

Prevalence and Severity of Upper Limb Functional Difficulties among Health Professional Students: A Cross Sectional Study



By

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DEDICATION

Dedicated to My Mother

'Late Hamida Begum'

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LIST OF ABBREVIATIONS

BHPI: Bangladesh Health Professions Institute.

BMI: Body Mass Index

DASH: Disabilities of Arm, Shoulder and Hand

MSD: Musculoskeletal disorders

OT: Occupational Therapy

PARI: Physical activity related injuries

PETE: Physical Education Teacher Education

PT: Physiotherapy

SLT: Speech and language therapy

SSI: School sports injuries

ULFD: Upper limb functional difficulty

US: United States

ABSTRACT

Background: Injuries are common in young, active populations and students. Most injuries are manifested by pain, discomfort, or tingling in the upper extremity. The outcomes of upper limb complaints on activities of daily living, well-being, social participation, and career productivity, there are high prevalence rates of upper limb functional difficulties.

Aim: The study aims to estimate the prevalence and severity of upper limb functional difficulties among health professional students.

Methods: 328 health professional students completed a cross-sectional study. The severity of Upper Limb Functional Difficulties was assessed by the Disabilities of the Arm, Shoulder, and Hand outcome questionnaire. This study captured sociodemographic variables that are related to upper limb functional difficulty. Descriptive statistics and fisher's exact test analysis were used to analyse the data.

Results: A total of 328 students had in this study, where the response rate was 80.4%. The prevalence of Upper Limb Functional Difficulties was 68.9% (226) among health professional students. 31.1% (102) of students had no Upper Limb Functional Difficulties. In this study, 40.5% were male 59.5% were female students. The mean Disabilities of the Arm, Shoulder, and Hand questionnaire score of problems in performing activities was 1.35. The researcher found mild difficulties in students for problems in performing activities. The mean Disabilities of the Arm, Shoulder, and Hand questionnaire score for the extent of difficulty during sleep because of pain was 1.41. The researcher found mild difficulties in students for the extent of difficulty during sleep because of pain. This research showed that only Physiotherapy and Occupational Therapy department students were found to have severe difficulty. Association between Educational department and Severity of Disabilities of the Arm, Shoulder, and Hand outcome questionnaire examined by chi-square test. The association was significant ($p > 0.05$) because the p-value was found to be 0.006.

Conclusion: Functional difficulties decrease participation in daily activities and could extend the difficulty during sleep. Our research could have a global impact on university

students because after, this research, they can be aware of the prevalence of upper limb functional difficulties. Students will know about the sociodemographic variables that have an impact on upper limb functional difficulties.

Key word: DASH questionnaire, upper limb functional difficulty, upper limb injuries, students.

CHAPTER I: INTRODUCTION

1.1 Background

Injuries are common in young, active populations and students. The most common upper limb injuries are strains, sprains, and joint dislocations. It is a major problem in modern society (Huisstede et al., 2006) (Pihlajamäki et al., 2020). In adolescents, chronic recurrent upper limb pain developed in more than 20% of girls and 10% of boys, whereas occasional symptoms were found in more than 50% of this population (Feldman et al., 2002). Pain and sensory disturbance in the upper limb are common symptoms, with reported point prevalence rates ranging from 4% to 35%. Although not always associated with activity limitation, they do contribute to work absence (Walker-bone et al., 2004).

Upper limb symptoms cannot be explained by clear-cut pathology seem anxious in disproportion to their functional limitations. Upper limb pain sufferers about causation and prognosis or about the correct response to symptoms (Palmera et al., 2006). Pain intensity and disability correlate with psychosocial factors such as depression and pain interference (the degree to which pain interferes with activities of daily living) as much or more than pathophysiology in upper extremity illness (Nota et al., 2016). Psychological factors such as pain anxiety (a mental state of perceived danger that is provoked by the experience or anticipation of pain) and pain catastrophizing (a maladaptive coping mechanism through which patients cognitively address their pain, thereby intensifying the fearful aspects of the experience of pain) have been associated with nonspecific or idiopathic arm pain (Ring et al., 2006)

Functional impairment in a child has long-term implications for their growth that can affect their cognitive, emotional, social, and educational development. Disability has an impact on well-being and quality of life. A person with a disability is one who suffers impairment in body structures and functions and is limited in performing activities (Dey et al., 2020). There are few articles that study the prevalence of upper limb injuries with a focus on college students. Some authors focus on the use of computers as the main risk factor for musculoskeletal complaints and report an alarming incidence of upper limb symptoms (41–81%) among college students (Almomani et al., 2019).

Most injuries are manifested by pain, discomfort, or tingling in the upper extremity (Huisstede et al., 2006). Other studies evaluated the general musculoskeletal symptoms of college students. In upper limb injuries in rugby, 55–71% were sprains or strains, and 4–26% were dislocations or fractures. Hand and finger fractures and shoulder dislocations accounted for 80% of the most severe upper limb injuries. Studies have reported that a substantial portion of all upper limb injuries (45–75%) are shoulder injuries (Juliana Usman & McIntosh, 2013). Despite a number of studies investigating neck disorders that are associated with upper limb symptoms and/or neck pain with upper limb activities (William & Gwendolen, 2013), and the outcomes of upper limb complaints on activities of daily living, well-being, social participation, and career productivity, there are high prevalence rates of upper limb functional difficulties (Feldman et al., 2002).

Upper limb injuries are prevalent in the general population, especially in females. Participation in housework may entail biomechanical loads that may contribute to or worsen upper limb injuries. The majority of the clients (38.4%) were between the ages of 51 and 60, and upper limb injuries are common among homemakers, who are mostly

women. The most prevalent upper limb injuries amongst these homemakers were found to be flexor tendinitis (36.3%), followed by carpal tunnel syndrome (21.8%), and De Quervain's tenosynovitis (17.5%) in the entire study population (Yang & Cheung, 2016). For computer-related pain, 61% reported some degree of functional impairment on the SHRRF scale. On the 100-point scale, the mean functional impairment score was 6.7 (Schlossberg et al., 2004). Work-related musculoskeletal disorders of the upper limb are common—particularly in an industrial setting—and because examining and preventing workplace disability is a major issue in health care,

The overall prevalence of mild-to-moderate upper limb disability in university students, based on the original DASH scores, was 24% (Almomani et al., 2019; Kirsten & Julia, 2015). The Disabilities of the Arm, Shoulder, and Hand (DASH) Questionnaire is the most commonly used patient-reported outcome measure in clinical research and practice for patients with injuries and diseases of the upper extremities. It is also a well-known fact that persons affected by injuries and diseases of the hand or the upper extremities have specific needs and problems in functioning and everyday life, such as problems in fine hand use, self-care, domestic life, and social participation. The DASH was developed and is used for persons suffering from any kind of injury or disease of the upper extremities (Almomani et al., 2019; Braitmayer et al., 2016). It can be assumed that comparisons of clinical DASH scores with data from an approximately similarly employed group would permit not only assessment of patients' functional disabilities before and after treatment but also identify the degree to which these scores differ from those of a nonclinical population (Jester et al., 2005). We see that the prevalence and severity of upper limb difficulties are not widely disclosed among health professional students. In terms of upper limb functional difficulties,

research is conducted in Jordan, and there is evidence that severity is associated with demographic factors. So, it is important to explore the prevalence and severity of upper limb functional difficulties among health professional students.

