Evaluation of Hand and Wrist problems among the carpenters in different areas of Bangladesh

Faculty of Medicine

University of Dhaka

By

Nargish Akter

Du roll: 1299

Du Reg No: 7472

Session: 2016-2017

Student of Bachelor Of Science in Physiotherapy

Department of Physiotherapy

Saic College of Medical Science and Technology

Saic Tower, M - 1/6, Mirpur-14, Dhaka-1216, Bangladesh

We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for the acceptance of this dissertation entitled - **Evaluation of Hand and Wrist problems among the Carpenters in different areas of Bangladesh**

Submitted by **Nargish Akter** for the partial fulfilment of the requirement for the degree of Bachelor of Science in Physiotherapy (B.Sc. PT).

…….

Md. Furatul Haque
Lecturer
Department of Physiotherapy
SCMST, Mirpur-14, Dhaka.
Supervisor

……

Md. Shahidul Islam
Assistant Professor
Department of Physiotherapy
SCMST, Mirpur-14, Dhaka.

……

Zahid Bin Sultan Nahid
Assistant Professor
Head,
Department of Physiotherapy
SCMST, Mirpur-14, Dhaka.

……..

Abid Hasan Khan
Lecturer
Department of Physiotherapy
SCMST, Mirpur-14, Dhaka.

…….

Dr. Zakia Rahman

Lecturer

Department of Physiotherapy

SCMST, Mirpur-14, Dhaka.

……..

Dr. Abul Kasem Mohammad Enamul Haque
Principal

Saic College of Medical Science and Technology

SCMST, Mirpur-14, Dhaka.

DECLARATION

This work has not previously been accepted in substance for any degree and isn't concurrently submitted in candidature for any degree. This dissertation is being submitted in partial fulfillment of the requirements for the degree of B.Sc. in Physiotherapy.

I confirm that if anything identified in my work that I have done plagiarism or any form of cheating that will directly awarded me fail and I am subject to disciplinary actions of authority. I confirm that the electronic copy is identical to the bound copy of the Thesis.

In case of dissemination the finding of this project for future publication, research supervisor will highly concern, it will be duly acknowledged as graduate thesis and consent will consent taken from the physiotherapy department of Saic College of Medical Science and Technology (SCMST).

Signature: **Date:**

Nargish Akter
Bachelor of Science in Physiotherapy (B.Sc. PT)
DU Roll no: 1299
Reg.no: 7472
Session: 2016- 2017
Department of Physiotherapy
Saic college of medical science and technology

CONTENTS

Acknowledgement

First of all, I would like to pay my gratitude to **Almighty Allah** who has given me the ability to complete this project in time with success. The second acknowledgement must go to my parents, my Elder brother and sister who have always inspired me for preparing the project properly. I am extremely grateful to my honorable and praiseworthy Supervisor **Md. Furatul Haque**, Lecturer, Department of Physiotherapy, Saic College of Medical Science and Technology (SCMST) for giving me his valuable time, his keen supervision and excellent guidance without which I could not be able to complete this project.

I am also very thankful to **Dr. Abul Kasem Mohammad Enamul Haque**, Principal, SCMST; **Md. Shahidul Islam**, Assistant Professor & Course Coordinator, Department of Physiotherapy, SCMST; **Zahid Bin Sultan Nahid**, Assistant Professor, Department of Physiotherapy, SCMST; **Abid Hasan Khan**, Lecturer, Department of Physiotherapy and also all of my respected teachers for helping me in this study.

I am grateful to the intern physiotherapists, Department of Physiotherapy, SCMST, Mirpur-14, Dhaka for their support throughout the period of this study. I wish to thank the Librarian of SCMST and his associates for their kind support to find out related books, journals and also access to internet.

Finally, I would like to thanks all the participants who willingly participated as the study population during the conduction of my study and the entire individual who were directly or indirectly involved with this study.

Acronyms

SCMST : SAIC College of Medical Science and Technology

MSDs : Musculoskeletal Disorders

WRMSDs : Work – Related Musculoskeletal Disorders

DASH : Disabilities of The Arm, Shoulder And Hand

WHO : World Health Organization

CTS : Carpal Tunnel Syndrome

JLHA : Job Load and Hazard Analysis

EASHW : European Agency for Safety and Health at Work

DQT : De Quervain's tenosynovitis

DU : University of Dhaka

PT : Physiotherapy

SPSS : Statistical Package For Social Science

BMRC : Bangladesh Medical Research Council

ERB : Ethical Review Board

SD : Standard Deviation

N : Frequency

% : Percentage

List of Tables

List of Figure

ABSTRACT

Purpose: The purpose of this study to evaluate the hand and wrist problems among the carpenters in different areas of Bangladesh.

Objectives: To evaluate the hand and wrist problems among the carpenters in different areas of Bangladesh. To identify hand and wrist problems of the carpenters by using Disabilities of Arm, Shoulder and Hand (DASH). To inquire about pain in hand and wrist at the time of work. To asses the ability of the participants about carrying out routine activities. To inquire about hand and wrist problems interfering and social activities and limiting daily work. To asses the severity of the symptoms of hand and wrist problems of the study of carpenters. To collect socio-demographic information from the participants.

Methodology: Cross sectional type of descriptive Study. Total 167 samples were collected by purposive sampling from different areas of Dhaka and Narayangonj District. Data was collected by self-developed and Structured Questionnaire. Descriptive statistics were used for Data analysis and the result were showed in Table, Pie chart and Bar chart.

Result: In this study Showed that, 167 carpenters were participants in this study. In this study 76 (45.5%) people have pain in during work and 91 (54.5%) people have no pain in during work. Among them 81 (48.5%) people have pain in hand and wrist and 86 (51.5%) people have don't pain in their hand and wrist. In this study Used DASH scale for hand and wrist activity and the mean result of the participants was 23.815 and SD was ± 6.488.

Conclusion: Wrist and hand injuries today are a major hindrance to daily life and are associated with disability, low productivity, and mental health problems. In this study researcher showed that, Carpenters have pain in their hand and wrist for long time work in this profession.

***Key words**: Hand, Wrist, Carpenter, Disabilities.*

Chapter-I INTRODUCTION

1.1 Background:

MSDs are the main contributor to occupational illness in both industrialized and developing nations. Workplace activities including hard lifting and repeated chores are known risk factors. MSDs are a substantial occupational issue and a major cause of illness. There is evidence from numerous research that occupational variables and MSDs are related. Risky working circumstances, outdated working procedures, disorganized work, and rudimentary working instruments are some of the elements that put stress on the workers and reduce productivity. Some of the postures that carpenters employ when building wooden furniture are difficult, which eventually causes bodily pain and MSDs (Biswas et al., 2022).

WMSDs in the hand and wrist are more likely to cause prolonged absences from work than those in other anatomical locations, which results in larger productivity and wage losses. Epidemiological study links the execution of repetitive and vigorous hand-intensive tasks with the onset and severity of hand and wrist WMSDs. The performance of such duties while exhibiting uncomfortable or severe wrist and forearm postures, chilly temperatures, and vibration aggravates these illnesses. Both non-work exposures and workplace psychosocial factors affect these diseases (Barr., 2004).

In the medical field, musculoskeletal problems have long been diagnosed. The first person to link work-related sudden, irregular movements and awkward postures with specific musculoskeletal system problems was an Italian physician named Bernardino Ramazzini, who lived in the seventeenth century (Nunes and Bush., 2012).

In western countries, wrist diseases are widespread, yet the epidemiology is unclear due to the challenges in identifying patients with wrist disorders in various healthcare settings. Damage to strongly innervated structures such bone, the capsule, ligaments, tendons, other soft tissue, and neural structures is a common occurrence in wrist problems. Fractures of the distal radius, ulna, and carpal bones, soft tissue injuries, instability caused by damage to the carpal ligaments, tenosynovitis, and nerve diseases including carpal tunnel syndrome are among the common wrist conditions. The evaluation of impairment has traditionally been the focus of outcome

measurement for people with wrist diseases, utilizing metrics such wrist range of motion, grip strength, discomfort, and hand sensation. However, there is no direct correlation between the severity of the impairment and the capacity to carry out daily tasks (activity limitations) (Bialocerkowski., 2002).

There are numerous wooden furniture manufacturing enterprises in West Bengal and throughout the world. Both in the rural and urban parts of West Bengal, a great number of people are discovered to be working as carpenters, but typically, the manufacturing facilities are disorganized, small-scale businesses. Unorganized laborers who execute the work of carpenters are employed in this sector. Most carpenters work as day laborers for low wages and come from less affluent homes (Biswas et al., 2022).

Carpenters often hold their tools above or below their waists while building and finishing the inside, and they occasionally balance on ladders or the structural frame itself. Making wooden forms for concrete pouring includes firmly holding heavy lumber, using hand held power tools, manually pounding, and connecting forms (Lemasters et al., 1998).

It is widely known that conditions affecting the pisiform bone and the pisotriquetral joint can induce pain on the ulnar side of the wrist. Acute pisiform fractures, mal-union and nonunion of the pisiform, degenerative changes in the pisotriquetral joint, loose bodies, maltracking of the pisiform, pisotriquetral instability, and the pisotriquetral pain syndrome following carpal tunnel release are among them. The radio-carpal, mid-carpal, distal radio-ulnar, and pisotriquetral joints are the four distinct joints visible under an arthroscopic microscope in the wrist. In standard wrist arthroscopy, the radiocarpal and midcarpal joints are seen (Arya et al., 2007).

Hand injuries and illnesses can result in extended periods of sick leave and have a detrimental impact on the hand's ability to perform. The likelihood of returning to work (RTW) generally declines as sick leave duration increases. Instead of the initial physical condition itself, difficulties returning to work frequently result from personal, professional, or family-related issues . Other potential variables, such as work-related and psychological influences, as well as the physical or biological effects of hand diseases and injuries, contribute to the length of sick absence (Opsteegh et al., 2009).

Carpenters in the building sector are reporting a rising frequency of accidents. The majority of these WMDs are chronic and result from repeated high-force motions, severe postures, and heavy lifting over an extended period of time. Construction is a field where job tasks differ widely from site to site, where the pace and conditions of the work are affected by the weather, and where the scope of the project can change from the first stages of groundbreaking outdoors to the latter phases of remodeling and detailing within. Job analysis in manufacturing is frequently limited to a task and cycle assessment related to the person/machine interface. This kind of job analysis is not feasible in the setting of the construction sector. Finding a repeated cycle and putting exposure into a category might be challenging because to the high diversity of the environment, equipment utilized, and dynamic body positions. Few studies have examined how physical activity affects the emergence of body segment discomfort (Dimov et al., 2013).

Carpenters build, fix, and install wooden and other material-based construction frames and structures. Depending on the building project, when the work environment is deemed to be unfavorable for the workers, they do their duties both indoors and outdoors. Their line of work is physically demanding, and injuries and illnesses are more likely to occur. Sadly, they are not aware of the issues with occupational safety and health that are associated. They are impacted by a variety of occupational risks, including physical material handling, exposure to heat, cold, dust, chemicals, and biological agents, repetitive motion, uncomfortable posture, and others. There are few reports on issues with workplace health (Biswas et al., 2022).

Workplace hazards such as dangerous working conditions have been linked to the possibility of serious public health issues, including work-related musculoskeletal diseases (WRMSDs). Poor workplace safety and health practices, which can impair the musculoskeletal systems of the upper body and produce pain, are a daily burden on people. The global death toll from occupational work-related issues was about 6,300 people each day (Tafese., 2014).

The American Academy of Orthopedic Surgeons, in conjunction with a number of other organizations, developed the Disability of the Arm, Shoulder, and Hand (DASH) questionnaire as an outcome measure unique to the upper extremities. Because the upper extremity functions as a single unit, using a single outcome measure for a variety of upper extremity illnesses makes sense. Due to its characteristic of being primarily a measure of handicap, the DASH would be

appropriate in this regard. One of the primary ideas behind the development of the DASH was to make it easier to compare the health burden of various upper-extremity disorders, in addition to reducing the administrative load associated with employing several disease-specific indicators (Gummesson et al., 2003).

It was created to help characterize the disability upper-limb disorder sufferers experience as well as to track symptom and functional changes over time.

Numerous tests have revealed that the DASH excels in both of these capacities. It benefits both doctors and researchers by providing a single, trustworthy tool that can be used to evaluate any or all joints in the upper extremity. The DASH outcome measure includes the core DASH questionnaire in addition to two optional, four-item modules to measure symptoms and function in athletes, performers, and other workers whose professions demand a high level of physical performance. Occupational physicians and other clinicians may find the modules, which are scored separately from the DASH, useful in evaluating these professional workers because they might only be experiencing difficulties at high performance levels, which are outside the scope of the 30-item DASH outcome measure (Willams., 2014).

1.2 Justification of this study:

Hand and wrist injuries pose a significant obstacle to daily functioning and are linked to disability, poor productivity, and mental health issues. Along with having a significant effect on functional ability.

