-1343.Conducting this research project is partial fulfillment of the requirement for the degree of B.Sc. in Physiotherapy. I want to collect data for my research project from department of Physiotherapy. So, I need your kind permission for data collection at Musculoskeletal unit of CRP, Savar, Dhaka. I would like to assure that nothing of the study would be harmful for the participants.

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

Sincerely,

Khadiza

Khadiza Akter

4thYear

B.Sc. in Physiotherapy

Class Roll: 04; Session: 2019-20

Bangladesh Health Professions Institute (BHPI)

(An academic institution of CRP)

Chapain, CRP, Savar, Dhaka, 1343.

Forwarded

Md. Ershad Ali
Lecturer
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

Forwarded for kind consideration
Sudh

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

Approved.

28/12/24

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

Appendix 3

অনুমতি পত্র

(অংশগ্রহণকারীকে পড়ার জন্য অনুরোধ করা হলো)

আসসালামু আলাইকুম,
আমার নাম খাদিজা আক্তার। আমি "ফিজিওথেরাপি" প্রোগ্রামের অধীনে একটি গবেষণা পরিচালনা করছি। আমার গবেষণার শিরোনাম হলো "দীর্ঘস্থায়ী ঘাড়ের ব্যথা রোগীর জন্য কাইনেসিওফোবিয়ার বৈশিষ্ট্য এবং সংশ্লিষ্ট ফ্যাক্টর" । এই গবেষণা বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই), যা ঢাকা বিশ্ববিদ্যালয়ের মেডিসিন অনুষদের অধিভুক্ত, এখানে পরিচালিত হচ্ছে। এজন্য, আমি আপনার কিছু ব্যক্তিগত এবং গবেষণার সাথে সম্পর্কিত তথ্য সংগ্রহ করতে চাই। এটি প্রায় ২০-৩০ মিনিট সময় নেবে।

আমি আপনাকে জানাতে চাই যে এটি একটি পেশাগত গবেষণা এবং এটি অন্য কোনো কাজে ব্যবহার করা হবে না। আপনার দেওয়া সকল তথ্য গোপন রাখা হবে এবং যেকোনো প্রতিবেদন বা প্রকাশনায় আপনার পরিচয় গোপন রাখা হবে।

এই গবেষণায় অংশগ্রহণ সম্পূর্ণ স্বেচ্ছামূলক এবং আপনি যেকোনো সময় এই গবেষণা থেকে নিজেকে প্রত্যাহার করতে পারবেন কোনো নেতিবাচক প্রভাব ছাড়াই। এছাড়া, আপনি যেকোনো প্রশ্নের উত্তর দিতে অস্বীকৃতি জানাতে পারেন।

অংশগ্রহণকারী হিসাবে যদি এই গবেষণা বা আপনার অধিকার সম্পর্কে কোনো প্রশ্ন থাকে, তাহলে আপনি গবেষক খাদিজা আক্তার অথবা আমার সুপারভাইজার মো. এরশাদ আলী (লেকচারার, ডিপার্টমেন্ট অব ফিজিওথেরাপি, বিএইচপিআই, সিআরপি, সাভার, ঢাকা-১৩৪৩) এর সাথে যোগাযোগ করতে পারেন।

আমি কি সাক্ষাৎকার শুরু করতে পারি?

হ্যাঁ ☐ না ☐

অংশগ্রহণকারীর স্বাক্ষর: …… তারিখ: ……

তথ্যসংগ্রাহকের স্বাক্ষর: ..... তারিখ: .....

Consent Form

(Please read out to the participant)

Assalamu Alaikum,

My name is Khadiza Akter. I am conducting this research project which is the part of B.Sc. in Physiotherapy program and my research title is "Characteristics and associated factor of kinesiophobia for the patients with chronic pain" at Bangladesh Health Professions Institute (BHPI), affiliated with the Faculty of Medicine, University of Dhaka. Because of that I would like to collect some personal and other related information. This will take approximately 20-30 minutes.

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

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

If you have any query about the study or your right as a participant, you may contact with researcher **Khadiza Akter** or my supervisor **Md. Ershad Ali**, Lecturer, Department of Physiotherapy, BHPI, CRP, Savar, Dhaka-1343.

May I start the interview?