1.2 Significance of the Research

The researcher is interested in doing this research because it has never been done before in Bangladesh. By participating in this study, participants will be more aware of the prevalence of upper limb functional difficulties and will be more concerned about them. This study will promote the health and well-being of participants by identifying which tasks or functional activities, as well as demographic factors, put them at risk. It will improve their academic performance or future career and assist in developing appropriate interventions. The identification of high-risk groups will facilitate early diagnosis, screening, and prevention of upper limb disability among health professional students (Almomani et al., 2019). This would enable therapists to provide better advice to high-risk patients and could be useful in the development of targeted management strategies as well as public and occupational health initiatives.

1.3 Operational definition

Health Professional Students: Students of any health profession (such as medicine, nursing, pharmacy, physician assistants, and others), across the continuum of healthcare education, including professional schools (such as nursing, medical, pharmacy schools), and graduate education, are referred to as health professional students (e.g., residency and fellowship programs).

Any injury sustained while participating in physical education classes, sports, or leisure-time activities is referred to as a PARI for example, sprains, strains and fractures.

1.4 Study Aim, Objectives, Questions

1.4.1 Research Questions

What is the prevalence of upper limb functional difficulty and to what extent the difficulty is severe among health professional students?

1.4.2 Aim

To estimate prevalence and severity of upper limb functional difficulties among health professional students.

1.4.3 Objectives

- ❖ To identify how much problem students face in performing activities
- ❖ To find out the extent of difficulty students face during sleep because of the pain.
- ❖ To identify the association between sociodemographic factors and severity of upper limb functional difficulties and between daily activity task and severity of upper limb functional difficulties

CHAPTER II: LITERATURE REVIEW

2.1 Upper Limb Injuries

The fastest-growing cause of disability in the US workplace, impacting workers of all ages, especially those under 25, is upper extremity musculoskeletal illnesses. College students may also be at risk for upper extremity illnesses linked to extended computer use. Of the remaining 1,544 students, 720 (47%) said they never experienced symptoms, 630 (41%) after using a computer for several hours, 106 (6.9%) after using a computer for an hour or less, 49 (3.2%) after using a computer for a few minutes, and 39 (2.5%) after experiencing upper extremity symptoms (pain) with nearly all activities (Katz et al., 2002). Another study conducted in America, where upper extremity symptoms be associated with use of computers and they investigate to the risk factors be associated with persistent or recurrent upper extremity and neck pain among engineering graduate students. The extensive computer use necessary for data analysis and thesis preparation, as well as employment as Graduate Student Researchers and teaching assistants, puts graduate students at a higher risk for musculoskeletal symptoms and disorders than undergraduates (Schlossberg et al., 2004).

Pain or tingling sensations in the arms, shoulders, neck, or upper back without a distinct pathophysiologic substrate are the characteristic of nonspecific work-related upper limb disorder (Eijsden-Besseling et al., 2010). physical risk factors at work (such as repetition, duration, quick cycle times, uncomfortable posture), physical health, and psychosocial issues. More than 20% of girls and 10% of boys in this age group experience chronic recurrent neck and shoulder difficulties, while more than 50% of this group experience

only occasional symptoms. The incidence of neck pain alone in the student cohort was approximately 10%. There is evidence that suggests upper limb discomfort may be related to physical activity, especially occupational activity. Upper extremity pain is thought to be increased by repetitive motion from several activities, such as working and participating in sports (Feldman et al., 2002).

According to initial survey, around 22.7% of Chinese general university students had Physical activity related injuries (PARI) within the previous year, showing that the condition is common among Chinese undergraduates. Physical activity related injuries be associated with sprains, strains, and fractures (Cai et al., 2019). Another study found that the PARI among injured students was sprain 33.3% (12/36), 27.8% (10/36) was strain injuries and 5.6% (2/36) was fractures (Tang et al., 2020).

2.1.1 Physical activity related injuries in students

Regular physical activity (PA) involvement has a variety of positive effects on one's physical and emotional well-being as well as their risk of developing chronic diseases and dying young (Tang et al., 2020). Physical activity-related injury (PARI), which ranks as one of the major causes of mortality and morbidity for reasonably active school-aged adolescents and young adults in many countries, makes a considerable contribution to non-fatal injury (Cai et al., 2019).

In eight western countries, 32.0%-55.0% of injuries to boys and 19.0%-59.0% of injuries to girls aged 11 to 15 are caused by PARIs. The sociodemographic parameters of the PARI incidence rates both before and after sex stratification. Boys were much more likely than

females to sustain injuries, with over one-third of boys reporting injuries (34.3% vs. 29.3%) (Cai et al., 2020).

Another study found that physical activity related injuries in students were mild 61.1%, (22/36), moderate injuries made up 36.1% (13/36), and severe injuries made up 2.8% (1/36). There was no significant difference in injury severity between men and women (Tang et al., 2020). Despite the fact that general university students may have a higher likelihood of developing PARI, there are knowledge gaps about the issue (Cai et al., 2019). According to a global study, there are around 41.4% of college students who are inactive. In various nations, university students' levels of physical activity have decreased. For the occurrence of chronic diseases globally, physical inactivity ranks fourth, and it is linked to increased mortality rates for Chinese citizens (Yu et al., 2022). In the student population, several cross-sectional studies have reported high prevalence (41–81%) of self-reported upper extremity musculoskeletal disorders (MSDs), pain and difficulties among senior undergraduate students, engineering graduate students, and female undergraduate students (Chang et al., 2007). The number of high school athletes has increased over the previous ten years, going from 6 million in the 1995–1996 academic year to 7.2 million in 2005–2006. Although there are over 2 million injuries suffered by high school sports each year, 10% of those injuries are recurring ones (Swenson et al., 2009).

2.1.1.1 Strain injury

Diffuse upper limb pain, frequently described as burning in intensity, is a key characteristic of repetitive strain injury, also known as cumulative trauma disorder syndrome. This pain may be so intense that hand use is severely restricted. Additionally noted include tenderness, sensory disruption, and autonomic dysfunction. The reduced vibration sense

and the painful sensations that 60% of the office workers reported may be early signs of repetitive strain injury (Greening & Lynn, 1988). The prevalence rate was strain injuries among injured students 27.8% (10/36) (Tang et al., 2020).

Minor nerve irritation or entrapment, as well as the specific involvement of the median nerve, may be contributing factors to repetitive strain injury (RSI) (Greening & Lynn, 1988). Forearm pain without a known cause has been attributed to neurogenic causes by other authors. By employing magnetic resonance imaging to show both a smaller carpal tunnel region and decreased median nerve mobility (Helliwell & Taylor, 2007), Greening and colleagues added to their earlier report of evidence of median nerve dysfunction in this condition (Greening & Lynn, 1988; Helliwell & Taylor, 2007).

2.1.1.2 Median Nerve injury

Median nerve injury is the commonest upper limb injury. Median nerve injuries may be accompanied by severe soft tissue injury. Common causes of median nerve injuries in younger patients include wrist abrasions from glass or other sharp objects and motor vehicle (particularly motorcycle) accidents in older patients. Overuse and excessive practice are also the main cause of elbow injury. In shoulder injuries Consequently, excessive practice can produce problems of the shoulder due to overuse (McHardy & Pollard, 2005; Zhang et al., 2011). Another study conducted among students' group, when compared to the non-user group, the high smartphone user group's median nerve ratios were noticeably greater. When compared to the low smartphone user group, the VAS pain in movement was shown to be significantly higher in the high smartphone user group and the non-user group (İnal et al., 2015).