These are the most common disorders and costliest occupational problems among the carpenter workers. Moreover, the carpenter workers generally do repetitive works and sometimes they do need to do heavy weight, or sometimes other work materials. These regular heavy weight lifting and repetitive activity seem to be associated with wrist and hand disorders.

The study aim to evaluate the hand and wrist problems among the carpenters in different areas of Bangladesh. As a student of B.sc in physiotherapy, medical faculty of Dhaka University, a research study is the part of final profession curriculum. My title is evaluation of Hand and Wrist problems among the Carpenters in different areas of Bangladesh. The title is physiotherapy based which is suitable for me to study.

I would like the highlights the quality of life among the carpenter workers through my research. Many studies have provided evidence of hand and wrist disorder among various groups of working population, but in Bangladesh few researches have studied about the carpenter workers and there is no specific information about the hand and wrist problem among the carpenters.

So that, having not any previous research regarding in this topic. I am interested in this topic. If someone wants to work on this topic related research in future, then this research will help him for better knowledge.

1.3 Research Question:

What are the hand and wrist problems among the carpenters in different areas of Bangladesh?

1.4 Objectives of this study:

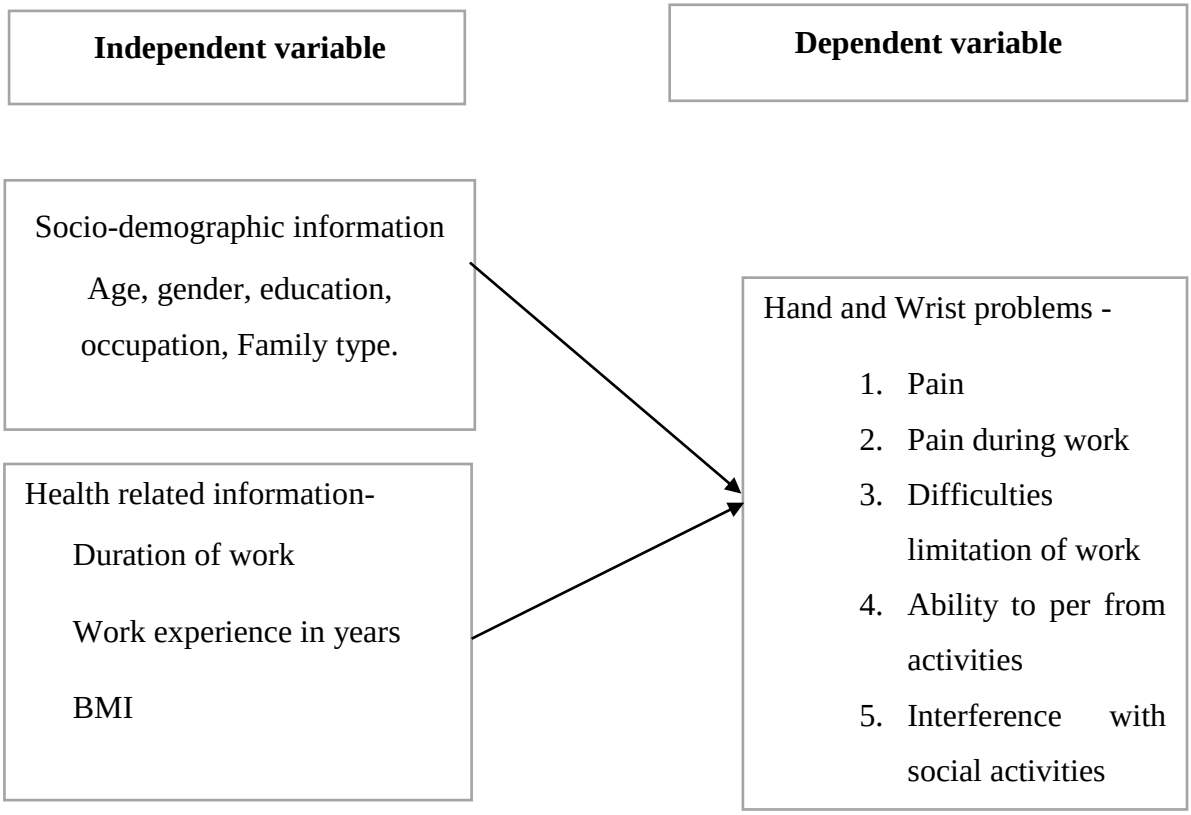
1.4.1 General objective-

1. To explore the hand and wrist problems among the carpenters in different areas of Bangladesh.

1.4.2 Specific objectives:

1. To identify hand and wrist problems of the carpenters by using Disabilities of Arm, Shoulder and Hand (DASH).
2. To collect about pain in hand and wrist at the time of work.
3. To asses the ability of the participants about carrying out routine activities.
4. To collect about hand and wrist problems interfering and social activities and limiting daily work.
5. To asses the severity of the symptoms of hand and wrist problems of the study of carpenters.
6. To collect socio-demographic information from the participants.

1.5 Conceptual Framework:



1.6 Operational Definition of Different Variables:

Hand: The hand is the most sensitive and prehensile organ of the body. 25% of the pacinian corpuscles of the body are situated in the hand. It is not only an essential organ to perform functional activity, but it is also the primary organ for tractile perception.

Wrist: The restricted definition of the carpus, which is the complex connection between the metacarpals, carpus, and forearm bones where the hand is linked to the arm..

Carpenter: A person who constructs or fixes wooden objects like shelving, scaffolds, or buildings.

Socio-demographic: It refers that the social status, age, sex, education, race of population.

Prevalence: The prevalence of a particular attribute in a population over time is measured.

Dash scale questionnaire: A self-report questionnaire called the Disabilities of the Arm, Shoulder, and Hand (DASH) evaluates upper-limb physical function and symptoms. The Disabilities of the Arm, Shoulder and Hand (DASH) outcome measure, a 30-item self-report questionnaire, was developed to assess the patient's health over the course of the previous week. The questions address a range of subjects, including the degree to which arm, shoulder, and hand issues make it challenging to perform different physical activities (21 items), the severity of each pain symptom, including activity-related pain, tingling, weakness, and stiffness (five items), and the impact of the problem on social interaction, work productivity, sleep quality, and self-image (four items).

Chapter-II Literature Review

The hand's numerous bones, muscles, and ligaments allow for a great deal of flexibility and dexterity. The hand's bones come in three main categories, including: The 14 bones known as phalanges are located in both the toes of each foot and the fingers of each hand. The thumb only has two phalanges, but each finger has three (the distal, middle, and proximal). The five bones known as metacarpals make up the middle section of the hand. The eight carpal bones make up the wrist. The ulna and radius bones of the arm are joined to the two rows of carpal bones in the hand (Jhons, 2022).

The wrist joint, which connects the forearm to the hand and allows for a large range of motion, is a complicated joint. The forearm's long bones are the radius and ulna. Despite tapering at the wrist end to become narrower than the Radius, the ulna is the bigger of the two bones. The ulna is placed on the little finger side of the wrist, and the radius is on the thumb side. The eight carpal bones that make up the wrist are divided into the proximal and distal rows. Proximal and distal are terms used to describe the location of bones (Wrist., 2022).

Playing sports, which puts stress on your wrist and puts you at risk for injury. When skating or snowboarding, for instance, you can fall on your hand that is extended. While playing contact sports, your wrist could get hurt. Your wrists can also become sore while playing basketball and gymnastics. Working on an assembly line, using power tools, or engaging in repetitive wrist motions like typing. Having particular illnesses. Depending on the issue, a wrist problem may present with a variety of symptoms. Arm pain is a typical symptom. Other signs include be swelling, a loss of wrist power, or an unexpected numbness or tingling sensation (Wrist injuries., 2021).

The International Commission on Occupational Health (2009) defined work-related musculoskeletal disorders (WMSDs) as musculoskeletal system illnesses and diseases with a work-related causative factor. The World Health Organization has used the word "work-related" to denote a medical etiology of a disease in which the performance of one's job and the workplace environment are two key elements that may have an impact on the development of the illness (Musa., 2014).

Many workers, including carpenters, plumbers, welders, mechanics, and others, are sometimes obliged to adopt uncomfortable positions for sizable portions of the workday, including kneeling, stooping, squatting, or lying down. Workers engaged in physical material handling, atypical and constrained postures, repetitive and static work, vibration, and unfavorable psychological and social circumstances have been found to have a high prevalence of job-related MSDs (Morken et al., 2002).

One of the most prevalent recurrent trauma disorders and non-traumatic peripheral nerve lesions is carpal tunnel syndrome (CTS). According to estimates for the cost of medical treatment and surgical releases, it is one of the most expensive upper-extremity musculoskeletal illnesses (Harris-Adamson et al., 2015).

Workplace hazards such as dangerous working conditions have been linked to the possibility of serious public health issues, including work-related musculoskeletal diseases (WRMSDs). Poor workplace safety and health practices, which can impair the musculoskeletal systems of the upper body and produce pain, are a daily burden on people. The global death toll from occupational work-related issues was about 6,300 people each day (ILO., 2011).

Due to multiple pressures in their line of work, carpenters have a variety of occupational health issues. Musculoskeletal disorders (MSDs), the most prevalent self-reported work-related illness among them, involve impairment in the body's muscles, tendons, bones, cartilages, and ligaments. All types of musculoskeletal system injuries, from minor, transient conditions to severe, permanently crippling ones, are included. It is a symptom of postural strain and one of the main reasons for working-life impairment. MSDs, which are the most common health issue in terms of frequency and cause time lost at work, are aggravated by occupational variables (Biswas et al., 2022).

Multiple groups have described musculoskeletal problems as a growing burden. Health policy makers and other professionals look for appropriate national preventive programs for reporting and prevention of musculoskeletal disorders; Age, gender, and psychological characteristics are known as worker-related risk factors for musculoskeletal illnesses among workers. Repetitive duties and difficult positions are known as work-related factors (Aghillinejad et al., 2012).

Finland has performed examinations into workplace occupational hazards related to building construction. The term "job load and hazard analysis" (JLHA) refers to a method that was established to examine jobs and working conditions.

JLHA employs a four-stage methodology that includes: (1) hazard identification and measurement; (2) hazard evaluation; (3) conclusions and recommendations; and (4) follow-up. At three construction sites, the JLHA approach of work analysis was put to the test. The chance to investigate interactions between the task being performed and the person performing the activity is provided by job analysis. JLHA has received accolades from both employees and employers for being successful in preventing accidents and producing results that can be proven (Dimov et al.,2013).

All of these are collective designations for MSDs that affect tendons, tendon sheaths, and tendon sheath lubrication, as well as the associated bones, muscles, and nerves in the hands, wrists, elbows, shoulders, neck, and back. Carpal tunnel syndrome, tennis and golfer's elbow, and tendinitis are a few of them. Carpenters working in the construction industry have higher occupational injury rates than the country's general labor force, according to data from the US Bureau of Labor Statistics. Additionally, they noted that occupational carpal tunnel syndrome accounts for a significant portion of lost workdays and workers' compensation costs in the United States, with carpentry, wood products, and forestry showing the greatest rates (Musa., 2014).

The most prevalent occupational health issues in Bangladesh that impact thousands of carpenters are musculoskeletal illnesses (MSDs). When working with wood, musculoskeletal issues can cause elbow, neck, shoulder, and wrist pain. In the modern workplace, musculoskeletal disorders (MSDs) are the most significant issues that ergonomists face. Carpenters had an 87% prevalence of musculoskeletal disorders, with wrist pain from an improperly designed, ergonomic hammer being the most common. The prevalence of other musculoskeletal conditions among workers was 72% for finger stiffness and 75% for shoulder pain (Haque., 2018).

Carpenters, masons, electricians, sheet metal workers, roofers, iron workers, and plumbers are just a few of the professions that are frequently exposed to risks associated with WMSDs due to their unique task requirements. Musculoskeletal diseases are brought on by the working habits of construction workers, which include fixed or restricted body positions, repetitive motions, force being concentrated on small regions of the body, and a tempo of work that does not provide enough time for recuperation between movements. Occur in these many occupations and have an impact on the bodily components of construction workers, including the back, neck, shoulders, and hands (Nazri et al., 2018).

An inflammation or degenerative process affecting the tendons, and occasionally the tendon sheaths as well, may manifest as pain in the hand-wrist region. The ailment is classified as tendonitis, peritendonitis, or tenosynovitis depending on the structures implicated. Manual laborers frequently experience hand symptoms, with a self-reported incidence of 30-45% (Thomsen et al., 2007).

According to the World Health Organization (WHO), when exposed to subpar working conditions while on the job, 50–70% of people get WRMSDs. Sewing machine operators who reported pain (ache, pain, and discomfort) in the previous 12 months had a 40% and a 37.7% prevalence of work-related elbow/forearm and hands/wrist MS disorders, respectively. 169 respondents (or 40.0%) reported having MS elbow/forearm problems. Of these, 70 (16.6%) reported having aches, pains, and discomfort for longer than 30 days, though not continuously. 159 (37.2%) of the total responders who were sewing machine operators had hand/wrist MS. (Deyyas and Tafese., 2014).