Yes ☐ No ☐

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

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

Appendix 3

গবেষণা প্রশ্নাবলী

শিরোনাম: দীর্ঘস্থায়ী ঘাড়ের ব্যথা রোগীর জন্য কাইনেসিওফোবিয়ার বৈশিষ্ট্য এবং সংশ্লিষ্ট ফ্যাক্টর।

	পার্ট-১: ব্যক্তিগত বিবরণ	
	রোগীর আইডি:	
১.১	রোগীর নাম:	সাক্ষাৎকারের তারিখ:
১.২	ঠিকানা: গ্রাম/বাড়ি নং..... পিও..... পিএস..... জেলা:.....	যোগাযোগের নম্বর:
	পার্ট-২: সামাজিক-জনসংখ্যা সংক্রান্ত তথ্য	
২.১	বয়স	……..(বছর)
২.২	লিঙ্গ	১= মহিলা ২= পুরুষ ৩= অন্যান্য
২.৩	শরীরের ওজন	…… কেজি
২.৪	উচ্চতা	…… মি
	বিএমআই	……
২.৫	বৈবাহিক অবস্থা	১= বিবাহিত ২= অবিবাহিত ৩= বিচ্ছিন্ন

২.৬	শিক্ষাগত যোগ্যতা	১= নিরক্ষর ২= প্রাথমিক স্তর ৩= মাধ্যমিক ৪= উচ্চ মাধ্যমিক ৫= স্নাতক ৬= স্নাতকোত্তর
২.৭	বসবাসের এলাকা	১= গ্রামীণ ২= আধা-শহুরে ৩= শহুরে
২.৮	পেশা	১= গৃহিণী ২= দোকানদার ৩= কৃষক ৪= সার্ভিস হোল্ডার ৫= ব্যবসা ৬= দিনমজুর ৭= ছাত্র ৮= অন্যান্য (……)
২.৯	পরিবারের সদস্য	…….
২.১০	উপার্জনকারী সদস্য	…….
২.১১	মাসিক আয়	…….
২.১২	কাজের প্রকৃতি?	……..
২.১৩	আপনি দিনে কত ঘন্টা কাজ করেন?	……..
২.১৪	কাজ: যান্ত্রিক চাপ	……..
২.১৫	অবসর: যান্ত্রিক চাপ	……..
২.১৬	কোন ব্যক্তিগত অভ্যাস?	১= হ্যাঁ ২= না

২.১৭	যদি হ্যাঁ হয় তবে	১= অ্যালকোহল ২= ধূমপান ৩= অন্যান্য
২.১৮	আপনি কি নিয়মিত ব্যায়াম করেন?	১= হ্যাঁ ২= না
২.১৯	ঘাড়ে আঘাতের কোনো ইতিহাস?	১= হ্যাঁ ২= না
২.২০	ব্যথার ধরন	১ = স্থায়ী ২ = মাঝেমধ্যে

পার্ট- ৩: ভিজুয়াল এনালগ স্কেল

ভাস স্কোর: [ ] ১০ এর মধ্যে

ব্যাথা নেই মাঝারি ব্যাথা তীব্র ব্যাথা

পার্ট-৪: ব্যথা সম্পর্কিত তথ্য

৪.১	যখন আপনি প্রথমবার ঘাড়ে ব্যথা অনুভব করেছিলেন আপনার বয়স কত ছিল?	..... বছর
৪.২	-আপনার ঘাড় ব্যথা আপনার কাজের সাথে জড়িত? -আপনার ঘাড়ের ব্যথা কি অবসর কার্যক্রমের সাথে সম্পর্কিত? - আপনার ঘাড়ের ব্যথা কি আপনার বর্তমান চাকরিতে শুরু হয়েছে?	১ = হ্যাঁ, ২ = না ১ = হ্যাঁ, ২ = না ১ = হ্যাঁ, ২ = না
৪.৩	গত ১২ মাসে কতবার আলাদা আলাদা ঘাড়ে ব্যথা হয়েছে?	১ = একবার ২ = ২-৪ বার ৩ = ৫-১০ বার ৪ = ১০ বারের বেশি ৫ = আমার সবসময় ব্যাথা থাকে
৪.৪	গত ১২ মাসে ঘাড়ের ব্যথার জন্য কতদিন ছুটিতে ছিলেন?	১ = কোনদিন না ২ = ১-৭ দিন ৩ = ৮-১৪ দিন ৪ = ১৫-২৮ দিন ৫ = ১-৩ মাস ৬ = ৩ মাসের বেশি
৪.৫	গত ১২ মাসে আপনার ঘাড়ের ব্যথা সবচেয়ে দীর্ঘ সময় কতদিন ধরে ছিল?	১ = একদিনের কম ২ = ১-৭ দিন ৩ = ১-৪ সপ্তাহ ৪ = ৫-৭ সপ্তাহ ৫ = ৮ সপ্তাহ থেকে ৩ মাস ৬ = ৩-১২ মাস
৪.৬	গত ১২ মাসে কি আপনার ঘাড়ে ব্যথা ছড়িয়ে পড়েছিল?	১ = হ্যাঁ ২ = না