2.1.1.3 Ulnar Nerve injury

Injury to the ulnar nerve is more likely in men than in women. Overuse injuries caused by repetitive upper limb movements during sprinting, stopping, jumping, and landing are what increase the risk of acute injury. Paresthesia, dysesthesia, and muscle weakness in the affected hand can all be brought on by ulnar nerve injury. Ulnar Neuropathy has been linked to a number of risk factors, including obesity, being a man, smoking, and doing a job that requires heavy lifting with the upper limbs (e.g. farming and manufacturing) (KakitaID et al., 2020; Zhang et al., 2011). Shoulder joint pain are very common in ulnar nerve injury due to repetitive movement of shoulder. Rotator cuff tears, impingement, and glenohumeral instability are the common injuries. Ulnar nerve injury was the most frequent major upper extremity peripheral nerve injury resulting in hospital admission from 1993 to 2006 when compared with median, radial, and brachial plexus injuries (Kekelekis et al., 2020; Woo et al., 2014; Zhang et al., 2011).

2.1.1.4 Sprain injury

David M. Swenson, Ellen E. Yard, Sarah K. Fields, and R. Dawn Comstock conducted research in America 2009 among High school sports participants, in soccer, girls sustained injuries more frequently than males did (injury rate ratio = 1.39; 95% confidence interval, 1.07-1.82). Recurrent injuries were most frequently ligament sprains (incomplete tears) (34.9%) and most frequently occurred to the ankle (28.3%), knee (16.8%), head/face (12.1%), and shoulder (12.0%) (Swenson et al., 2009).

Another study found that the prevalence of injury types among female ballet student was 8.2% in sprain injury (12/196) (Garrick, 1999). M K Jui Ray and M Kohandel conducted

research in Iran 2010, where the aim is to recognize the epidemiology of injuries among them because physical education students are at risk of injury in the practical class. They found out that the most frequent injuries were contusions (41%), sprains (22%), wounds (19%), strains (11%) and cramps (7%), and the majority of the injuries were mild to moderate (Ray & Kohandel, 2010).

2.1.2 Musculoskeletal injury

Muscular-skeletal conditions that affect the nerves, tendons, muscles, and supporting tissues that cause mild to severe recurring or persistent pain. These illnesses typically affect the neck, shoulder, back, wrist, and hand (Ilyas et al., 2022). In the student population, several cross-sectional studies have reported high prevalence (41–81%) of self-reported upper extremity musculoskeletal disorders (MSDs), pain and difficulties among senior undergraduate students, engineering graduate students, and female undergraduate students (Chang et al., 2007).

Tamknat Ilyas, Rabia Jawa, Hunza Zulfiqar, Sania Maqbool, Hafiz Muhammad Uzair Asghar and Abdul Rehman conducted a cross sectional study in Pakistan 2022 about upper extremity musculoskeletal problems among male and female dental students. The results show that both male and female dental students experienced higher U.E joints issues in their daily lives, primarily in the shoulder and wrist joints. The results are supported by the pain evaluation (Ilyas et al., 2022).

2.1.3 Fractures injury

Most common injuries in student in playground injuries and its very severe upper extremity injury in 5-9 years old students. Most of the cases, 35% are fractures and 75% of the

children were injured by falling. Most of the cases injuries were happened falls on excessive height. Upper limb fractures were more likely to occur in falls from playground equipment (52%) than from other outdoor activities. Most of the fractures occurred in outdoor activities rather than occurring to the indoors activities. Due to injuries three percent (3%) of playground injuries require admission to hospital (Howard et al., 2009).

Fractures are very common injuries in general people that associated with fracture or ligamentous injury of the hand, wrist, forearm, humerus or shoulder and associated soft tissue injuries, such as of ligaments and cartilage, can also occur in fractures. Eighty-five percentage of radial head fractures occur in patients between 20 and 60 years of age. Hand fractures are among the most common skeletal injuries (Meals & Meals, 2013).

10–25% of accidents and injuries in childhood a major public health issue in fractures. The prevalence rate in the fractures of the Swedish boys in 42% and British have at least one fractures before reaching the adult age. Fractures are more common in boys rather than girls and it occurred in younger age. Boys engaging in high-risk contact and competitive sports are probably the main cause of affect in fractures rather than girls. BMI is associated with an increased risk of bone fracture. Younger children frequently sustain severe compound upper limb injuries unintentionally as a result of penetrating trauma from tools like knives or cutting machines. Explosions frequently result in injuries in older children, rather than workplace or auto accidents (Ignatiadis et al., 2008; Rubie-Davies & Townsend, 2006). A significant issue for baseball players is elbow and shoulder injuries. High pitch velocity, shoulder external rotation insufficiency, and weak prone external rotation strength have all been linked to shoulder and elbow injuries in prior research (Hamano et al., 2021).

2.1.4 Sports injury

One of the biggest causes of injury to kids and teens at school is involvement in school sports. Findings from a 1998 WHO cross-border study on "health behavior of school-age children" revealed that children aged 11, 13, and 15 accounted for 21.8% of injuries, with sports-related and playground accidents accounting for half of these incidents. Male children between the ages of 10 and 14 were found to suffer the majority of injuries in a survey of Montreal students. In total, 1303 children from three k–12 schools in Shanghai, China, participated in the study—685 boys and 618 girls. Over the course of a year, 29.5% of SSI incidents were self-reported on average (Ding et al., 2022).

Injury among PETE students frequently result in (partial) absence from sports classes, with various repercussions including delayed exams, poorer grades, or altered curriculum. The incidence of sports injuries among PETE students was examined by several authors, who discovered injury risks of 1.1 to 2.1 per student per year and incidence rates of 1.44 to 4.72 per 1000 hours of sports engagement (Goossens et al., 2014). Upper limb injuries are very big problems for athletes because it can ruin the athlete's future and functional activity (Fares et al., 2020; Zhang et al., 2011). Upper limb injury epidemiology in rugby union football, despite reports that they accounted for between 14% and 28% of all rugby injuries and the overall upper limb injury incidence rate (IIR) was 9.84 injuries (Juliana Usman & McIntosh, 2013).

Team sports with substantial player populations, such as floorball, football, handball, and ice hockey, account for a significant share of the acute sports injuries reported nationally in Sweden. Acute injuries that require medical care and treatment are especially important because, in the worst-case situation, they could result in long-term medical disability.

Injuries result in pain, time away from sports, and significant societal expense (Åman et al., 2018).

2.1.5 Functional Difficulty

In Jordan university student, assess the prevalence of upper limb pain and disability and to investigate associated demographic factors among students were assessed by the Disabilities of the Arm, Shoulder, and Hand (DASH) outcome questionnaire. The prevalence of upper limb pain and functional disability among university students was 24% (Almomani et al., 2019).