Shoulders, arms, elbows, wrists, hands, back, legs, and feet can all be impacted by work-related MSDs. They result from jerky, repeated movements, bad posture, or both. Tenderness, aches and pains, tingling, stiffness, and swelling are among the symptoms (Akrouf et al., 2010).

Construction of roads, bridges, and tunnels as well as all phases of commercial and residential building projects employ carpenters, who are exposed to a variety of chemical and physical elements on a daily basis. The diagnoses of asbestosis, emphysema, transportation injuries, falls, and cancers of the lung, bone, and male breast were found to have significantly elevated age-adjusted proportionate mortalities in a study that looked at 27 362 United States Carpenters Union members who passed away between 1987 and 1990.13 In order to focus on key areas for intervention, it is therefore necessary to better comprehend this complicated sector (lemasters et al.,1998).

Musculoskeletal conditions can affect the triangular fibrocartilage complex as well as the distal radio-ulnar, radio-carpal, inter-carpal, mid carpal, and carpometacarpal joints, as well as the supporting ligaments and capsule of the humeroulnar, humeroradial, and proximal radioulnar joints of the elbow. The tendons and muscles that surround the elbow, forearm, wrist, and hand may also be affected. Entrapment or other types of distal neuropathies affecting the median, ulnar, or radial nerves may also result from injuries (Sutton et al., 2016).

WMSDs are characterized by injuries or abnormalities of the muscles, nerves, tendons, joints, cartilage, and other parts of the spinal column, according to the US Department of Labor (Waller et al., 2022).

Musculoskeletal Disorders (MSDs), which impact millions of employees in Europe, were listed as the most prevalent work-related health issue in 2010 by the European Agency for Safety and Health at Work. (Collins and Sullivan., 2015).

DQT is most frequently brought on by overusing the thumb muscles. It is characterized by pain that spreads to the wrist's radial surface and is made worse by ulnar deviation of the hand. The findings revealed that among Lahore carpenters with positive FT, the prevalence of DQT was 50.45%, with 25.2% reporting their greatest pain ever, 26.2% reporting repetitive wrist movements, and 25.2% reporting work-related DQT. 32 carpenters (31%) had a negative test, while 71 (69%) carpenters had a positive FT. When Finkelstein's test was positive, the mean pain score was 6.9320.40, and when the test was negative, the mean pain score was 5.2415.91. At p0.001, the difference was statistically significant. Age and labor hours among carpenters had a positive correlation (r=0.807) (saadat., 2021).

Workplace activities include heavy load lifting, repetitive duties, and awkward working postures are risk factors for WMSDs. The two group welders frequently encountered musculoskeletal issues at work after beginning the current employment. As neck (82.0%), knees (59.0%), lower back (72.2%), and elbows (72.2%) were the most frequently afflicted body parts among arc welders, the most frequently affected body parts among gas welders were neck (64.7%), shoulders (66.7%), knees (67.1%), lower back (66.7%), and upper back (66.7%). (64.75) (Hossein et al., 2011).

When using either hand or powered tools like saws, sanders, hammers, or staplers, ergonomic difficulties can be attributed to three factors: First, the instrument itself needs to be held securely and oriented correctly in relation to the task. Second, the materials can need assistance throughout the procedure (generally on a non-adjustable assembly platform). Thirdly, postural strain may be influenced by the nature of the product and the manufacturing procedure. A pleasant hand grip, little vibration, and less shock loading are all characteristics of good tool design that can assist reduce the loading on the body. The neck/shoulder, elbow, and back received the lowest ratings from small groups of carpenters who were experts in formwork, ceiling, and dry-walling. The greatest risks came from formwork (Musa., 2014).

The prevalence of musculoskeletal illnesses among workers was investigated for two major reasons: to determine the prevalence rate of these disorders and to identify the causal and other relevant factors that affected it (Aghillinejad et al., 2012).

The National Institute for Occupational Safety and Health reported in 1997 that repetitive movements are the primary cause of the majority of work-related musculoskeletal injuries, which affect the muscles, ligaments, tendons, or nerves. Back pain made up the majority of the workers' compensation claims filed for MSDs, according to a study of more than 10,000 carpenters in the state of Washington. According to a study, weighted mean difference data collected from symptoms can be used to estimate the incidence of cumulative trauma disorders among carpenters. It was previously mentioned that carpenters frequently adopt uncomfortable positions while working and suffer from musculoskeletal issues such low back, neck, and wrist pain. Age, year of exposure, and pain severity all had a substantial impact on risk level. On the other hand, chronic musculoskeletal strain that persists may be an indication of MSDs (Biswas et al., 2022).

In the control group, hand-wrist pain affected 7.8% of people, but 15.7% of people who did repetitive tasks experienced it. In the two groups, the prevalence of potential wrist extensor tendonitis was 1.5% and 3.8%, and the prevalence of confirmed wrist extensor tendinitis was 0.76% and 0.51%, respectively (Thomsen., et al . 2007). At least one body location was affected by MSDs, which were most common in the hand/wrist (42%), shoulder (41%), and lower back (38%), with an overall prevalence rate of MSDs among trash cleaners of about 90% (Chang., 2012).

The disabilities of the arm, shoulder, and hand (DASH) questionnaire was created as a self-administered, region-specific outcome instrument to assess symptoms and disability in the upper extremities. A 30-item disability/symptom scale, scored from 0 (no disability) to 100, makes up the majority of the DASH. This study's major goal was to evaluate the DASH's longitudinal construct validity among surgical patients. The second goal was to calculate post-operative self-rated treatment effectiveness (Gummeson et al., 2003).

A 30-item self-report questionnaire known as the Disabilities of the Arm, Shoulder and Hand (DASH) outcome measure was created to evaluate the patient's health over the course of the previous week. The questions cover a variety of topics, including the degree to which arm, shoulder, and hand problems make it difficult to

perform various physical activities (21 items), the severity of each pain symptom, including activity-related pain, tingling, weakness, and stiffness (five items), and the effect of the issue on social interaction, productivity at work, sleep quality, and self-image (four items). Each question has five possible answers. The DASH score, which ranges from 0 (no disability) to 100 (the most severe handicap), is then calculated using the scores (Willams .,2014).

Cross-sectional research are increasingly using the DASH. Further research on the DASH's capacity to detect change over time would be beneficial for both the interpretation of score changes and the estimation of sample sizes, improving its usage in prospective studies (such as the evaluation of the efficacy of various treatment modalities). The ability of an instrument to measure change can be demonstrated in a variety of ways, including comparing groups at one moment and examining changes over time for groups or individuals (Beaton et al., 2001).

The DASH questionnaire is designed to gauge how an impairment affects the severity and nature of a disability. Even if a person is using their other limb to make up for anything, their capacity to function as a whole is evaluated. Researchers from the Institute of Work and Health in Canada and the American Academy of Orthopaedic Surgeons collaborated to create the questionnaire. Numerous scholarly associations and societies in North America, such as the American Association for Hand Surgery, the American Orthopedic Society for Sports Medicine, the American Shoulder and Elbow Surgeons, the American Society for Surgery of the Hand, the Arthroscopy Association of North America, and the American Society of Plastic and Reconstructive Surgeons, supported their work (Willams.,2014).

Chapter-III METHODOLOGY

3.1 Study design:

It was a Cross sectional type of descriptive Study.

3.2 Study area:

Study area was Dhaka (Sutrapur) and Narayangonj (Don chamber, Fatullah, Mission Para) district.

3.3 Study period:

The duration of the study was 12 months from 1st July 2022 to 30th June 2023

3.4 Study population:

The study population was carpenters of different areas of Dhaka and Narayangonj District.

3.5 Sample size:

Sample size of this study were calculated by this following equation-

We know that;

$n = \frac{z^2 p(1-p)}{d^2}$

Here,

n= Required sample size.

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

P = P is the prevalence taken as 87% or 0.87 ((Haque., 2018).

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

$n = \frac{z^2 p(1-p)}{d^2}$

$n = \frac{(1.96)^2 \times 0.87(1-0.87)}{(0.05)^2}$

$= \frac{3.84 \times 0.87 \times 0.13}{0.0025}$

$= \frac{0.4343}{0.0025}$

$= 173.72$

So, sample size 174.

So, the researcher aim to focus his study by 174 sample following the calculation above initially.

3.6 Sampling technique:

Convenience sampling technique were applied to select the carpenters.

3.7 Method of data collection:

Data was collected from the carpenters by face to face formal interview.

3.8 Instruments of data collection-

- A pre-tested structured questionnaire was used as an instrument of data collection for the present study.
- To evaluate the hand and wrist problems among the carpenters in different areas of Bangladesh by using Disabilities of The Arm, Shoulder and Hand (DASH) Scale.
- Both open and close ended questions were included in the questionnaire.

3.9 Tools of Data collection:

For collecting data some other materials were also used-

- Weighing machine and
- Measuring tape.

3.10 Inclusion criteria:

- Who were willingly participating.
- Only Dhaka and Narayangonj district carpenter were include in this study.

3.11 Exclusion Criteria:

- Mentally unstable.
- Less than 18 years people were not included in this study.

3.12 Procedure of data collection:

At first, researcher took permission from the Carpenters. Before collecting data, the objectives of this study and purpose were explained to all participants. All the participants were given consent form for taking permission from them to participate in this study and they were given opportunity to ask any types of study related questions. The participants who could not read the consent form, researcher read the consent form in front of the participants. After getting written consent, researcher started to collect data. At first, the researcher collected general information using self-developed socio-demographic questionnaire and also collected information about work related by self- developed questions. Structured questionnaire named DASH scale were used in this study to evaluate the hand and wrist activities among the carpenters in different areas of Bangladesh. The interview was conducted in Bengali as though they can understand the questions easily. Face to face interview was conducted because this may provide higher response than other data collection methods. Every interview lasted 8-10 minutes. Each data was collected carefully and confidentially was maintained. After successfully collecting data, researcher leaves the participants by giving thanks to all participants to be a part of study willingly.

3.13 Data Management:

After collection of the questionnaire from the participants, those were checked for any error and inconsistency in the responses. Necessary correction were done accordingly. The responses were coded for the entry into the computer program.

3.14 Data analysis:

Data was analyzed by according to objectives and variable of this study by Microsoft excel and using SPSS (Statistical package for social science) (25 version), And use some statistical test (eg: Chi-Square test).

3.15 Presentation of Results:

The findings of the study have been presented by frequency tabulation of the characteristics. The results were also presented by various graphs, charts and description of the variable.

3.16 Ethical consideration:

- The Research proposal was submitted to the Ethical Review Board (ERB) of SCMST and approval was obtained from the Board.
- The investigator obtained written permission from ethical review board (SCMST).
- Bangladesh Medical Research Council (BMRC) and World Health Organization (WHO) guideline also were followed to conduct the study.
- Ethical review board informed by written document about aims and objectives of the study and that the Participate of the study will not harmed.
- The clients name, address and personal information were kept confidential by the investigator mentally and the dates would be shared with others.

.

Chapter-IV RESULT

This was a cross sectional study. The main objective of the study was to evaluate the hand and wrist activities among the carpenters in different areas of Bangladesh. Total 167 data were collected from Dhaka and Narayangonj. Data were numerically coded and captured in Microsoft Excel and calculated as percentage and presented by using bar chart, pie chart, and tables and using an SPSS 25.0 version software program.

Socio-demographic characteristics

4.1 Age of the Participants:

Table no 1: Frequency distribution of the participants by age

Age group in years	Frequency		Mean	SD
	N	%		
>32	92	55.1	32.91	10.406
<32	75	44.9		
Total	167	100.0		

Regarding frequency distribution of the carpenters by age, it was found that out of 167, 92 (55.1%) carpenters had above >32 years of age. It was also found that 75 (44.9%) carpenters had below the <32 years of age. The mean age was 32.91 and SD was 10.406 (Table.no 1).

4.2 BMI of the participants:

Table no 2: Frequency distribution of the participants by BMI

BMI Group	Frequency		Mean	Standard Deviation
	N	%		
Under weight (<18.5)	22	13.2	22.225	2.9185
Normal (18.6 – 24.9)	121	72.5		
Over weight (25.0 – 29.9)	22	13.2		
Obese (>30)	2	1.2		
Total	167	100.0		

It was revealed that 121 (72.5%) carpenters had normal weight. It was also found that 22 (13.2%) carpenters were underweight, and the number of over weight carpenters were 22 (13.2%) and the 2 (1.2%) carpenters had obese. The mean BMI was 22.225 and SD was 2.9185 (Table no 2).

4.3 Education level of the participants:

Table no 3: Frequency distribution of the participants by Educational level

Educational Level	Frequency	
	N	%
No formal Education	43	25.7
Primary Level	102	61.1
High school Level	21	12.6
Graduation / Post graduation	1	0.6
Total	167	100.0

About the education level of the carpenters 102 (61.1%) carpenters had completed their primary level. It was also found that 43 (25.7%) carpenters had no formal education. The study also showed that 21 (12.6%) carpenters passed high school level. (Table.no 3).