৪.৭	যদি হ্যাঁ হয়, তবে ব্যথা কোথায় ছড়ায়?	ডান/ বাম ১ = উপরের বাহু ২ = কনুই ৩ = হাতের কবজি ৪ = আঙুল
৪.৮	আপনার ঘাড়ের ব্যথা কি আপনার ঘুমে ব্যাঘাত ঘটায়?	১ = হ্যাঁ ২ = না

৪.৯	নিম্নলিখিত কাজগুলিতে আপনার ঘাড়ের ব্যথা কি সমস্যা সৃষ্টি করে?			
	আমি এটা কখনই করি না	কোন সমস্যা নেই	সামান্য সমস্যা	অনেক সমস্যা
দীর্ঘ সময় দাঁড়িয়ে থাকা	১	২	৩	৪
দীর্ঘ সময় বসে থাকা	১	২	৩	৪
৫ কেজির বেশি ওজন ওঠানো	১	২	৩	৪
২০ কেজির বেশি ভারি ওজন ওঠানো	১	২	৩	৪
কাঁপানো যন্ত্র দিয়ে কাজ করা	১	২	৩	৪
অস্বস্তিকর ভঙ্গিতে কাজ করা	১	২	৩	৪
একই ভঙ্গিতে দীর্ঘ সময় কাজ করা	১	২	৩	৪

পার্ট- **৫**: **টেম্পা স্কেল ফর কিনেসিওফোবিয়া**

	সর্বোচ্চ অসম্মতি	অসম্মতি	সম্মতি	সর্বোচ্চ সম্মতি
১. আমি ভয় করি যে আমি ব্যায়াম করলে নিজেকে আঘাত করতে পারি	১	২	৩	৪
২. আমি যদি এটি কাটিয়ে ওঠার চেষ্টা করি তবে আমার ব্যথা বাড়বে	১	২	৩	৪

৩. আমার শরীর আমাকে বলছে আমার হয়ত কোন বড় সমস্যা আছে	১	২	৩	৪
৪. যদি আমি ব্যায়াম করি তাহলে হয়ত আমার ব্যাথা কমবে	৪	৩	২	১
৫. মানুষজন আমার শারিরিক অবস্থা গুরুত্ব সহকারে নিচ্ছে না	১	২	৩	৪
৬. একটি দুর্ঘটনা আমার জীবনকে হুমকির মুখে ফেলতে পারে	১	২	৩	৪
৭. ব্যাথা মানেই আমার ভিতরে ক্ষত আছে	১	২	৩	৪
৮. ব্যাথা বাড়বে মানে এই নয় যে সমস্যাটি বিপদজনক	৪	৩	২	১
৯. আমি দুর্ঘটনাবসত নিজেকে আঘাত করতে পারি	১	২	৩	৪
১০.সাবধানতা অবলম্বন করা বা অপ্রয়োজনীয় চলাচল আমাকে নিরাপদ এবং ব্যাথামুক্ত রাখবে	১	২	৩	৪
১১. আমার শারিরিক সমস্যা না থাকলে আমার ব্যাথা হতোনা	১	২	৩	৪
১২. যদিও আমার সমস্যাটির জন্য ব্যাথা হচ্ছে কিন্তু শারিকিভাবে সক্ষম হলে ব্যাথা কম হত	৪	৩	২	১
১৩. ব্যাথার কারনে আমি বুঝতে পারি কখন ব্যায়াম বন্ধ করতে হবে	১	২	৩	৪
১৪. আমার সমস্যা নিয়ে কারও পক্ষে শারিরিকভাবে সক্ষম হওয়া সম্ভব নয়	১	২	৩	৪
১৫. আমি অন্যান্য মানুষের মতো কাজ করতে পারিনা কারন আমার পক্ষে আঘাতপ্রাপ্ত হওয়া খুবই সহজ	১	২	৩	৪
১৬. যদিও আমার অনেক ব্যাথা হচ্ছে তবুও আমি মনে করি এটা বিপদজ্জনক নয়	৪	৩	২	১
১৭. ব্যাথা থাকলে কারও ব্যায়াম করা উচিত নয়	১	২	৩	৪