4% of people have functional disabilities brought on by health issues, which are characterized by functional restrictions in daily activities or essential activities of daily living. It is a serious health issue. 12% of Canadians experience functioning problems. Functional impairment is a significant medical issue. It can raise the chance of falling, using medical services, becoming dependent, and eventually dying. Functional disability may also result in risky circumstances and a low quality of life. Activities of daily living are used to assess a person's functional status, particularly in the case of those with impairments (Dey et al., 2020; Rubie-Davies & Townsend, 2006). Functional difficulty or limits in students may have an impact on their participation and attendance at school. It may be connected to places, activities, and socioeconomic position. Compared to other kids their age, children with impairments have higher injury risks. It may be influenced by demographic variables such injury type and severity, as well as age and sex (Dey et al., 2020).

Additionally, injuries from fighting were more likely to occur among students with impairments. the 16.3% self-reported prevalence of disabilities among students. Among most elderly adults, functional impairments are common. Comparing self-report disabilities to peers without disabilities, the risk of injury is noticeably higher. Within the group of impaired students, male injury rates were not higher than female injury rates (McHardy & Pollard, 2005; Younes et al., 2019).

CHAPTER III: METHODS

3.1 Study Design

3.1.1 Quantitative research design

Quantitative research design was used because the researchers use quantitative methods to state situations or events that affect people. It was used because questionnaires and close ended question were used to gather information from the entire student population. This research is clearly communicated through statistics and numbers. It was helpful because the researcher collect data from a large group of diverse respondents (Williams, 2021).

3.1.2 Cross-sectional survey study

Cross-sectional survey study was used to conduct this study because this design allow researcher to collect data on multiple diseases and risk factors simultaneously, and they permit considerable analytical freedom to define and compare subgroups within the sample population (K.Arnett & A.Claas, 2017). The researcher was choosing this study because the researcher was select a population from specific period that is similar to a snapshot and analyze the data to figure out prevalence and severity of upper limb functional difficulties among health professional students. The aim of the researcher can be achieved with a cross-sectional approach, that is why the researcher chose this study design.

3.2 Study Period

The study period was between April 2022 to March 2023

3.3 Study Participants

3.3.1 Study Populations

The target population of this study was students of Bangladesh Health Professions Institute. Here I had included only Physiotherapy, Occupational Therapy, Speech and Language Therapy and Diploma students from BHPI because only those department students were studied in BHPI.

3.3.2 Sampling Techniques

Purposive sampling was used in this research because student was selected by the researchers to meet a specific purpose. It can enable researchers a lot of information out of the data that they had been collected. Students were willingness to participate, and the ability to communicate experiences and opinions in an articulate, expressive, and reflective manner. It can emphasis on generalizability and similarity to identify and select all cases that meet some predetermined criterion of importance. Purposive sampling strategies may be more appropriate to the aims of implementation research and more consistent with recent developments in quantitative methods and particularly true of efforts to implement evidence-based practices (Palinkas et al., 2016).

Here researchers were taken data from the whole student of Bangladesh Health Professions Institute who would fulfill the inclusion and exclusion criteria of this research.

3.3.3 Sample size

In order to ensure that the overall sample accurately represents the entire population, the sample size refers to the total number of respondents included in a study. This number is frequently divided into subgroups based on variables like age, gender, and region. One of

the most critical aspects of statistical analysis is choosing the proper sample size (Kibuacha, 2021).

For calculating sample size, the investigator used the principle of sample size determination,

$$n=(z)^2 pq/r.$$

Sample size was estimated for this study according to the formula -95% confidence interval and 5% sampling error. Here the confidence interval is $(z)=1.96$ and the sampling error is $(r) = 0.5$.

Though the prevalence upper limb functional difficulty is yield, so the quantity of person with upper limb functional difficulty is considered as 50% of the total amount of person with a disability (10%) in Bangladesh

$$p= 0.5 \text{ where } q= 0.5 (1-p) \text{ and}$$

then the sample size it was stand for:

$$n= (1.96)^2 \times 0.5 \times 0.5/ (0.05)^2$$

$$= 384.16$$

The calculated sample size is 384. But it was an educational study for the researcher and there were some limitations to the research work, such as time limitations, cost limitations etc. So, the researcher collected $(n=328)$ participants for this study.

3.3.4 Inclusion Criteria

- ❖ Participants who study in Bangladesh Health Professions Institute.

3.3.5 Exclusion Criteria

- ❖ Participants who did not attend in academic activities for previous two months was excluded from the study
- ❖ 1st year student and occupational therapy assistant course students was excluding from this study

3.4 Ethical Considerations

Then it was applied for official permission for study from the head of the Occupational Therapy Department and Principal of the Bangladesh Health Professions Institute. Ethical consideration is ensured by an informed consent letter to the participant. Consent was obtained by providing each participant a clear description of the study purpose and procedures involved in the study and informing them that if they wish they can withdraw themselves anytime from the study. Participants were well informed that their information might be published anywhere in the research project, thus maintaining confidentiality. The field notes were not shared and discussed with others. The researcher elucidated the role of the participants in the study and ensured that it will not cause any harm.

3.4.1 Consent From IRB

The researcher proposed the study to the Institutional Ethical Review Board by giving a presentation through the Department of OT, BHPI. The board critically appraised the study on the basis of research proposal and presentation. After receiving the clearance (CRP/BHPI/ IRB/9/22/635) from the board, the student researcher continued the further process. Information on the study population was taken from the Bangladesh Health Professions Institute.

3.4.2 Informed Consent

- ❖ Verbal consent was taken from the participants.
- ❖ Researcher was explained the research aim to the participant, they feel willing to participate, so that their data was taken.

3.4.3 Right of Refusal to Participate or Withdraw

In this study, participants were free to choose, whether to participate or not. They were also free to withdraw participation from the study within November.

3.4.4 Confidentiality

The information provided by the participants was confidential. Their name and identity were not be disclosed to anyone. The participants were informed that their identity will remain confidential for future uses, such as report writing, publication, conference or any other written materials and verbal discussion.

3.4.5 Unequal Relationship

If the student researcher took the data directly, the equal relationship is ensured. For that reason, the student researcher engaged third party to took the data. then he selected the participants according to inclusion and exclusion criteria. So equal relationship was ensured.