4.4 Religion of the participants –

The study was conducted among 167 carpenters. Among them 154 (92.2%) carpenters were Muslim and 13 (7.8%) were Hindu (Figure no.1).

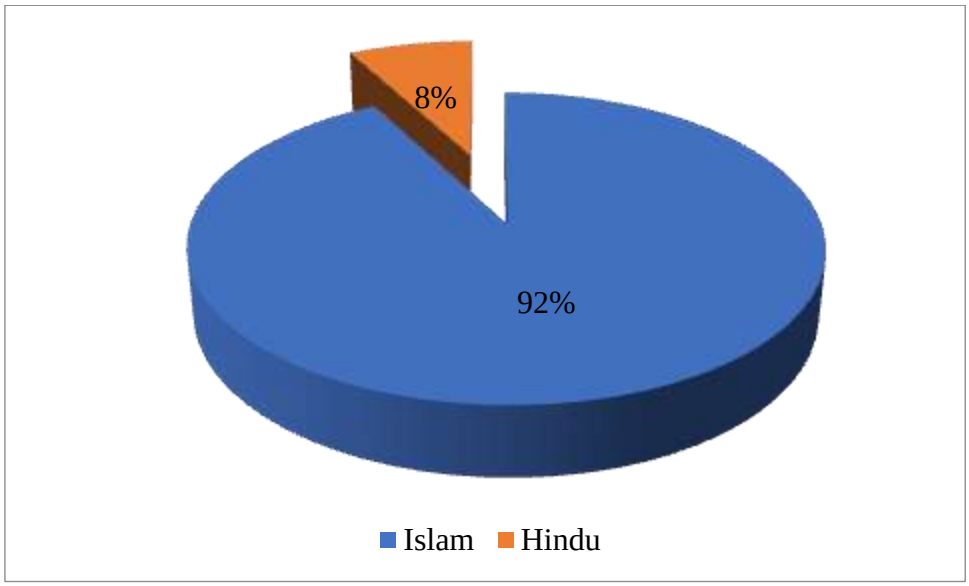


Figure no -1: Religion of the participants

4.5 Marital Status of the participants -

This study was showed that 33 (19.8%) participants was Unmarried and 134 (80.2%) was Married (Figure.no 2).

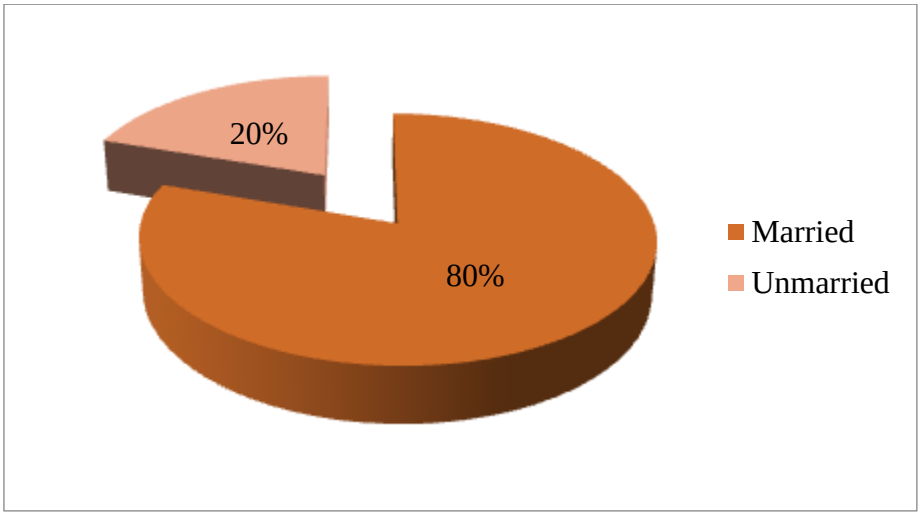


Figure no -2: Marital status of the participants

4.6 Living Area of the participants:

Table no 4: Frequency distribution of the participants by living area

Living Area	Frequency	
	N	%
Rural	2	1.2
Urban	146	87.4
Semi-urban	19	11.4
Total	167	100.0

The study revealed that 146 (87.4%) carpenters were living in urban area, It was also found that 19 (11.4%) carpenter were living in semi-urban area (Table.no 4).

4.7 Family type of the participants –

The study showed that 83 (49.7%) carpenters living were Nuclear family, 69 (41.3%) carpenter living with Joint Family, 15 (9.0%) carpenters were others (Figure.no 3).

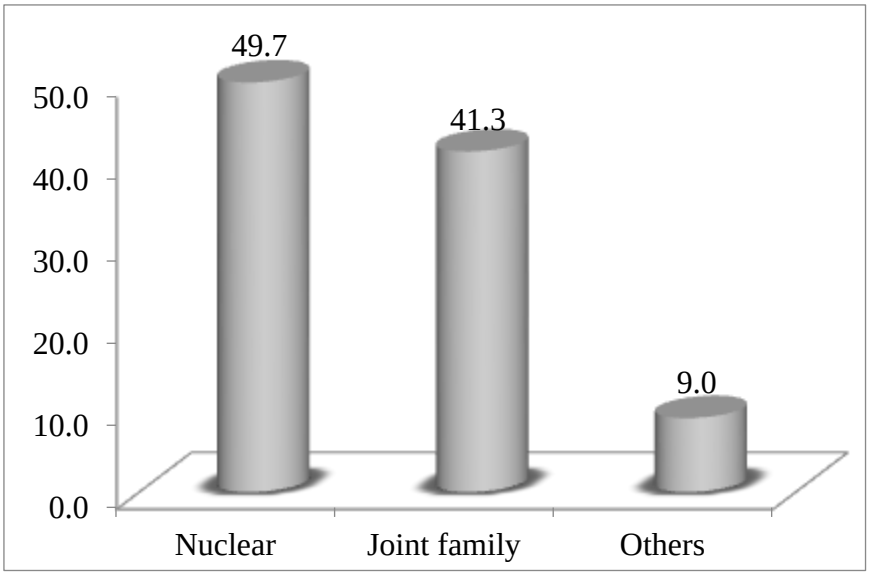


Figure no -3: Type of participants family of the participants

4.8 Monthly Income of the participants:

Table no 5: Frequency distribution of the participants by monthly Income

Income of the participants	Frequency	
	N	%
Taka 0 – 9000	20	12.0
Taka 10000 – 20000	119	71.3
Taka 21000 – 40000	27	16.2
Taka >40000	1	0.6
Total	167	100.0

It was found that 119 (71.3%) participants had family income taka 10000 –20000. It was also found that 27 (16.2%) participants had family income 21000 – 40000 taka (Table.no 5).

Work related information

4.9 Working experience of the participants:

Table no 6: Frequency distribution of the participants by working experience of the participants

Working experience of the participants	Frequency	
	N	%
>6 months	2	1.2
1 year	15	9.0
More than 1 year	150	89.8
Total	167	100.0

The study was conducted Among 167 carpenters. The study showed that 150 (89.8%)) carpenters had more than one year experience, it was also found that 15 (9%) carpenters had 1 year experience, and 2 (1.2%) carpenters had < 6 months experience of their profession (Table.no 6).

4.10 Daily working hour –

The study was conducted among 167 carpenters. Among them 50 (29.9%) people were doing work > 8 hours in a day and 117 (70.1%) people were doing work < 8 hours in a day (Figure.no 4).

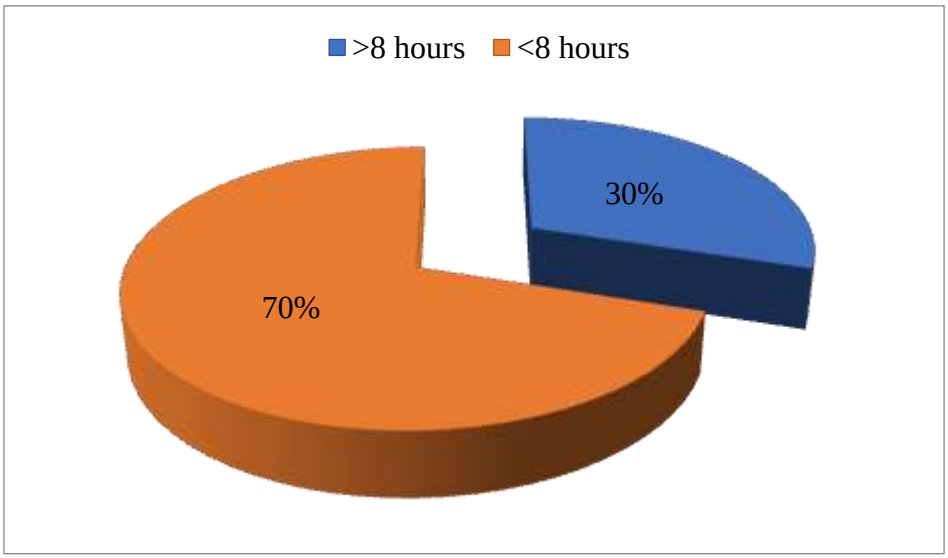


Figure no -4: Per day work of the participants

4.11 Pain in hand and wrist:

A total of 167 carpenters had participants in this study. Among them 81 (48.5%) people have pain in hand and wrist and 86 (51.5%) people have don't pain in their hand and wrist (Figure.no 5).

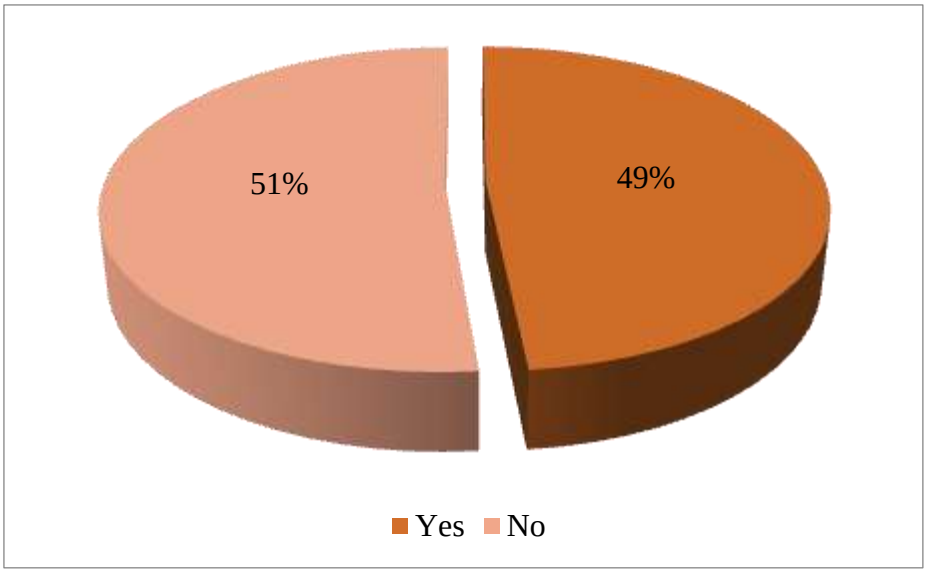


Figure no -5: Pain in hand and wrist of the participants

4.12 Pain during work:

Table no 7: Frequency distribution of the participants by pain during work

Pain During Work	Frequency	
	N	%
Yes	76	45.5
No	91	54.5
Total	167	100.0

This study revealed that 167 carpenter. Among them 76 (45.5%) carpenter had pain during work and 91 (54.5%) carpenter had no pain in during work (Table.no 7).

4.13 Smoking habit of the participants –

The study showed that 94 (56.3%) carpenter had no smoking habit and 73 (43.7%) carpenters had smoking habit (Figur.no 6).