পার্ট-৬: নেক ডিসএবিলিটি ইনডেক্স

বিভাগ ১ – ব্যথার তীব্রতা

- এই মুহূর্তে আমার কোন ব্যথা নেই।
- এই মুহূর্তে ব্যথা খুবই হালকা।
- এই মুহূর্তে ব্যথা মাঝারি।
- এই মুহূর্তে ব্যথা মোটামুটি তীব্র।
- এই মুহূর্তে ব্যথা খুব তীব্র।
- এই মুহূর্তে ব্যথা সবচেয়ে খারাপ কল্পনা করা যায়

বিভাগ ২- ব্যক্তিগত যত্ন (ধোয়া, ড্রেসিং, ইত্যাদি)

- আমি অতিরিক্ত ব্যথা ছাড়াই নিজের যত্ন নিতে পারি।
- আমি সাধারণত নিজের যত্ন নিতে পারি কিন্তু এতে অতিরিক্ত ব্যথা হয়।
- নিজের যত্ন নেওয়া বেদনাদায়ক এবং আমি ধীরগতির এবং সতর্কতা অবলম্বন করি।
- আমার কিছু সাহায্য দরকার হয় কিন্তু আমার ব্যক্তিগত যত্নের অধিকাংশই নিজে পরিচালনা করি।
- স্ব-যত্নের বেশিরভাগ ক্ষেত্রে আমার প্রতিদিন সাহায্যের প্রয়োজন হয়।
- আমি জামাকাপড় পরতে পারি না, আমার জামা কাপড় ধুতে এবং বিছানায় থাকি।

বিভাগ ৩ - উত্তোলন

- আমি অতিরিক্ত ব্যথা ছাড়াই ভারী ওজন তুলতে পারি।
- আমি ভারী ওজন তুলতে পারি কিন্তু এটি অতিরিক্ত ব্যথা দেয়।
- ব্যথা আমাকে মেঝে থেকে ভারী ওজন তুলতে বাধা দেয়, কিন্তু সেগুলি সুবিধামত অবস্থানে থাকলে আমি তুলতে পারি, উদাহরণস্বরূপ একটি টেবিলে।

- ব্যথা আমাকে ভারী ওজন তুলতে বাধা দেয়, তবে আমি হালকা থেকে মাঝারি ওজন ভুলতে পারি যদি সেগুলি সুবিধাজনকভাবে অবস্থান করে।
- আমি খুব হালকা ওজন তুলতে পারি।
- আমি কোনোকিছুই তুলতে বা বহন করতে পারি না।

বিভাগ ৪ - পড়া

- আমি আমার ঘাড়ে ব্যথা ছাড়াই যত খুশি পড়তে পারি।
- আমার ঘাড়ে সামান্য ব্যথা হলেও আমি যত খুশি পড়তে পারি।
- আমি মাঝারি ব্যথা নিয়ে যত খুশি পড়তে পারি।
- আমার ঘাড়ে মাঝারি ব্যথার কারণে আমি যতটা চাই ততটা পড়তে পারি না।
- আমার ঘাড়ে প্রচণ্ড ব্যথার কারণে আমি খুব কমই পড়তে পারি।
- আমি মোটেই পড়তে পারি না।

বিভাগ ৫-মাথাব্যথা

- আমার কোনো মাথাব্যথা নেই।
- আমার সামান্য মাথাব্যথা আছে যা মাঝেমাঝে আসে।
- আমার সামান্য মাথাব্যথা আছে যা ঘন ঘন আসে।
- আমার মাঝারি মাথাব্যথা আছে যা মাঝেমাঝে আসে।
- আমার তীব্র মাথাব্যথা আছে যা ঘন ঘন আসে।
- আমার প্রায় সব সময় মাথাব্যথা থাকে।