3.4.6 Risk and Beneficence

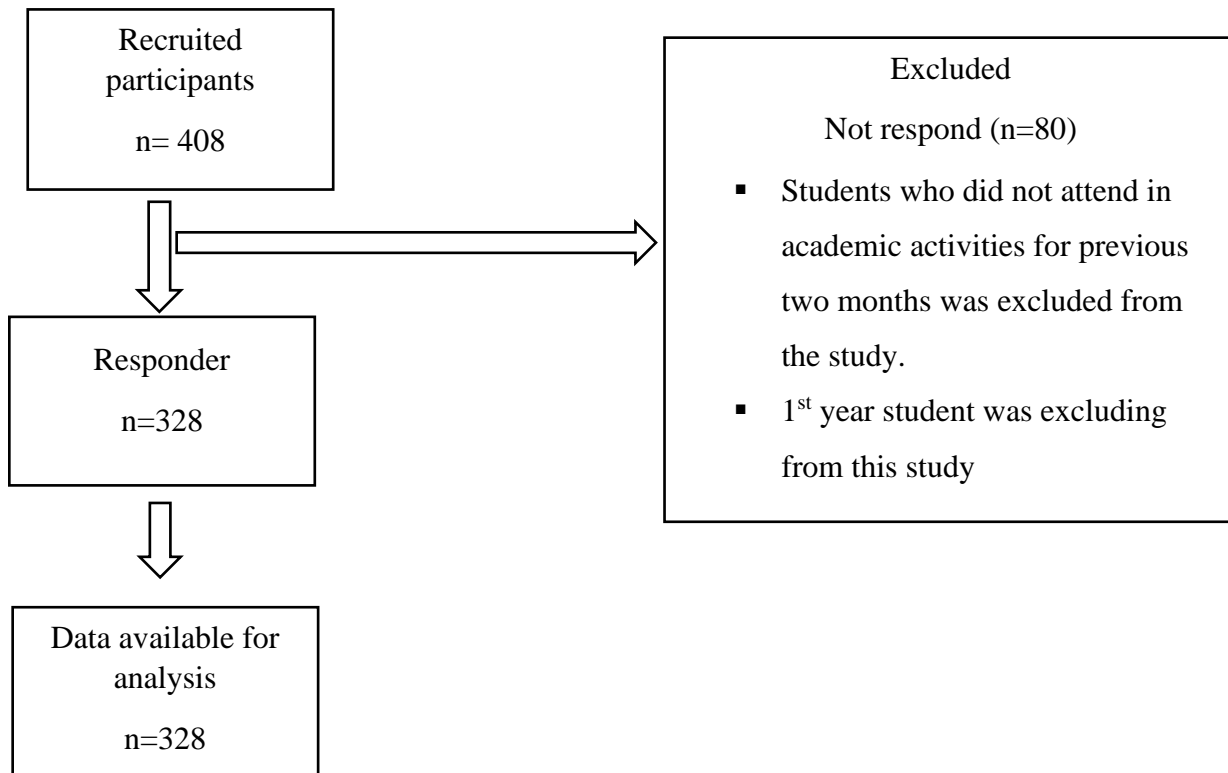
The participants were not any risk and they weren't to get any beneficence from this research. No therapeutic intervention was provided or no activity had been done that will adversely affect the participant

3.5 Data Collection

3.5.1 Participant Recruitment Process

The participants of the present study were recruited from Bangladesh Health Professions Institute, located in Savar, Bangladesh. The total number of students in the selected universities was approximately 408. Those students were excluded from the study who were not attend in academic activities for previous two months and 1st year student was excluding from this study.

The researcher was taken the data from the students. Firstly, the researcher discusses to all the monitor of every class about the research and how to took the data from the students. Then the monitor took the data from the student of his/her class. Then the researcher collected the data from the monitor of every class.



3.5.2 Data Collection Method

Face to face survey interview was used because the students was given their full attention and the interviewer had deduce the quality of each response. Direct human contact was the primary strength of this research and human interaction increases students' cooperation and motivation. It has the highest response rates (Krysan et al. 1994). This research permits the longest survey (328) interviews. The researcher did stimulate and involve a student, build a sense of trust, and create rapport factors that encouraged students to provide honest answers and disclose information. Respondents who might otherwise be difficult to engage fully in a survey interview can become absorbed, cooperative participants with face-to-face interaction (Neuman, 2012).

3.5.3 Questionnaire

The DASH questionnaire was used. The main part of the DASH is a 30-item disability/symptom scale concerning the patient's health status during the preceding week (McConnel et al. 1999). The items ask about the degree of difficulty in performing various physical activities because of an arm, shoulder or hand problem (21 items), the severity of each of the symptoms of pain, activity-related pain, tingling, weakness and stiffness (5 items), as well as the problem's effect on social activities, work, and sleep and its psychological impact (4 items). The procedure by which these particular items were selected followed established methods (Almomani et al., 2019). Each item has a 5-ranking scale with 1 having "no difficulty" in performing the activity, 2 having "mild difficulty", 3 having "moderate difficulty", 4 having "sever difficulty" and 5 being "unable to do the activity". The overall score is calculated by adding up assigned values for each response to an item; divide by 30 (number of items); subtract 1; multiply by 25. The overall score of

the DASH ranges from 0–100, in which a score of 0 means “no disability”, a score of 50 means “moderate disability” and a score of a 100 means “maximum disability” in the upper limbs.³³ It is a reliable and valid tool that can be used to assess one or more joints in upper extremity. It has very good psychometric properties. The score for the disability/ symptom scale is called the DASH score (Almomani et al., 2019; Gummesson et al., 2003)

3.5.4 Pre-test of the survey question

The researcher was taken a field test in three students. After taking their data the researcher changes some question. The researcher conducts a supervision to the supervisor and finally changes some question according to participant’s overview. After that the questionnaire were provided to the participants who are took the data according to the inclusion and exclusion criteria.

3.6 Data Analysis

For any researcher's data must be properly analyzed, so data analysis is essential. There is lots of method to analyze data. The researcher chose descriptive statistics over other statistical methods. Descriptive statistics describe, organize, and summarize data by using terms such as frequencies, percentages, and central tendency descriptions. Data was entered into the Statistical Package for Social Science (SPSS) version 26 and analyzed with a Microsoft Excel spreadsheet and the descriptive statistic method. To organize the data presentation, SPSS and Microsoft Office Word were used. All of the information was compiled into a single SPSS variable. Descriptive statistic, mean and standard deviation was calculated. Descriptive statistics was stated as mean \pm standard deviation (SD) and frequencies (count and percentage) to estimate the prevalence of upper limb functional

difficulties and to estimate the severity of upper limb functional difficulties. The Fishers exact test was to identify the association between demographic factors and severity of upper limb functional difficulties and between daily activity task and severity of upper limb functional difficulties. The association was significant if the p value was found $p > 0.05$ and the association was not significant if the p value was found $p < 0.05$.

3.7 Quality Control and Quality Assurance

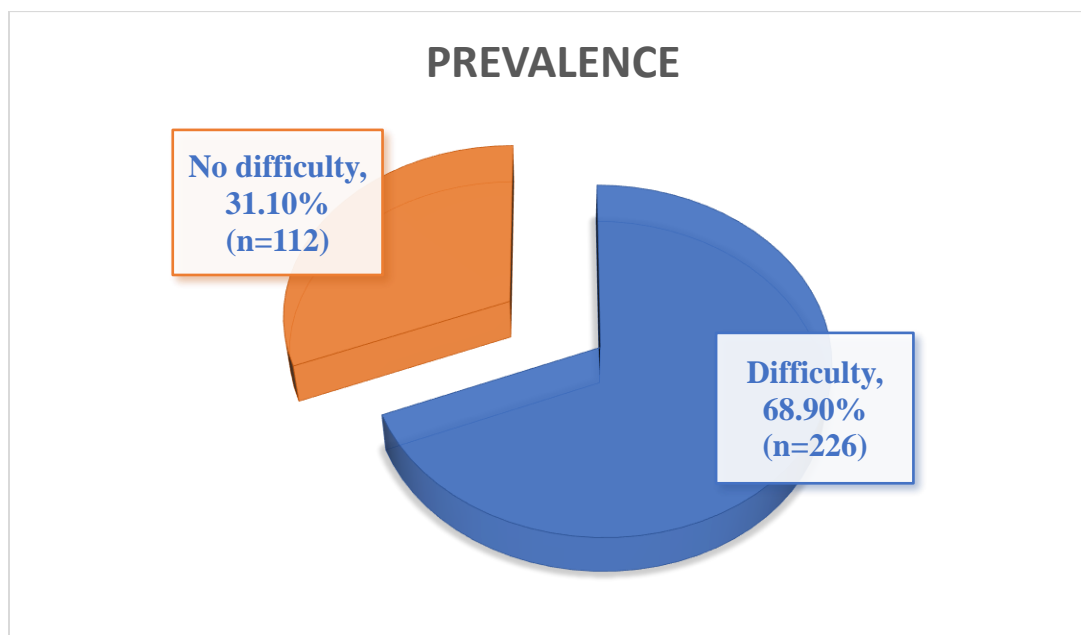
All data was done accurately under the supervision of the respective supervisor and followed all the instructions. Before selecting the study methodology, it was ensured that it may fulfil the study purpose. Prior to collecting the final data, a pilot survey was conducted with 3 participants to adjust the questionnaire. There were some changes that were needed to use the questionnaire properly. On the pilot survey the main variable of which games the participants liked most were added to the socio demographic variable. After adjusting the questionnaire investigator started the final data collection.