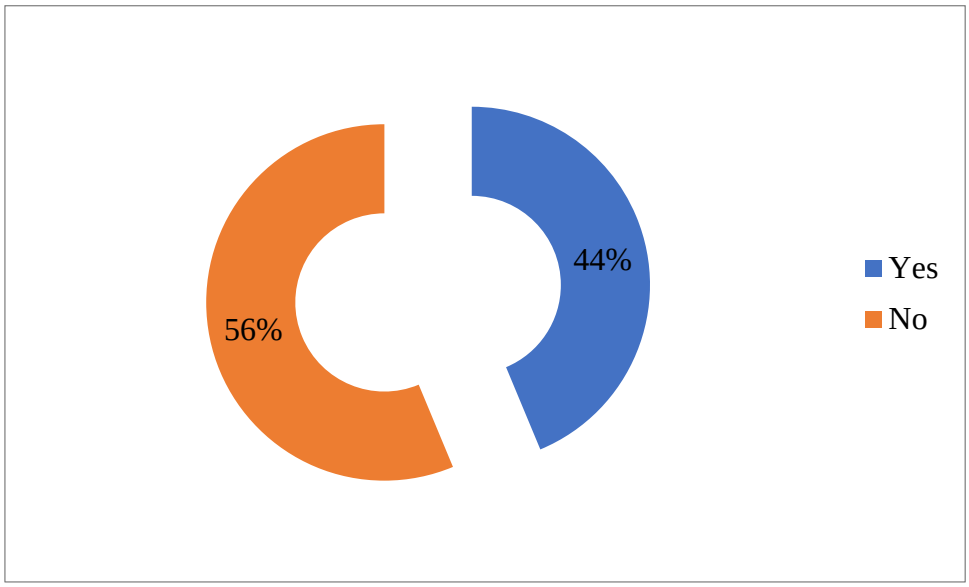


Figure – 6: Smoking habit of the participants

Disabilities of The Arm, Shoulder And Hand (Based on DASH Scale)

4.14 Tight or new jar:

Table no -8: Frequency distribution of the carpenters by tight or new jar

Label Name	Frequency	
	N	%
No difficulty	16	19.8
Mild difficulty	32	39.5
Moderate difficulty	33	40.7
Total	81	100.0

This study showed that 16 (19.8 %) carpenter had no difficulty and it was also showed that 32 (39.5%) carpenters had mild difficulty and 33 (40.7%) carpenters had moderate difficulty (Table.no 8).

4.15 Carpenters by writing :

Table no -9: Frequency distribution of the carpenters by writing

Label Name	Frequency	
	N	%
No difficulty	35	43.2
Mild difficulty	40	49.4
Moderate difficulty	6	7.4
Total	81	100.0

The study revealed that 40 (49.4%) carpenters had mild difficulty, 35 (43.2%) carpenter had no difficulty and it was also showed that 6 (7.4%) carpenter had moderate difficulty (Table.no 9).

4.16 Carpenters by turn a key:

Table no -10: Frequency distribution of the carpenters by turn a key

Label Name	Frequency	
	N	%
No difficulty	12	14.8
Mild difficulty	47	58.0
Moderate difficulty	22	27.2
Total	81	100.0

This study showed that 47 (58.0%) carpenters was mild difficulty and it was also showed that 22 (27.2%) carpenters was moderate difficulty and 12 (14.8%) carpenter was no difficulty (Table.no 10).

4.17 Carpenters by prepare a meal:

Table no -11: Frequency distribution of the carpenters by prepare a meal

Label Name	Frequency	
	N	%
No difficulty	52	64.2
Mild difficulty	22	27.2
Moderate difficulty	7	8.6
Total	81	100.0

This study revealed that 52 (64.2%) carpenters was no difficulty, it was also found that 22 (27.2%) carpenters was Mild difficulty and 7 (8.6%) was Moderate difficulty (Table.no 11).

4.18 Push open a heavy door by carpenters:

Table no -12: Frequency distribution of the carpenters by push open a heavy door

Label Name	Frequency	
	N	%
No difficulty	3	3.7
Mild difficulty	40	49.4
Moderate difficulty	36	44.4
Severe difficulty	2	2.5
Total	81	100.0

It was found that 3 (3.7%) carpenters was no difficulty, it was also found that 40 (49.4%) carpenters was Mild difficulty, it was also showed that 36 (44.4%) carpenters was Moderate difficulty and 2 (2.5%) carpenters was severe difficulty (Table.no 12).

4.19 Place an object on a shelf above your head by carpenters

Table no -13: Frequency distribution of the carpenters by place an object on a shelf above head

Label Name	Frequency	
	N	%
No difficulty	7	8.6
Mild difficulty	50	61.7
Moderate difficulty	24	29.6
Total	81	100.0

A total of 81 carpenters had pain in their hand and wrist. The study showed that 7 (8.6%) carpenters had no difficulty and it was showed that 50 (61.7%) carpenters had mild difficulty and 24 (29.6%) carpenters had moderate difficulty (Table.no 13).

4.20 Do heavy household chores by carpenters:

Table no -14: Frequency distribution of the carpenters by do heavy household chores (e.g., wash walls, wash floors).

Label Name	Frequency	
	N	%
No difficulty	11	13.6
Mild difficulty	56	69.1
Moderate difficulty	12	14.8
Severe difficulty	2	2.5
Total	81	100.0

The study revealed that 11 (13.6%) carpenters had no difficulty, 56 (69.1%) was Mild difficulty, 12 (14.8%) carpenters had moderate difficulty, 2 (2.5%) carpenters had severe difficulty (Table.no 14).

4.21 Garden or do yard work by carpenters:

Table no -15: Frequency distribution of the carpenters by garden or do yard work.

Label Name	Frequency	
	N	%
No difficulty	46	56.8
Mild difficulty	32	39.5
Moderate difficulty	2	2.5
Severe difficulty	1	1.2
Total	81	100.0

46 (56.8%) carpenters had no difficulty, 32 (39.5%) carpenters had mild difficulty, 2 (2.5%) carpenters had moderate difficulty, 1 (1.2%) carpenters had severe difficulty (Table.no 15).

4.22 Carpenters by make a bed:

Table no -16: Frequency distribution of the carpenters by make a bed

Label Name	Frequency	
	N	%
No difficulty	62	76.5
Mild difficulty	16	19.8
Moderate difficulty	3	3.7
Total	81	100.0

In this study 62 (76.5%) carpenters had no difficulty, 16 (19.8%) was mild difficulty, 3 (3.7%) was moderate difficulty (Table.no 16).

4.23 Carry a shopping bag by carpenters:

Table no -17: Frequency distribution of the carpenters by carry a shopping bag or briefcase.

Label Name	Frequency	
	N	%
No difficulty	8	9.9
Mild difficulty	45	55.6
Moderate difficulty	27	33.3
Severe difficulty	1	1.2
Total	81	100.0

It was found that 8 (9.9%) had no difficulty, 45 (55.6%) had mild difficulty, 27 (33.3%) had moderate difficulty, 1 (1.2%) carpenters had severe difficulty (Table.no.17).

4.24 Carry a heavy object by carpenters:

Table no -18: Frequency distribution of the carpenters by carry a heavy object

Label Name	Frequency	
	N	%
No difficulty	4	4.9
Mild difficulty	23	28.4
Moderate difficulty	51	63.0
Severe difficulty	3	3.7
Total	81	100.0

This study revealed that 4 (4.9%) had no difficulty, 23 (28.4%) had mild difficulty, 51 (63.0%) had moderate difficulty, 3 (3.7%) had severe difficulty (Table.no.18).

4.25 Change a light-bulb overhead by carpenters:

Table no -19: Frequency distribution of the carpenters by change a light-bulb overhead.

Label Name	Frequency	
	N	%
No difficulty	19	23.5
Mild difficulty	60	74.1
Moderate difficulty	1	1.2
Severe difficulty	1	1.2
Total	81	100.0

It was found that 19 (23.5%) carpenters had no difficulty, it was also found that 60 (74.1%) carpenters had mild difficulty, 1 (1.2%) carpenters had moderate difficulty, 1 (1.2%) carpenters had severe difficulty (Table.no 19).

4.26 Wash or blow dry hair by carpenters:

Table no -20: Frequency distribution of the carpenters by wash or blow dry hair.

Label Name	Frequency	
	N	%
No difficulty	54	66.7
Mild difficulty	26	32.1
Moderate difficulty	1	1.2
Total	81	100.0

This study revealed that 54 (66.7%) carpenters had no difficulty, it was also found that 26 (32.1%) carpenters had mild difficulty, 1 (1.2%) carpenters had moderate difficulty (Table.no 20).

4.27 Wash Back by the carpenters

Table no 21: Frequency distribution of wash back by the carpenters.

Label Name	Frequency	
	N	%
No difficulty	18	22.2
Mild difficulty	56	69.1
Moderate difficulty	6	7.4
Severe difficulty	1	1.2
Total	81	100.0

It was found that 18 (22.2%) was no difficulty, it was also revealed that 56 (69.1%) was Mild difficulty, 6 (7.4%) was Moderate difficulty, 1 (1.2%) was severe difficulty (Table.no 21).

4.28 put on a pull over Sweater by carpenters

Table no -22: Frequency distribution of the carpenters by put on a pull over Sweater.

Label Name	Frequency	
	N	%
No difficulty	56	69.1
Mild difficulty	25	30.9
Total	81	100.0

This study revealed that 56 (69.1%) carpenters had no difficulty and it was also found that 25 (30.9%) carpenters had mild difficulty (Table.no 22).

4.29 use a knife cut food by carpenters:

Table no -23: Frequency distribution of the carpenters by use a knife cut food

Label Name	Frequency	
	N	%
No difficulty	13	16.0
Mild difficulty	64	79.0
Moderate difficulty	4	4.9
Total	81	100.0

81carpenters have pain in their hand and wrist. In this study found that 13 (16.0%) had no difficulty, 64 (79.0%) had mild difficulty, 4 (4.9%) had moderate difficulty (Table.no 23).

4.30 Recreational activities which require little effort by carpenters:

Table no -24: Frequency distribution of the carpenters by Recreational activities which require little effort (e.g., card playing, Knitting, etc.) .

Label Name	Frequency	
	N	%
No difficulty	22	27.2
Mild difficulty	52	64.2
Moderate difficulty	6	7.4
Severe difficulty	1	1.2
Total	81	100.0

This study revealed that 22 (27.2%) carpenters had no difficulty, 52 (64.2%) carpenters had mild difficulty, 6 (7.4%) carpenters had moderate difficulty, 1 (1.2%) had severe difficulty (Table.no 24).

4.31 Recreational activities by carpenters:

Table no -25: Frequency distribution of the carpenters by Recreational activities.

Label Name	Frequency	
	N	%
No difficulty	15	18.5
Mild difficulty	42	51.9
Moderate difficulty	24	29.6
Total	81	100.0

This study found that 15 (18.5%) had no difficulty, 42 (51.9%) had mild difficulty, 24 (29.6%) had moderate difficulty (Table.no 25).

4.32 Recreational activities in which you move your arm freely by carpenters:

Table no -26: Frequency distribution of the carpenters by Recreational activities in which you move your arm freely (e.g., playing frisbee, badminton, etc.)

Label Name	Frequency	
	N	%
No difficulty	8	9.9
Mild difficulty	62	76.5
Moderate difficulty	10	12.3
Severe difficulty	1	1.2
Total	81	100.0

This study revealed that 8 (9.9%) carpenters had no difficulty, it was also found that 62 (76.5%) carpenters had mild difficulty, 10 (12.3%) carpenters had moderate difficulty (Table.no 26).

4.33 Manage Transportation Needs by carpenters

Table no -27: Frequency distribution of the carpenters by Manage Transportation Needs.

Label Name	Frequency	
	N	%
No difficulty	47	58.0
Mild difficulty	32	39.5
Moderate difficulty	2	2.5
Total	81	100.0

This study found that 47 (58.0%) carpenters had no difficulty, 32 (39.5%) carpenters had mild difficulty, 2 (2.5%) carpenters moderate difficulty (Table.no 27).

4.34 Carpenters by sexual activities:

Table no -28: Frequency distribution of the of the carpenters by sexual activities

Label Name	Frequency	
	N	%
No difficulty	46	56.8
Mild difficulty	34	42.0
Moderate difficulty	1	1.2
Total	81	100.0

This study found that 46 (56.8%) was no difficulty, it was also found that 34 (42.0%) carpenters had mild difficulty, 1 (1.2%) carpenters had moderate difficulty (Table.no.28).

4.35 during the past week normal social activities by carpenters:

Table no -29: Frequency distribution of the carpenters by during the past week normal social activities.

Label Name	Frequency	
	N	%
Not at all	11	13.6
Slightly	53	65.4
Moderately	16	19.8
Quait a bit	1	1.2
Total	81	100.0

This study found that 11 (13.6%) carpenters had Not at all, this study also found that 53 (65.4%) carpenters had Slightly and 16 (19.8%) carpenters had moderately (Table.no 29).

4.36 During the past week doing other regular daily activities by carpenters:

Table no -30: Frequency distribution of the carpenters by during the past week doing other regular daily activities.

Label Name	Frequency	
	N	%
Not a limited at all	3	3.7
Slightly limited	68	84.0
Moderately limited	10	12.3
Total	81	100.0

This study found that 03 (3.7%) had Not a limited at all, 68 (84.0%) had Slightly limited, 10 (12.3%) was Moderately limited (Table.no 30).

4.37 Arm, shoulder or hand pain by carpenters

Table no -31: Frequency distribution of the carpenters by Arm, shoulder or hand pain

Label Name	Frequency	
	N	%
None	2	2.5
Mild	37	45.7
Moderate	42	51.9
Total	81	100.0

This study found that 2 (2.5%) had none pain, 37 (45.7%) had mild pain , 42 (51.9%) had moderate pain (Table.no 31).

4.38 Arm ,shoulder or hand pain when you performed any specific activity by carpenters:

Table no -32: Frequency distribution of the carpenters by Arm ,shoulder or hand pain when you performed any specific activity.