বিভাগ ৬- মনোযোগ

- আমি কোন অসুবিধা ছাড়াই যখন চাই তখন পুরোপুরি মনোনিবেশ করতে পারি।
- সামান্য অসুবিধা হলেও আমি পুরোপুরি মনোনিবেশ করতে পারি।

- আমি যখন চাই তখন মনোযোগ দিতে আমার যথেষ্ট অসুবিধা হয়।
- আমি যখন চাই তখন মনোযোগ দিতে আমার অনেক অসুবিধা হয়।
- আমি যখন চাই তখন মনোযোগ দিতে আমার অনেক বেশী অসুবিধা হয়।
- আমি মোটেও মনোনিবেশ করতে পারি না।

বিভাগ ৭-কাজ

- আমি যত কাজ করতে চাই ততটা করতে পারি।
- আমি শুধুমাত্র আমার স্বাভাবিক কাজ করতে পারি, কিন্তু তার বেশী না।
- আমি আমার স্বাভাবিক কাজের বেশিরভাগই করতে পারি, কিন্তু তার বেশী না।
- আমি আমার স্বাভাবিক কাজ করতে পারি না।
- আমি খুব কমই কোনো কাজ করতে পারি।
- আমি কোনো কাজই করতে পারি না

বিভাগ ৮- ড্রাইভিং

- আমি ঘাড় ব্যথা ছাড়াই আমার গাড়ি চালাই।
- আমার ঘাড়ে সামান্য ব্যথা নিয়ে যতক্ষণ চাই ততক্ষণ গাড়ি চালাতে পারি।
- আমার ঘাড়ে মাঝারি ব্যথা নিয়ে আমি যতক্ষণ চাই ততক্ষণ আমার গাড়ি চালাতে পারি।
- আমার ঘাড়ে মাঝারি ব্যথার কারণে আমি যতক্ষণ চাই ততক্ষণ আমার গাড়ি চালাতে পারি না।
- আমার ঘাড়ে তীব্র ব্যথার কারণে আমি খুব কমই আমার গাড়ি চালাতে পারি।
- আমি আমার গাড়ি মোটেও চালাতে পারি না।

বিভাগ ৯ – ঘুমানো

- আমার ঘুমাতে কোন সমস্যা নেই।
- আমার ঘুম কিছুটা ব্যাহত হয়েছে (১ ঘণ্টার কম। ঘুমহীন) ।

- আমার ঘুম মাঝারিভাবে ব্যাহত (1-2 ঘন্টা। ঘুমহীন) ।
- আমার ঘুম মাঝারিভাবে ব্যাহত (2-3 ঘন্টা। ঘুমহীন) ।
- আমার ঘুম খুব ব্যাহত হয় (3-4 ঘন্টা। ঘুমহীন) ।
- আমার ঘুম সম্পূর্ণভাবে ব্যাহত (5-7 ঘন্টা। ঘুমহীন) ।

বিভাগ ১০- বিনোদন

- আমি ঘাড়ের ব্যথা ছাড়াই আমার সমস্ত বিনোদনমূলক ক্রিয়াকলাপে নিযুক্ত থাকতে পারি।
- আমি আমার ঘাড়ে কিছুটা ব্যথা সহ আমার সমস্ত বিনোদনমূলক ক্রিয়াকলাপে নিযুক্ত থাকতে পারি।
- আমি বেশিরভাগ ক্ষেত্রেই নিযুক্ত হতে পারি, কিন্তু আমার ঘাড়ে ব্যথার কারণে আমার স্বাভাবিক বিনোদনমূলক ক্রিয়াকলাপে নয়।
- আমার ঘাড়ে ব্যথার কারণে আমি আমার কিছু স্বাভাবিক বিনোদনমূলক ক্রিয়াকলাপে নিযুক্ত হতে পারি।
- আমার ঘাড়ে ব্যথার কারণে আমি খুব কমই কোনো বিনোদনমূলক কাজ করতে পারি।
- আমি কোনো বিনোদনমূলক কাজ করতে পারি না।

Research Questionnaire

Title: Characteristics and associated factor of kinesiophobia for the patient with chronic neck pain.