CHAPTER IV: RESULTS

Prevalence of the upper limb functional difficulties among health professional students.

Figure 4.1

Prevalence of upper limb functional difficulties (N=328)



In the study among 328 participants, 31.1% (n=112) participants were found no difficulty and (n=226) participants were found difficulty. In this research, the researcher found 31.1% student had no upper limb functional difficulties. So, the prevalence was 68.9% upper limb Functional difficulties among health professional students.

Table 4.1*Severity of upper limb functional difficulties among health professional students (N=328)*

		Frequency	Percent	mean	Std. deviation
Severity of DASH score	No difficulty	102	31.1%	5.0568	9.51844
	Mild Difficulty	212	64.6%		
	Moderate difficulty	12	3.7%		
	Severe difficulty	2	0.6%		
	Total	328	100%		
Problem in performing activities	Not limited at all	249	75.9%	1.35	0.727
	Slightly limited	54	16.5%		
	Moderately limited	16	4.9%		
	Very limited	7	2.1%		
	Unable	2	0.6%		
	Total	328	100%		
	Extent of difficulty during sleep	No difficulty	228		
Mild difficulty		75	22.9%		
Moderate difficulty		15	4.6%		
Severe difficulty		9	2.7%		
So much difficulty that I can't sleep		1	0.3%		
Total		328	100%		

In this study among 328 participants, the researcher found 31.1% (n=102) students had no difficulty. Mild difficulties were found highest in percentage and that is 64.6% (n=212). Moderate and Severe difficulty were found 12(3.7%) and 2(0.6%). The mean DASH score of severity was 5.06. According to the DASH, the researcher had found mild difficulties in students. Std deviation of DASH score were 9.518. It indicates that, data had lots of

variation. So, Severity of upper limb functional difficulties among health professional students were mild.

In this study among 328 participants, 0.6% (n=2) students were unable to perform any activities and 2.1% (n=7) student's activities were very limited. 4.9% (n=16) student's activities were moderately limited and 16.5%(n=54) student's activities were slightly limited. The researcher had found 24.1% (n=79) students had problem to perform functional activities. 75.9% (n=249) students had problem in performing activities not limited at all. The mean DASH score of problem in performing activities was 1.35. According to the DASH, the researcher had found mild difficulties in students for problem in performing activities. Std deviation of DASH score was 0.727. It indicates that, data hadn't lots of variation. So, the difficulty students face in performing activities were mild.

In this study among 328 participants, 0.3% (n=1) students were so much difficulty that he/she can't sleep because of pain and 2.7% (n=9) students were severe difficulty because of pain during sleep. 4.6% (n=15) students were moderate difficulty and 22.9% (n=54) students were mild difficulty because of pain during sleep. The researcher had found 31.5% (n=100) students were extent of difficulty during sleep because of pain. 69.5% (n=228) students were no difficulty during sleep because of pain. The mean DASH score of extent of difficulty during sleep because of pain was 1.41. According to the DASH, the researcher had found mild difficulties in students for extent of difficulty during sleep because of pain. Std deviation of DASH score was 0.733. It indicates that, data hadn't lots of variation. So, the students were extent of difficulty during sleep because of pain were mild.

Table 4.2*Sociodemographic characteristics of health professional students (N=328)*

		Frequency	Percent
Age	18-20	24	7.3%
	21-23	226	68.9%
	24-26	78	23.8%
Gender	Male	133	40.5%
	Female	195	59.5%
Educational department	OT	112	34.1%
	PT	103	31.4%
	SLT	80	24.4%
	Diploma	33	10.1%
Educational year	2 nd year	135	41.2%
	3 rd year	109	33.2%
	4 th year	84	25.6%
Area of living	Rural	300	91.5%
	Urban	28	8.5%
Marital status	Married	38	11.6%
	Unmarried	290	88.4%
Living with family	Yes	162	49.4%
	No	166	50.6%

Socio demographic variables were analysed in this research. It includes age, gender, educational department, educational year, area of living, marital status and living with or without family. Educational department are associated with the severity of DASH score. Sociodemographic variables were analysed by descriptive statistics where researcher found the frequency and percentage of the participants of this study. In this research, the researcher found 40.5% male and 59.5% female participants. In this research, the researcher found 11.6% married and 88.4% unmarried participants.

Table 4.3

Association between sociodemographic variables and Severity of upper limb functional difficulties (N=328)

		Severity of DASH score				Value	Exact significance (2 sided)
Variables		No difficulty	Mild difficulty	Moderate difficulty	Severe difficulty		
Age	18-20	20.8%	75.0%	4.2%	0.0%	7.547	0.230
	21-23	32.3%	64.6%	3.1%	0.0%		
	24-26	30.8%	61.5%	5.1%	2.6%		
	Total	31.1%	64.6%	3.7%	0.6%		
Gender	Male	32.3%	63.2%	4.5%	0.0%	1.681	0.679
	Female	30.3%	65.6%	3.1%	1.0%		
	Total	31.1%	64.6%	3.7%	0.6%		
Educational department	OT	21.4%	75.0%	2.7%	0.9%	22.713	0.002
	PT	43.7%	48.5%	6.8%	1.0%		
	SLT	25.0%	73.8%	1.3%	0.0%		
	Diploma	39.4%	57.6%	3.0%	0.0%		
	Total	31.1%	64.6%	3.7%	0.6%		
Educational year	2 nd year	36.3%	59.3%	4.4%	0.0%	7.711	0.200
	3 rd year	25.7%	70.6%	3.7%	0.0%		
	4 th year	29.8%	65.5%	2.4%	2.4%		
	Total	31.1%	64.6%	3.7%	0.6%		
Area of living	Urban	32.1%	60.7%	7.1%	0.0%	1.932	0.510
	Rural	31.0%	65.0%	3.3%	0.7%		
	Total	31.1%	64.6%	3.7%	0.6%		
Marital status	Married	28.9%	60.5%	10.5%	0.0%	5.078	0.150
	Unmarried	31.4%	65.2%	2.8%	0.7%		
	Total	31.1%	64.6%	3.7%	0.6%		
Living with family	Yes	31.5%	64.2%	3.7%	0.6%	.316	0.989
	No	30.7%	65.1%	3.6%	0.6%		
	Total	31.1%	64.6%	3.7%	0.6%		

In this study among 328 participants, severe difficulty was found only in students between the age range of 24-26 and the percentage was 4.2%. Moderate difficulty was found highest in students between the age range of 24-26 and the percentage was 5.1%. Mild difficulty was in students between the age range of 24-26 and the percentage was 61.5%. Between the age range of 18-20, students had no severe difficulty were found. But 4.2% moderate difficulty were found between the age range of 18-20. Mild difficulty was found highest in students between the age range of 18-20 and the percentage was 75%. Between the age range of 21-23, students had no severe difficulty were found. But 3.1% moderate difficulty were found between the age range of 21-23. Mild difficulty was found in students between the age range of 18-20 and the percentage was 64.6%. Association between Age and Severity of DASH examined by fisher's exact test. The association was not significant ($p>0.05$) because the p value had found 0.230.