Label Name	Frequency	
	N	%
None	3	3.7
Mild	58	71.6
Moderate	20	24.7
Total	81	100.0

This study found that 3 (3.7%) had no pain, 58 (71.6%) had mild pain, 20 (24.7%) had moderate pain (Table.no 32).

4.39 Tingling in arm, shoulder or hand by carpenters:

Table no -33: Frequency distribution of the carpenters by Tingling in arm, shoulder or hand.

Label Name	Frequency	
	N	%
None	29	35.8
Mild	35	43.2
Moderate	16	19.8
Severe	1	1.2
Total	81	100.0

This study revealed that 29 (35.8%) had no pain, it was also found that 35 (43.2%) had mild pain, 16 (19.8%) had moderate pain, 1 (1.2%) had severe pain (Table.no 33).

4.40 Weakness in arm shoulder or hand by carpenters:

Table no -34: Frequency distribution of the carpenters by weakness in arm shoulder or hand.

Label Name	Frequency	
	N	%
None	4	4.9
Mild	50	61.7
Moderate	27	33.3
Total	81	100.0

This study found that 4 (4.9%) had None, it was also found that 50 (61.7%) had mild, 27 (33.3%) had Moderate (Table.no.34).

4.41 Stiffness in arm shoulder or hand by carpenters:

Table no -35: Frequency distribution of the carpenter by Stiffness in arm shoulder or hand.

Label Name	Frequency	
	N	%
None	5	6.2
Mild	54	66.7
Moderate	21	25.9
Severe	1	1.2
Total	81	100.0

This study revealed that 5 (6.2%) had None, it was also found that 54 (66.7%) had mild, 21 (25.9%) had moderate, 1 (1.2) had severe pain (Table.no 35).

4.42 How much difficulty have you had sleeping because of the pain in arm, shoulder or hand by carpenters:

Table no -36: Frequency distribution of the carpenters by During the past week, how much difficulty have you had sleeping because of the pain in arm, shoulder or hand.

Label Name	Frequency	
	N	%
No difficulty	15	18.5
Mild difficulty	53	65.4
Moderate difficulty	13	16.0
Total	81	100.0

This study revealed that 15 (18.5%) had no difficulty, 53 (65.4%) had mild difficulty, 13 (16.0%) had moderate difficulty (Table.no.36).

4.43 Feel less capable, less confident or less useful because of my arm, shoulder or hand problem by carpenters:

Table no -37: Frequency distribution of the carpenters by feel less capable, less confident or less useful because of my arm, shoulder or hand problem

Label Name	Frequency	
	N	%
Strongly disagree	11	13.6
Disagree	33	40.7
Neither agree or disagree	32	39.5
Agree	5	6.2
Total	81	100.0

This study revealed that 11 (13.6%) had strongly disagree, 33 (40.7%) had disagree, 32 (39.5%) had neither agree or disagree, 5 (6.2%) was Agree.

4.44 Result of DASH Score:

Table no 38-: Frequency distribution of the carpenters by DASH scale result

Score	Frequency		Mean	SD
	(N)	(%)		
<24	44	54.3	23.815	6.488
>24.1	37	45.7		
Total	81	100.0		

This study found that 81 carpenters have pain in their hand and wrist. The mean result of the DASH was 23.815 and SD was ±6.488.

4.45 Association between Re-Age And Feel Less Capable, Confident, Useful of the carpenters:

Table-39: Frequency distribution of the Re-Age And Feel Less Capable, Confident, Useful.

Re Age of the Participate	Strongly disagree	Disagree	Neither agree or disagree	Agree	Pearson Chi-Square	P Value
>32	6	14	13	0	17.329	0.002
<32	5	19	19	5		
Total	11	33	32	5		

This table Shows that Pearson chi square value was 17.329 and the P value was 0.002.

So, There is strong significant association between re-age of the participants and feel less capable, confident, useful (Table.no.39).

4.46 Association between Re-Age And Feel Less Capable, Confident, Useful of the carpenters:

Table-40 : Frequency distribution of the Re-Age and Arm, shoulder or hand pain (last week)

Re Age of the Participate	None	Mild	Moderate	**Pearson Chi-Square**	**P Value**
>32	1	19	13	16.469	0.001
<32	1	18	29		
Total	2	37	42		

This table Shows that Pearson chi square value was 16.469 and the P value was 0.001. So, There is very strong significant association between re-age of the participants and a Arm, shoulder or hand pain (last week). (Table.no 40).

Chapter – V DISCUSSION

The researcher can explain her findings in the discussion section, which is a crucial component. The research team begins by outlining any connections and correlating them with the study's findings in this crucial section of the publication. The essential literature support has been included with the findings and discussion, as well as the findings themselves (Shuttleworth, 2009).

The purpose of this study was to evaluate the hand and wrist activities among the carpenters in different areas of Bangladesh. In this study there was about 167 carpenters were taken. The data that were collected by the researcher through questions, analyzed and discussed below. In spite of the sample size was limited, this study gives us the information regarding individuals in our country who have hand and wrist pain.

In this study researcher found that, A total of 167 carpenter were participate. The mean age of the respondents (N=167) was 32.91 years and standard deviation was (SD:± 10.406) years. The study showed that highest age of the participants was 63 year and lowest age was 18 year. Most vulnerable age group was >32 years here 92 (55.1%). In other study conduct in Bangladesh, 300 male carpenters were participate in this study and the mean age and standard deviation was 45.23 years and (SD:± 11.65) years (Haque, MT., 2018).

In other study Conduct in London, The mean age and standard deviation (SD) were 39.8 years, ±13.0 years (Dimov, et al., 2013). Other study showed that, The mean age and standard deviation (SD) were 28.17 years, ± 6.88 years (saadat, m., 2021).

In this study performed on male carpenters working in various wood markets of Dhaka and Narayangonj District. In other study showed that, This cross-sectional survey performed on male carpenters working in various wood markets of Lahore aged between 25 and 55 years (saadat, m., 2021).

In this Study researcher found that, 25.7% were No formal education, 61.1% were passed primary level, 12.6% were complete High school level, 0.7% were complete their graduation. and 7.8% people were Hindu religion, and 92.2% were Islam religion. 19.8% was Unmarried and 80.2% was Married in this study. 2 (1.2%) people were live in Rural Area, 146 (87.4%) people were live in Urban Area, 19 (11.4%)

people were live in Semi- urban area. In this study also showed that 167 carpenters were participate in this study, 83 (49.7%) people were Nuclear family, 69 (41.3%) were Joint Family, 15 (9.0%) people were others.

In this study researcher also found that, 89.8% (150) people were more than one year experience , 9.0% (15) people were 1 year experience, and 1.2% (2) people were < 6 months experience of their profession. In other study showed that, A carpenter's career lasted an average of 17.2 years, with a range of 0.5 to 43 years (Dimov, et al., 2013).

In this study researcher found that, 50 (29.9%) people were doing work > 8 hours in a day, 117 (70.1%) people were doing work < 8 hours in a day. In other researcher found that, the mean and standard deviation of working hour per day was 8.37 and (SD:± 1.56) (saadat, m., 2021). In other study conduct in India showed that, weekly working hours >48 hours was 114 and <48 hours was 34 (Biswas et al., 2022).

In study researcher found that, Among them 81 (48.5%) people have pain in hand and wrist and 86 (51.5%) people have don't pain in their hand and wrist. In the other showed that, 300 male carpenter were participate in their study and found that 260 (87%) people have wrist pain and also found that 195 (65%) people have Shoulder pain (Haque, MT., 2018). In other study conduct in India showed that, 104 (86.70%) people have discomfort in Shoulder, 84 (70%) people have discomfort in Arm, 92 (76.6%) people have discomfort in Wrist (Biswas et al., 2022).

In study researcher found that, 167 carpenters were participants in this study. In this study 76 (45.5%) people have pain in during work and 91 (54.5%) people have no pain in during work. In other study conduct in India showed that, 111 people have felling pain in during working time >48 hours and <48 hours in during work 29 people have felling pain (Biswas et al., 2022).

In this study showed that, In this study 81 carpenters have pain in their hand and wrist. The mean result DASH score of the participate was 23.815 and SD was ±6.488. In other study showed that, The DASH questionnaire primarily consists of a 30-item scale measuring disabilities and symptoms. The two optional DASH scales (job and sport/music) were not included in the study. The disability/symptom scale provides 5 possible responses for each item. A scale score, ranging from 0 (no disability) to 100 (most severe disability), can be determined if at least 27 of the 30 items are completed. The baseline mean DASH score was 34 (SD± 22) (Gummesson, et al., 2006). In another study, showed that, the purpose of the study, The disabilities

of the arm, shoulder, and hand (DASH) questionnaire was created as a self-administered, region-specific outcome instrument to assess symptoms and disability in the upper extremities. 240 workers were participate, This study demonstrated that, when compared to published normative values for the DASH questionnaire, there was an increase in upper-extremity impairment. The mean DASH score was 27.32 and standard deviation was ±6.41 (kitis, et al., 2009). In another study showed that, The mean DASH score for all the patients was 34 (SD ±20) (Atroshi, et al., 2000).

Chapter – VI CONCLUSION

Wrist and hand problems today are a major hindrance to daily life and are associated with disability, low productivity, and mental health problems. In addition to having a big impact on functional ability. These are the conditions that affect carpenter workers the most frequently and cost the most money. The study aim to evaluate the hand and wrist problems among the carpenters in different areas of Bangladesh.

In this study there was about 167 carpenters were taken. The data that were collected by the researcher through questions, analyzed and discussed below. . A cross sectional type of descriptive study design was used to conduct the research.

The potential for major public health issues, including work-related musculoskeletal diseases (WRMSDs), has been connected to workplace dangers like hazardous working conditions. People must deal with poor workplace safety and health procedures on a daily basis, which might harm the upper body's musculoskeletal systems and cause pain. Risk factors for WMSDs at work include repetitive tasks, lifting large loads, and awkward working positions.

The mean age of the respondents (N=167) was 32.91 years and standard deviation was (SD:± 10.406) years. In this study showed that, In this study 81 carpenters have pain in their hand and wrist. In this study 76 (45.5%) people have pain in during work and 91 (54.5%) people have no pain in during work. In this study used to Dash scale to determine their hand and wrist activity. The mean result DASH score of the participate was 23.815 and SD was ±6.488.

Chapter- VII RECOMMENDATION AND LIMITATION

7.1 Recommendation:

The study aim to evaluate the hand and wrist activities problems the carpenters in different areas of Bangladesh.

The main recommendation would be as follow:

- The random sampling technique rather than the convenient would be chosen in further in order to enabling the power of generalization the result.
- The duration of the study was short, so in future wider time would be taken for conducting the study.
- Different measurement tool need to be included.
- Still now in Bangladesh there is little research had been conducted about hand and wrist activities among the carpenters That is why need to conduct more study about this topic.
- In future someone want to doing this topic related research ,this research will help for better information.

7.2 Limitation of this study:

Every study has its own set of limitations. There were some situational limitation While Considering the Study. Those are as follows:

- The researcher is a student of fourth years BSc in physiotherapy. This thesis are first research work so a number of deficiencies are present in the thesis.
- At the initial stage of data collection a good number of participants were conducted but later on many participants didn't take part in the interview despite repeated requested.
- Due to the short study period, an adequate number of samples could not be gathered for the study.
- Sample size were 174 and Data were collected 167 due to time limitation.

Chapter- Viii Reference

Arya, P.A., Kulshreshtha, R., Kakarala, K.G., Sing, R., Compson, P.J. (2007). Visualisation of the pisotriquetrial joint through standard portals for arthroscopy of the Wrist. The journal of Bone and joint surgery;89;(2).

Akrouf., Q.A.S., Crawford., J.O., Al-Shatti., A.S., Kamel., M.I.(2010). Musculoskeletal disorders among bank office workers in Kuwait. Eastern Mediterranean Health Journal; 16 (1) ;94-100.

Aghillinejad, M., Choobeineh, A.R., Sadeghi, Z., Nouri, M.k., Ahmadi, A.B. (2012). Prevalence of Musculoskeletal disorders among Iranian Steel workers. Iranian Red Cresent Medical Journal ; 14 (4); 198-203

Atroshi, I., Gummesson, C., Andersson, B., Dahlgren, E. and Johansson, A., 2000. The disabilities of the arm, shoulder and hand (DASH) outcome questionnaire: reliability and validity of the Swedish version evaluated in 176 patients. Acta Orthopaedica Scandinavica, 71(6), pp.613-618.

Barr, E.A., Barbe, F.M., and Clark, D.B.(2004). Work related Musculoskeletal disorder of the hand and wrist: Epidemiology pathophysiology and sensorimotor changes. Journal of orthopedic and sports physical therapy;34(10);610-627.

Bialocerkowaski, E.A.(2002).Difficulties associated with wrist disorders- a qualitive study. Clinical rehabilitation;16(4)429-440.