	Part-1: Personal details	
	Patient ID:	Date of Interview:
1.1	Patient Name:	
1.2	Address: Village/house no……. PO……. PS……. District…….	Contact no:
	Part-2: Socio-demographic Information	
2.1	Age	1= (In year).....
2.2	Gender	1= Female 2= Male 3= Others
2.3	Body weight	……KG
2.4	Height	……m
	BMI	**……**
2.5	Marital Status	1= Married 2= Unmarried 3= Separated
2.6	Educational status :	1= Illiterate 2= Primary level 3= Secondary 4= Higher secondary 5= Graduation

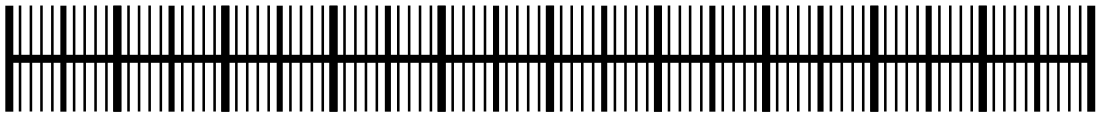
		6= Post graduation
2.7	Living areas	1= Rural 2= Semi Urban 3= Urban
2.8	Occupations	1= Housewife 2= Shopkeeper 3= Farmer 4= Service Holder 5= Business 6= Day-labor 7= Student 8=Others
2.9	Family member	…….
2.10	Earning member	……
2.11	Monthly income	……
2.12	Nature of work?	……
2.13	How many hours do you work in a day?	…….
2.14	Work: Mechanical stress	……
2.15	Leisure: Mechanical stress	……
2.16	Any personal Habits ?	1= Yes 2= No
2.17	If yes	1= Alcohol 2= Smoking 3= Other
2.18	Do you exercise regularly?	1= Yes 2= No

2.19	Any history of neck injury?	1= Yes 2= No
2.20	Nature of pain	1= Constant 2= Intermittent

Part 3: Visual Analogue Scale (VAS) for pain intensity

Vas score: ☐ out of 10

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100



No pain Moderate pain Severe pain

Part 4: Pain related information

(Dutch musculoskeletal questionnaire)

4.1	Please indicate your age when you experienced your neck pain for the first time?	……year
4.2	- Is your neck pain associated with your work? - Is your neck pain associated with leisure time activities? - Did your neck pain start during your current job?	1=Yes, 2=No 1=Yes, 2=No 1=Yes, 2=No
4.3	How often have you had separate spells of neck pain during the past 12 months?	1= Once 2= Between 2-4 times 3= Between 5-10 times 4= More than 10 times 5= My complaints are always there
4.4	How many days were you on sick leave during the past 12 months due to your neck pain ?	1= None 2= 1-7 days 3= 8-14 days 4= 15-28 days 5=Between 1-3 months 6=Longer than 3 months
4.5	How long was the longest spell of your neck pain during the past 12 months?	1= Less than one day 2= 1-7 days 3= 1-4 weeks 4= 5-7 weeks 5= Between 8 weeks and 3 months 6= 3-12 months
4.6	Did you have radiating neck pain (to the arms) during the past 12 months?	1= Yes 2= No
4.7	If yes, then where does it radiate?	Left/right 1= Upper arm 2= Elbow 3= Forearm

		4= Wrist 5= Hand
4.8	Does your neck pain hinder your sleep?	1= Yes 2= No

4.9	Is your neck pain causing trouble when:			
	I do this never	No trouble	Little trouble	Much trouble
Standing for a long period	1	2	3	4
Sitting for a long period	1	2	3	4
Moving loads (more than 5 kg)	1	2	3	4
Moving heavy loads (more than 20 kg)	1	2	3	4
Working with vibrating tools	1	2	3	4
Working in uncomfortable postures	1	2	3	4
Working in the same postures for a long period	1	2	3	4

Part-5: Tampa scale of Kinesiophobia

	Strongly disagree	Disagree	Agree	Strongly agree
1. I'm afraid that I might injury myself if I exercise	1	2	3	4
2. If I were to try to overcome it, my pain would increase	1	2	3	4
3. My body is telling me I have something dangerously wrong	1	2	3	4
4. My pain would probably be relieved if I were to exercise	4	3	2	1
5. People aren't taking my medical condition seriously enough	1	2	3	4
6. My accident has put my body at risk for the rest of my life	1	2	3	4
7. Pain always means I have injured my body	1	2	3	4