In this study among 328 participants, moderate difficulty was found highest in male students and the percentage was 4.5%. Mild difficulty was found in male students and the percentage was 63.2%. Severe difficulty was found only in female students and the percentage was 1%. Severe difficulty was found in female students rather than male students. 3.1% moderate difficulty was found in female students. Mild difficulty was found in female students rather than male students and the percentage was 65.6%. Association between Gender and Severity of DASH examined by fisher's exact test. The association was not significant ($p>0.05$) because the value was found 0.679

In this study among 328 participants, severe difficulty was found highest in PT department students and the percentage was 1%. Moderate difficulty was found highest in PT department students and the percentage was 6.8%. But mild difficulty was found lowest in

PT department and the percentage was 48.5%. Severe difficulty was found highest in OT department students and the percentage was 0.9%. Moderate difficulty was found in OT department students and the percentage was 2.7%. But mild difficulty was found highest in OT department and the percentage was 75%. In diploma and SLT department, no severe difficulty was found. Mild and moderate difficulty were found in SLT department and the percentage was 73.8% and 1.3%. Mild and moderate difficulty were found in diploma course and the percentage was 57.6% and 3%. This research showed that only PT and OT department students were found severe difficulty. Association between Educational department and Severity of DASH examined by fisher's exact test. The association was significant ($p > 0.05$) because the p value was found 0.002.

In this study among 328 participants, 4th year students were found only severe difficulty and the percentage was 2.4%. 2.4% also moderate difficulty was found in 4th year student. Mild difficulty was found in 4th year students and the percentage was 65.5%. Moderate difficulty was found in 3rd year students and the percentage was 3.7%. Highest mild difficulty was found in 3rd year students and the percentage was 70.6%. Highest moderate difficulty was found in 2nd year students and the percentage was 4.4%. Mild difficulty was found in 2nd year students and the percentage was 59.3%. 4th year was at high risk to upper limb injury because only 4th year students had found severe difficulty. Association between Educational department and Severity of DASH examined by fisher's exact test. The association was not significant ($p > 0.05$) because the p value was found 0.200.

In this study among 328 participants, moderate difficulty was found highest in urban students and the percentage was 7.1%. Mild difficulty was found in urban students and the percentage was 60.7%. Severe difficulty was found only in rural students and the

percentage was 0.7%. Severe difficulty was found in rural students rather than urban students. 3.3% moderate difficulty was found in female students. Mild difficulty was found in rural students rather than urban students and the percentage was 65%. Association between Area of living and Severity of DASH examined by Fisher's exact test. The association was not significant ($p > 0.05$) because the p value was found 0.510.

In this study among 328 participants, moderate difficulty was found highest in married students and the percentage was 10.5%. Mild difficulty was found in married students and the percentage was 60.5%. Severe difficulty was found only in unmarried students and the percentage was 0.7%. Severe difficulty was found highest in unmarried students rather than married students. 2.8% moderate difficulty was found in unmarried students. Mild difficulty was found highest in unmarried students rather than married students and the percentage was 65.2%. Association between Marital status and Severity of DASH examined by Fisher's exact test. The association was not significant ($p > 0.05$) because the p value was found 0.150.

In this study among 328 participants, severe difficulty was found in students who were living with family and the percentage was 0.6%. Moderate difficulty was found in students who were living with family and the percentage was 3.7%. Mild difficulty was found in students who were living with family and the percentage was 64.2%. Similar severe difficulty was found in students who were living with family or not living with family. 3.6% moderate difficulty was found in students who were not living with family. Mild difficulty was found highest in students who were living with family rather than who were not living with family and the percentage was 65.1%. Association between Living with

family and Severity of DASH examined by fisher's exact test. The association was not significant ($p>0.05$) because the p value was found 0.989.

Table 4.4

Association between daily activity task variables and Severity of upper limb functional difficulties (N=328)

Variables		No difficulty	Mild difficulty	Moderate difficulty	Severe difficulty	Value	Exact significance (2 sided)
Others work involvement	Tuition	26.7%	69.3%	4.0%	0.0%	12.748	0.485
	Marketing	0.0%	100.0%	0.0%	0.0%		
	Music production	100.0%	0.0%	0.0%	0.0%		
	Not applicable	33.2%	62.3%	3.6%	0.9%		
	Total	31.1%	64.6%	3.7%	0.6%		
Favorite playing games	Cricket	32.9%	67.1%				
	Football	23.7%	76.3%				
	Basketball	33.3%	66.7%				
	Table tennis	25.0%	75.0%				
	Ceram	37.0%	63.0%				
	Badminton	35.1%	64.9%				
Homework	Ludo	34.3%	65.7%				
	Yes	31.2%	65.1%	3.1%	0.7%	3.317	0.370
	No	30.3%	60.6%	9.1%	0.0%		
Total	31.1%	64.6%	3.7%	0.6%			
Daily working hours	0-4	25.5%	71.8%	1.8%	0.9%	12.062	0.174
	5-9	36.6%	59.5%	3.3%	0.7%		
	10-14	30.4%	62.5%	7.1%	0.0%		
	15-19	11.1%	77.8%	11.1%	0.0%		
	Total	31.1%	64.6%	3.7%	0.6%		
Uses of hand at work	0-4	33.3%	63.1%	2.8%	0.7%	10.540	0.280
	5-9	32.8%	62.3%	4.1%	0.8%		
	10-14	23.2%	75.0%	1.8%	0.0%		

	15-19	22.2%	55.6%	22.2%	0.0%		
	Total	31.1%	64.6%	3.7%	0.6%		
Daily housekeeping hours	0-2	30.7%	64.8%	4.1%	0.4%	3.087	0.837
	3-5	30.6%	65.3%	2.8%	1.4%		
	6-8	41.7%	58.3%	0.0%	0.0%		
	Total	31.1%	64.6%	3.7%	0.6%		
Daily sleeping hours	0-4	28.6%	71.4%	0.0%	0.0%	2.408	1.000
	5-9	31.1%	64.5%	3.7%	0.7%		
	10-14	32.0%	64.0%	4.0%	0.0%		
	Total	31.1%	64.6%	3.7%	0.6%		
Use for transportation	Car	38.5%	61.5%				
	Bus	29.0%	71.0%				
	Walking	33.2%	66.8%				
	motorcycle	25.0%	75.0%				
Daily transportation hours	0-2	31.5%	63.7%	4.1%	0.7%	1.465	0.635
	3-5	27.3%	72.7%	0.0%	0.0%		
	Total	31.1%	64.6%	3.7%	0.6%		

In this study among 328 participants, moderate difficulty was found highest in tuition and the percentage was 4%. Mild difficulty was found in tuition and the percentage was 69.3%. Mild difficulty was found highest in marketing and the percentage was 100% (n=3). But the researcher found no difficulty in music production and the percentage was 100% (n=1). 0.9% severe difficulty was found in student who were not engaged in any activity or work. Moderate difficulty was found in student who were not engaged in any activity and the percentage was 3.6%. Mild difficulty was found in student who were not engaged in any activity and the percentage was 62.3%. According to this finding, students who were not engaged in any work were at severe difficulties. Association between others work involvement and Severity of DASH examined by fisher's exact test. The association was not significant ($p > 0.05$) because the p value was found 0.485.