Biswas, K.G., Majumdar, P. and Sahu, S., 2022. Musculoskeletal Disorders: Prevalent predicaments among carpenters of West Bengal, India. BLDE University Journal of Health Sciences, 7(2), p.211.

Beaton, D. E., Bombardier, C., Katz, J. N., Wright, J.G., Wells, G., Boers, M., Strand, V., and Shea, B. (2001). Looking for important change/differences in studies of responsiveness. OMERACT MCID Working Group. Outcome Measures in Rheumatology. Minimal Clinically Important Difference. The Journal of Rheumatology ; 28 (2) ;400-405.

Chang, J.H., Wu, J.D., Liu, C. H., Hsu, D. J. (2012). Prevalence of musculoskeletal disorders and ergonomic assessments of cleaners. American Journal of Industrial Medicine ; 55(7); 593-604.

Collins, J., Sullivan, L.W.O. (2015). Musculoskeletal disorder prevalence and psychosocial risk exposures by age and gender in a cohort of office based employees in two academic institutions. International journal of Industrial Ergonomics; 46; 85-97.

Dimov, M., Bhattacharya, A., Lemasters, G., Atterbury, M., Greathouse, L. and Ollila-Glenn, N., 2013. Exertion and body discomfort perceived symptoms associated with carpentry tasks: an on-site evaluation. AIHAJ-American Industrial Hygiene Association, 61(5), pp.685-691.

Deyyas, W. K., and Tafese, A. (2014). Environmental and Organizational Factors Associated with Elbow/Forearm and Hand/Wrist Disorder among Sewing Machine Operators of Garment Industry in Ethiopia. Journal of Environmental and Public Health; Volume 2014 ; Article ID 732731 ; https://doi.org/10.1155/2014/732731.

Health, Anatomy of the Hand. Jhons Hopkins Medicine, (2022). https://www.hopkinsmedicine.org/health/treatment-tests-and-therapies/anatomy-of-the-hand.

Forest, L.(1998). Prevalence of work related musculoskeletal disorder in active union carpenters. Occupational and environmental Medicine;55;(6);421-427.

Gummesson, C., Atroshi, I., Ekdahl, C. (2003). The disabilities of the arm, shoulder and hand (DASH) outcome questionnaire: longitudinal construct validity and measuring self-rated health change after surgery. BMC Musculoskelet Disorder; 4(11). doi: 10.1186/1471-2474-4-11.

Haque, MT. (2018). Ergonomic design of hammer handle to reduce musculoskeletal disorders of carpenters. International Journal of Research in Advanced Engineering and Technology ; 4(2); 78-83.

Hossein, E., Reza, K., Abolfazl., M. (2011). Comparative survey of work related musculoskeletal disorders (WRMDs) prevalence and related factors in Iranian welders. Pakistani Journal of Medical science; 27(2); 282-285.

Harris-Adamson, C., Eisen, E.A., Dale, A.M., Evanoff, B., Hegmann, K. T., Thiese, M.S., Kapellusch, J.M., Garg, A .,Burt, S., Bao, s., Silverstein, B., Gerr, F., Merlino, L., and Rempel, D. (2015). Personal and workplace psychosocial risk factors for carpal tunnel syndrome: a pooled study cohort. Occupational Environmental Medicine; 70 (8); 529-537.

International Labour Office, "ILO introductory report: global trends and challenges on occupational safety and health," in Proceedings of the 19th World Congress on Safety and Health at Work, Istanbul, Turkey, 2011.

https://www.ilo.org/wcmsp5/groups/public/@ed_protect/@protrav/@safework/documents/publication/wcms_162662.pdf.

Kitis, A., Celik, E., Aslan, U.B. and Zencir, M., 2009. DASH questionnaire for the analysis of musculoskeletal symptoms in industry workers: a validity and reliability study. Applied ergonomics, 40(2), pp.251-255.

Musa, A. I. (2014). Psychosocial Risk Factors For Work - Related Musculo-skeletal Disorders Among Carpentry Workers In Abeokuta, Ogun State, Nigeria. Journal Of Moshood Abiola Polytechnic ; 5 (2).

Morken, T., Riise, T., Moen, B., Bergum, O., Hauge, S.H., Holien, S., Langedrag, A., Olson, H.O., Pedersen, S., Saue, I.L., Seljebo, G.M., Thoppil, V. (2002). Frequent musculoskeletal symptoms and reduced health related quality of life among industrial workers. Occupational Medicine; 52(2);91-98.

Nunes, L.I., and Bush,M.P.(2012).Work related musculoskeletal disorder assessment and prevention. Ergonomic A systemic approach.p246.

Nazri, M.I.A.R.A., Abas, N.H., Affandi, H.M., Deraman, R., Hasmori, M.F., Nagapan, S., Abas, N. A., Kamal, M.F.M. (2018). A Survey on Work-Related Musculoskeletal Disorders Among Construction Trades. International Journal of Integrated Engineering ; 10(4); 131-139.

Opsteegh, L.,Messelink, R.A.H., Postema, K., Dijkstra,U,D., Sluis, D.V.K.C.(2009). Determinants of return to work in patients with hand disorders and hand injuries. Journal of occupational rehabilitation;19;245-255.

Sutton, D., Gross, D.P., Cote, P., Randhawa, K., Yu, H., Wong, J.J., Stern, P., Varatharajan, S., Southerst, D., Shearer, H.M., Stupar, M., Goldgrub, R., Velde, G.V.D., Nordinn, M., Carroll, L.J., Vaisey, A.T. (2016). Multimodal care for the management of musculoskeletal disorders of the elbow, forearm, wrist and hand: a systematic review by the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration. Chiropractic & Manual Therapies ; 24;8.

Shuttleworth, M. (2009) Writing a discussion section. Available at: https://explorable.com/writing-a-discussion-section [Accessed 15 January 2015].

Saadat, M., 2021. Frequency of De Quervain's Tenosynovitis in Carpenters of Lahore. The Healer Journal of Physiotherapy and Rehabilitation Sciences, 1(2), pp.68-75.

Thomsen, J.F., Mikkeleswen, S., Andersen, J.H., Fallentin, N., Loft, I.P., Frost, P., Kaergaard, A., Bonde, J.P., Overgaard, E. (2007). Risk factor for hand wrist disorders in repetitive work. Occupational and Environmental Medicine ; 64(8); 527-533.

Wrist Anatomy. Sports injury Clinic, Review October 25, 2022. https://www.sportsinjuryclinic.net/anatomy/wrist-anatomy.

Tafese, A.(2014). Environmental and organizational factors associated with Elbow/forearm/and hand/wrist disorder among sweing machine operators of garments industry in Ethopia. Journal of environmental and public health;doi.org/10.1155/2014/732731.

Waller, E., Bowens, A., and Washmuth, N. (2022). Prevalence of and prevention for work-related upper limb disorders among physical therapists: a systematic review. BMC Musculoskeletal Disorders; 23;453.

Williams, N., 2014. Dash. Occupational medicine, 64(1), pp.67-68.

Wrist Injuries and Disorders. Medline Plus., Last update june 20, (2021). https://medlineplus.gov/wristinjuriesanddisorders.html.

Appendix - A

Institutional Review Board (IRB) Permission Letter

SAIC COLLEGE OF MEDICAL SCIENCE AND TECHNOLOGY
Approved by Ministry of Health and Family Welfare
Affiliated with Dhaka University

Ref : *Date :* .....

Ref.No: *SCMST/PT/ERB-2017-18/1-2023/52*

3rd January'2023

To
Nargish Akter
4th Professional B.Sc. in Physiotherapy
Saic College of Medical Science and Technology (SCMST)
Mirpur-14, Dhaka-1216.

Sub: Permission to collect data

Dear Akter,

Ethical review board (ERB) of SCMST pleased to inform you that your proposal has been reviewed by ERB of SCMST and we are giving you the permission to conduct study entitled "Prevalence of hand and wrist disorders among the carpenters" and for successful completion of this study you can start data collection from now.

Wishing you all the best.

Thanking You,

11.01.'23
Head of ERB
Ethical Review Board
Saic College of Medical Science and Technology

11.01.23
Principal
Saic College of Medical Science and Technology
Mirpur-14, Dhaka-1216

Address: Saic Tower, M-1/6, Mirpur-14, Dhaka-1216.Mobile:01936005804
E-mail: simt140@gmail.com, Web:www.saicmedical.edu.bd

Appendix – B

সম্মতিপত্র

প্রিয় অংশগ্রহণকারী,

আমি নার্গিস আক্তার, ঢাকা বিশ্ববিদ্যালয় দ্বারা অনুমোদিত "সাইক কলেজ অব মেডিকেল সায়েন্স এন্ড টেকনোলজি" (এস সি এম এসটি) ফিজিওথেরাপী বিভাগে ব্যাচেলর অব ফিজিওথেরাপি প্রোগ্রামের ছাত্রী।

আমার ব্যাচেলর ডিগ্রির আংশিক পূর্ণতার জন্য একটি গবেষণা করছি।গবেষণার শিরোনামটি হলোঃ

" বাংলাদেশের বিভিন্ন এলাকায় কাঠমিস্ত্রি শ্রমিকদের হাত ও কব্জির কার্যক্রমের মূল্যায়ন।"

এখানে, সামাজিক জনসংখ্যা সংক্রান্ত তথ্য, স্বাস্থ্যগত আচরণ এবং বাহু কাধ ও হাতের অক্ষমতাজনিত প্রশ্ন অন্তর্ভূক্ত করে এমন প্রশ্নের একটি তালিকা রয়েছে যা আপনাকে পূরণ করতে হবে। এটি প্রায় ১৮-২৫ মিনিট সময় নেবে সম্পূর্ণ তথ্য সংগ্রহ করার জন্য আমাকে একবার আপনার সাথে সাক্ষাৎ করা প্রয়োজন। আমি আপনাকে জানাতে চাই যে, এটি সম্পূর্ণ একটি একাডেমিক অধ্যয়ন এবং প্রাপ্ত তথ্য অন্য কোন উদ্দেশ্যে ব্যবহার করা হবেনা। আপনার দ্বার প্রাপ্ত সমস্ত তথ্য গোপন রাখা হবে এবং তথ্যের উৎসও বেনামী থাকবে, এই গবেষণায় আপনার অংশগ্রহণ স্বেচ্ছায় এবং সেই সাথে সাক্ষাৎকারের সময় আপনি পছন্দ করেন না বা উত্তর দিতে চান না এমন প্রশ্নের উত্তর না দেওয়ার অধিকার রয়েছে।

আমি শুরু করার আগে আপনার কোন প্রশ্ন আছে ?

তাহলে, সাক্ষাৎকার নিয়ে এগিয়ে যেতে আমি কি আপনার সম্মতি পেতে পারি ?

- হ্যাঁ
- না

অংশগ্রহণকারীর স্বাক্ষর: তারিখ:

ঠিকানা:

মোবাইল নং:

স্বাক্ষীর স্বাক্ষর: তারিখ:

CONSENT FORM (ENGLISH)

Dear participate,

I am Nargish akter, Student of Bachelor of Physiotherapy program in the Department of Physiotherapy, Saic College Of Medical Science and Technology (SCMST) affiliated by "UNIVERSITY OF DHAKA". Conducting the study entitled- **Evaluation of Hand and Wrist problems among the Carpenters in different areas of Bangladesh.** .

As a part of my thesis work for the partial fulfillment of Bachelor degree. There is a list of Question you need to fill up which is include socio-demographic information, health seeking behave and socioeconomic status. This will take approximately 18-25 minutes. I need to meet you just once to collect entire information. I would like to inform you that this is a purely academic study and obtain information will not be used for any other purpose. All information provided by you will be kept confidential and also source of information will remain anonymous, your participation in this study voluntarily and also the right not to answer a particular question that you don't like or do not want to answer during interview.

Do you have any question before I start?

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

Yes ☐ ☐ No

Signature of the Participant……. Date……

Signature of the Researcher……. Date……

Mobile Number……... ID No…….

Address……

Appendix – C

Questionnaire (English)

Evaluation of Hand and Wrist problems among the Carpenters in different areas of Bangladesh**.**

Code No: | | | |

Participate Name: ……

Address: ……

Mobile No: ……..

Section1: Socio-demographic information (kindly tick √ question)

Q.N	Question	Answer	Code
1	What is your age?	(……) year	
2	What is your gender?	1.Male 2.Female 3.Other	
3	BMI		
	Height of the participate (Feet)		
	Weight of the participate (kg)		
4	What is your education level?	1.No formal education 2.Primary level 3.High school level 4.High-secondary level 5.Graduation/ Post graduation	
5	What is your Religion?	1. Muslim 2. Hindu 3. Buddhist 4. Christian 5. Others	
6	Marital status	1. Married	

		2. Unmarried	
7	Living area	1.Urban 2.Semi urban 3.Rural	
8	Family type	1. Nuclear 2. Extended 3. Other	
9	Monthly income	1. 0 – 9000 2. 10000 – 20000 3. 21000 – 40000 4. >40000	

Section 2: Work related information

Q.N	Question	Answer	Code No
1	How many years have you been in this profession?	1.>6 months 2.<6 months 3. 1 year 4. More than one year	
2	How long do you work per day?	1. >8 hours 2. <8 hours	
3	Do you have pain in your wrist and Hand?	1. Yes 2. No	
4	Do you have any pain during work?	1.Yes 2. No	
5	Do you have smoking habit?	1.Yes 2. No	

Section 3: Disabilities of The Arm, Shoulder And Hand (DASH)

Please rate your ability to do the following activities in the last week by circling the number below the appropriate response.