8. Just because something aggravates my pain does not mean it is dangerous	4	3	2	1
9. I am afraid that I might injure myself accidentally	1	2	3	4
10. Simply being careful that I do not make any unnecessary movements is the safest thing I can do to prevent my pain from worsening	1	2	3	4
11. I wouldn't have this much pain if there weren't something potentially dangerous going on in my body	1	2	3	4
12. Although my condition is painful, I would be better off if I were physically active	4	3	2	1
13. Pain lets me know when to stop exercising so that I don't injure myself	1	2	3	4
14. It's really not safe for a person with a condition like mine to be physically active	1	2	3	4
15. I can't do all the things normal people do because it's too easy for me to get injured	1	2	3	4
16. Even though something is causing me a lot of pain, I don't think it's actually dangerous	4	3	2	1
17. No one should have to exercise when he/she is in pain	1	2	3	4

Part-6: Neck disability index

Section 1: Pain Intensity

- □ The pain is very mild at the moment.
- □ The pain is moderate at the moment.
- □ The pain is fairly severe at the moment.
- □ The pain is very severe at the moment.
- □ The pain is the worst imaginable at the moment.

Section 2: Personal Care (Washing, Dressing, etc.)

- □ I can look after myself normally without causing extra pain.
- □ I can look after myself normally but it causes extra pain.
- □ It is painful to look after myself and I am slow and careful.
- □ I need some help but can manage most of my personal care.
- □ I need help every day in most aspects of self-care.
- □ I do not get dressed, I wash with difficulty and stay in bed.

Section 3: Lifting

- □ I can lift heavy weights without extra pain.
- □ I can lift heavy weights but it gives extra pain.
- □ Pain prevents me lifting heavy weights off the floor, but I can manage if they are conveniently placed, for example on a table.
- □ Pain prevents me from lifting heavy weights but I can manage light to medium weights if they are conveniently positioned.
- □ I can only lift very light weights.

Section 4: Reading

- □ I can read as much as I want to with no pain in my neck.
- □ I can read as much as I want to with slight pain in my neck.
- □ I can read as much as I want with moderate pain in my neck.
- □ I can't read as much as I want because of moderate pain in my neck.
- □ I can hardly read at all because of severe pain in my neck.
- □ I cannot read at all.

Section 5: Headaches

- □ I have no headaches at all.

- □ I have slight headaches, which come infrequently.
- □ I have moderate headaches, which come infrequently.
- □ I have moderate headaches, which come frequently.
- □ I have severe headaches, which come frequently.
- □ I have headaches almost all the time.

Section 6: Concentration

- □ I can concentrate fully when I want to with no difficulty.
- □ I can concentrate fully when I want to with slight difficulty.
- □ I have a fair degree of difficulty in concentrating when I want to.
- □ I have a lot of difficulty in concentrating when I want to.
- □ I have a great deal of difficulty in concentrating when I want to.
- □ I cannot concentrate at all.

Section 7: Work

- □ I can do as much work as I want to.
- □ I can only do my usual work, but no more.
- □ I can do most of my usual work, but no more.
- □ I cannot do my usual work.
- □ I can hardly do any work at all.
- □ I can’t do any work at all.

Section 8: Driving

- □ I can drive my car without any neck pain.
- □ I can drive my car as long as I want with slight pain in my neck.
- □ I can drive my car as long as I want with moderate pain in my neck.
- □ I can’t drive my car as long as I want because of moderate pain in my neck.
- □ I can hardly drive at all because of severe pain in my neck.

□ I can't drive my car at all.

Section 9: Sleeping

□ I have no trouble sleeping.

□ My sleep is slightly disturbed (less than 1 hrs sleepless).

□ My sleep is mildly disturbed (1-2 hrs sleepless).

□ My sleep is moderately disturbed (2-3 hrs. sleepless).

□ My sleep is greatly disturbed (3-5 hrs. sleepless).

□ My sleep is completely disturbed (5-7 hrs. sleepless).

Section 10: Recreation

□ I am able to engage in all my recreation activities with no neck pain at all.

□ I am able to engage in all my recreation activities, with some pain in my neck.

□ I am able to engage in most, but not all of my usual recreation activities because ofpain in my neck.

□ I am able to engage in a few of my usual recreation activities because of pain inmy neck.

□ I can hardly do any recreation activities because of pain in my neck.

I can't do any recreation activities at all.