	No difficulty	Mild difficulty	Moderate difficulty	Severe difficulty	UNABLE
1.Open a tight or new jar.	1	2	3	4	5
2.Write.	1	2	3	4	5
3.Turn a key	1	2	3	4	5
4.Prepare a meal	1	2	3	4	5
5.Push open a heavy door	1	2	3	4	5
6.Place an object on a shelf above your head.	1	2	3	4	5
7.Do heavy household chores (e.g., wash walls, wash floors)	1	2	3	4	5
8.Garden or do yard work.	1	2	3	4	5
9.Make a bed	1	2	3	4	5
10.Carry a shopping bag or briefcase	1	2	3	4	5
11.Carry a heavy object	1	2	3	4	5

(over 10 lbs)					
12.Change a lightbulb overhead.	1	2	3	4	5
13.Wash or blow dry your hair	1	2	3	4	5
14.Wash your back.	1	2	3	4	5
15.Put on a pullover sweater.	1	2	3	4	5
16.Use a knife to cut food.	1	2	3	4	5
17.Recreational activities which require little effort (e.g., cardplaying, knitting, etc.)	1	2	3	4	5
18.Recreational activities in which you take some force or impact through your arm, shoulder or hand (e.g., golf, hammering, tennis, etc.).	1	2	3	4	5
19.Recreationa	1	2	3	4	5

l activities in which you move your arm freely (e.g., playing frisbee, badminton, etc.)					
20.Manage transportation needs (getting from one place to another	1	2	3	4	5
21.Sexual activities.	1	2	3	4	5
	NOT AT ALL	SLIGHTLY	MODERATELY	QUAIT A BIT	EXTREMELY
22.During the past week, to what extent has your arm, shoulder or hand problem interfered with your normal social activities with family, friends, neighbours or groups? (circle number)	1	2	3	4	5
	Not	Slightly	Moderately	Very	Unable

	Limited At Al	Limited	limited	limited	
23.During the past week, were you limited in your work or other regular daily activities as a result of your arm, shoulder or hand problem? (circle number)	1	2	3	4	5

Please rate the severity of the following symptoms in the last week. (circle number)

	None	Mild	Moderate	severe	Extreme
24.Arm, shoulder or hand pain	1	2	3	4	5
25.Arm, shoulder or hand pain when you performed any specific activity.	1	2	3	4	5
26.Tingling (pins and needles) in your arm, shoulder or hand.	1	2	3	4	5
27.Weakness in your arm, shoulder or hand	1	2	3	4	5
28.Stiffness in your arm, shoulder or hand.	1	2	3	4	5
	No	Mild	Moderate	Severe	So much

	difficulty	difficulty	difficulty	difficulty	difficulty that I can't sleep
29.During the past week, how much difficulty have you had sleeping because of the pain in your arm, shoulder or hand? (circle number)	1	2	3	4	5
	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
30. I feel less capable, less confident or less useful because of my arm, shoulder or hand problem. (circle number)	1	2	3	4	5

প্রশ্নপত্র (বাংলা)

বাংলাদেশের বিভিন্ন এলাকায় কাঠমিস্ত্রি শ্রমিকদের হাত ও কব্জির কার্যক্রমের মূল্যায়ন.

কোড নাম্বারঃ | | | |

অংশগ্রহণকারীর নাম.....

ঠিকানা: .....

মোবাইল নাম্বার: .....

তারিখঃ

অধ্যায়-১ঃ সামাজিক জনসংখ্যা সংক্রান্ত তথ্য (দয়া করে প্রশ্নে √ টিক দিন)

প্রশ্ন নং	প্রশ্ন	উত্তর	কোড নং
১	আপনার বয়স কত?	.....বছর	
২	আপনার লিঙ্গ কী?	১. পুরুষ ২. মহিলা ৩. অন্যান্য	
৩	বিএমআই		
	অংশগ্রহণকারীর উচ্চতা (ফিট)		
	অংশগ্রহণকারীর ওজন (কেজি)		
৪	আপনার শিক্ষাগত যোগ্যতা কী?	১. কোন প্রাতিষ্ঠানিক শিক্ষা নেই ২. প্রাথমিক স্তর ৩. উচ্চ বিদ্যালয় স্তর ৪. উচ্চ মাধ্যমিক স্তর ৫. উচ্চ স্নাতক/স্নাতকোত্তর	
৫	আপনার ধর্ম কী ?	১. মসলিম ২. হিন্দু ৩. বৌদ্ধ ৪. খ্রিষ্টান ৫. অন্যান্য	
৬	বৈবাহিক অবস্থা	১. বিবাহিত ২. অবিবাহিত ৩. অন্যান্য	
৭	কোথায় বসবাস করেন ?	১. গ্রামীণ ২. শহুরে ৩. উপশহর	
৮	পরিবারের ধরণ কী ?	১. অণু পরিবার ২. যৌথ পরিবার ৩. অন্যান্য	
৯	মাসিক আয় কত ?	১. ০- ১০০০০ ২. ১০০০০ - ২০০০০ ৩. ২১০০০ - ৪০০০০	

		৪. > ৪০০০০	

অধ্যায়-২ কাজ সম্পর্কিত তথ্য

প্রশ্ন নং	প্রশ্ন	উত্তর	কোড নং
১.	আপনি এই পেশায় কত বছর ধরে আছেন?	১. > ৬মাস ২. < ৬মাস ৩. ১ বছর ৪. ১ বছরের বেশি	
২.	আপনি প্রতিদিন কতক্ষণ কাজ করেন ?	১. > ৮ ঘন্টা ২. < ৮ ঘন্টা	
৩.	আপনার কি কব্জি ও হাতে ব্যাথা আছে ?	১. হ্যা ২. না	
৪.	কাজের সময় আপনার কি কোন ব্যাথা হয় ?	১. হ্যা ২. না	
৫.	আপনার কি ধুমপানের অভ্যাস আছে ?	৩. হ্যা ৪. না	

অধ্যায়-৩ বাহু কাধ ও হাতের অক্ষমতাজনিত তথ্য (DASH)

অনুগ্রহ করে যথাযথ প্রতিক্রিয়ার নিচের নম্বরটি প্রদক্ষিণ করে গত সপ্তাহে নিম্নলিখিত ক্রিয়াকলাপ গুলি করার আপনার সক্ষমতার পরিমাণ নির্ণয়

		কোন অসুবিধা নেই	**হালকা অসুবিধা**	**মাঝারি অসুবিধা**	**গুরুতর অসুবিধা**	**অক্ষম**
১.	একটি আঁটসাঁট বা নতুন বয়াম খুলুন।	১	২	৩	৪	৫
২.	লিখুন	১	২	৩	৪	৫
৩.	একটি চাবি ঘুরান	১	২	৩	৪	৫
৪.	খাবার তৈরি করা	১	২	৩	৪	৫
৫.	একটি ভারী দরজা ধাক্কা দেন	১	২	৩	৪	৫
৬.	আপনার মাথার উপরে একটি তাকে একটি বস্তু রাখুন	১	২	৩	৪	৫
৭.	ভারী গৃহস্থলির কাজ করুন (যেমনঃ দেয়াল ধোয়া, মেঝে ধোয়া)	১	২	৩	৪	৫
৮.	বাগান করুন বা উঠানের কাজ করুন	১	২	৩	৪	৫
৯.	বিছানা প্রস্তুত করুন	১	২	৩	৪	৫
১০.	একটি শপিং ব্যাগ বা ব্রিফকেস বহন করুন	১	২	৩	৪	৫
১১.	একটি ভারী বস্তু বহন করুন (১০ পাউন্ডের	১	২	৩	৪	৫

	বেশি)					
১২.	মাথার উপরে লাইট বাল্বটি পরিবর্তন করুন	১	২	৩	৪	৫
১৩	আপনার চুল ধোয়া বা বায়ুপ্রবাহে শুকানো	১	২	৩	৪	৫
১৪.	আপনার পিঠ পরিষ্কার করুন	১	২	৩	৪	৫
১৫	একটি পুল ওভার সোয়েটার পরুন	১	২	৩	৪	৫
১৬	খাবার কাটার জন্য একটি ছুরি ব্যবহার করুন	১	২	৩	৪	৫
১৭.	বিনোদনমূলক ক্রিয়াকলাপ যার জন্য সামান্য প্রচেষ্টার প্রয়োজন (যেমন: তাস খেলা, বুনন ইত্যাদি)	১	২	৩	৪	৫
১৮	বিনোদনমূলক ক্রিয়াকলাপ যেখানে আপনি আপনার বাহু,কাধঁ বা হাত দিয়ে কিছু বল বা প্রভাব নেন (যেমন গল্ফ, হাতুড়ি, টেনিস ইত্যাদি)	১	২	৩	৪	৫
১৯	বিনোদনমূলক কার্যকলাপ যেখানে আপনি আপনার হাত অবাধে নাড়াচ্ছেন (যেমন: ফ্রিসবি খেলা, ব্যাট মিন্টন ইত্যাদি)	১	২	৩	৪	৫
২০	পরিবহনের প্রয়োজনগুলি পরিচালনা করুন (এক জায়গা থেকে অন্য জায়গায় যাওয়া)	১	২	৩	৪	৫
২১.	যৌন কার্যকলাপ	১	২	৩	৪	৫
		একেবারেই না	সামান্য	পরিমিতভাবে	খুবই সামান্য	অত্যধিক
২২	গত সপ্তাহে আপনার বাহু,কাঁধ বা হাতের সমস্যা কতটা পরিবার, বন্ধু-বান্ধব, প্রতিবেশি বা গোষ্ঠীর সাথে আপনার স্বাভাবিক সামাজিক কার্যকলাপে হস্তক্ষেপ করেছে (বৃত্ত নম্বর)	১	২	৩	৪	৫
		মোটেও সীমাবদ্ধ নয়	সামান্য সীমিত	মাঝারিভাবে সীমিত	খুবই কম সংখ্যক	অক্ষম

২৩	গত সপ্তাহে আপনার বাহু, কাঁধ বা হাতের সমস্যার ফলে আপনি কি আপনার কাজ বা অন্যান্য নিয়মিত দৈনন্দিন কার্যকলাপে সীমাবদ্ধ ছিলেন (বৃত্ত নম্বর)	১	২	৩	৪	৫

অনুগ্রহ করে গত সপ্তাহের নিম্নলিখিত লক্ষণগুলি তীব্রতা পরিমান করুন (বৃত্ত নম্বর)

		একটুও না	হালকা	সহনীয়	গুরুত্বর	অত্যধিক
২৪	বাহু,কাঁধ বা হাতে ব্যথা	১	২	৩	৪	৫
২৫	বাহু,কাঁধ বা হাতে ব্যথা যখন আপনি কোন নির্দিষ্ট কার্যকলাপ সম্পাদনা করেন	১	২	৩	৪	৫
২৬	আপনার বাহু, কাঁধ বা হাতে ঝনঝন (পিন এবং সুচ)	১	২	৩	৪	৫
২৭	আপনার বাহু, কাঁধ বা হাতে দূর্বলতা	১	২	৩	৪	৫
২৮	আপনার বাহু, কাঁধ বা হাতে কঠোরতা	১	২	৩	৪	৫
		কোন অসুবিধা নেই	হালকা অসুবিধা	মাঝারি অসুবিধা	গুরুত্বর অসুবিধা	এত কষ্ট যে আমি ঘুমাতে পারিনা
২৯	গত সপ্তাহে আপনার বাহু, কাঁধ বা হাতের ব্যথার কারনে আপনার ঘুমাতে কতটা অসুবিধা হয়েছে (বৃত্ত নম্বর)	১	২	৩	৪	৫
		দৃঢ়ভাবে অসম্মতি	অসম্মতি	একমত বা অসম্মত নয়	সম্মতি	দৃঢ়ভাবে সম্মতি
৩০	আমার বাহু, কাঁধ বা হাতের সমস্যার কারনে আমি কম সক্ষম, কম আত্মবিশ্বাসী বা কম দরকারি বোধ করি	১	২	৩	৪	৫

Appendix: D **Grant Chart**

Activities/ Month	July 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23
Proposal Presentation												
Introduction												
Literature Review												
Methodology												
Data collection												
Data Analysis												
Result												
1st progress presentation												
Discussion												
Conclusion and Recommendation												
2nd progress presentation												
Communication with supervision												
Final Submission												