In this study among 328 participants, mild difficulty was found highest who were playing football and the percentage was in 76.3% (n=29). Overall mild difficulties were found in table tennis, cricket, basketball, ludo, badminton and ceram in all students and the percentage were 75%, 67.1%, 66.7% 65.7%. 64.9% and 63%. According to this finding, football and table tennis games was the common risk factor to ULFD in students.

In this study among 328 participants, severe difficulty was found only in students who were doing homework and the percentage was 0.7%. Moderate difficulty was found in students who were doing homework and the percentage was 3.1%. Mild difficulty was found highest in students who were doing homework rather than who were not doing homework and the percentage was 65.1%. Moderate difficulty was found highest in students who were not doing homework rather than who were doing homework and the percentage was 9.1%. Mild difficulty was found lowest in students who were not doing homework rather than who were doing homework and the percentage was 60.6%. Association between Homework and Severity of DASH examined by fisher's exact test. The association was not significant ($p>0.05$) because the p value was found 0.370.

In this study among 328 participants, severe difficulty was found in students who were spend time between 0-4 hours and the percentage was 0.9%. 1.8% moderate difficulty was found in students who were spend time between 0-4 hours. 71.8% mild difficulty was found in students who were spend time between 0-4 hours. Severe difficulty was found in students who were spend time between 5-9 hours and the percentage was 0.7%. 3.3% moderate difficulty was found in students who were spend time between 5-9 hours. 59.5% mild difficulty was found in students who were spend time between 5-9 hours. 7.1% moderate difficulty was found in students who were spend time between 10-14 hours. 62.5% mild

difficulty was found in students who were spend time between 10-14 hours. Moderate difficulty was found highest in students who were spend time between 15-19 hours and the percentage was 11.1%. Mild difficulty was found highest in students who were spend time between 15-19 hours and the percentage was 77.8%. According to these results, students who were spend time between 15-19 was found more difficulty. Association between daily working hours and Severity of DASH examined by fisher's exact test. The association was not significant ($p>0.05$) because the p value was found 0.174.

In this study among 328 participants, severe difficulty was found in students who were used of hand between 0-4 hours and the percentage was 0.7%. 2.8% moderate difficulty was found in students who were used of hand between 0-4 hours. 63.1% mild difficulty was found in students who were used of hand between 0-4 hours. Severe difficulty was found highest in students who were used of hand between 5-9 hours and the percentage was 0.8%. 4.1% moderate difficulty was found in students who were used of hand between 5-9 hours. 62.3% mild difficulty was found in students who were used of hand between 5-9 hours. 1.8% moderate difficulty was found in students who were used of hand between 10-14 hours. Mild difficulty was found highest in students who were used of hand between 10-14 hours and the percentage was 75%. Moderate difficulty was found highest in students who were used of hand between 15-19 hours and the percentage was 22.2%. Mild difficulty was found in students who were uses of hand between 15-19 hours and the percentage was 55.6%. According to these results, students who were used of hand between 15-19 was found more difficulty. Association between uses of hand at work and Severity of DASH examined by fisher's exact test. The association was not significant ($p>0.05$) because the p value was found 0.280.

In this study among 328 participants, severe difficulty was found in students who were spend time in housekeeping between 0-2 hours and the percentage was 0.4%. Moderate difficulty was found highest in students who were spend in housekeeping time between 0-2 hours and the percentage was 4.1%. 64.8% mild difficulty was found in students who were spend time in housekeeping between 0-2 hours. Severe difficulty was found highest in students who were spend time in housekeeping between 3-5 hours and the percentage was 1.4%. 2.8% moderate difficulty was found in students who were spend time in housekeeping between 3-5 hours. 65.3% mild difficulty was found in students who were spend time in housekeeping between 3-5hours. Only mild difficulty was found in students who were spend time in housekeeping between 6-8 hours and the percentage was 58.3%. According to these results, students who were spend time in housekeeping between 3-5 hours was found more difficulty. Association between daily housekeeping hours and Severity of DASH examined by fisher's exact test. The association was not significant ($p>0.05$) because the p value was found 0.837.

In this study among 328 participants, only mild difficulty was found highest in students who were spend time in sleeping between 0-4 hours and the percentage was 71.4%. Severe difficulty was found highest in students who were spend time in sleeping between 5-9 hours and the percentage was 0.7%. 3.7% moderate difficulty was found in students who were spend time in sleeping between 5-9 hours. 64.5% mild difficulty was found in students who were spend time in sleeping between 5-9 hours. Moderate difficulty was found highest in students who were spend time in sleeping between 10-14 hours. Mild difficulty was found in students who were used of hand between 10-14 hours and the percentage was 64%. According to these results, students who were spend time in sleeping between 5-9 hours

was found more difficulty. Association between daily sleeping hours and Severity of DASH examined by fisher's exact test. The association was not significant ($p>0.05$) because the p value was found 1.000.

In this study among 328 participants, mild difficulty was found highest in 75% for use of motorcycle. Overall mild difficulties were found in bus, walking and car in all students were 71%, 66.8% and 61.5%.

In this study among 328 participants, severe difficulty was found highest in students who were spend time in transportation between 0-2 hours and the percentage was 0.7%. Moderate difficulty was found highest in students who were spend in transportation time between 0-2 hours and the percentage was 4.1%. 63.7% mild difficulty was found in students who were spend time in transportation between 0-2 hours. Only mild difficulty was found highest in students who were spend time in transportation between 3-5hours and the percentage was 72.7%. Association between daily transportation hours and Severity of DASH examined by fisher's exact test. The association was not significant ($p>0.05$) because p value was found 0.635.

CHAPTER V: DISCUSSION

The purpose of this study was to estimate prevalence and severity of upper limb functional difficulties among health professional students. In university students, the overall prevalence in this study was 68.9% and the severity of upper limb functional difficulties was mild.

Numerous studies found out computer users upper extremity discomfort, pain, and disability related various impairment severity ratings was moderate to high prevalence rate (42–96%) (Almomani et al., 2019).

Current study demonstrated that the mean DASH score of severity is 5.06 where other authors found the mean functional impairment on the SHRRF scale was 6.7 (Schlossberg et al., 2004). Current study revealed that upper limb functional difficulties were mild among health professional students. Another finding from current research that hand, shoulder, or wrist problems make any daily activities slightly limited during the past week were found highest number of participants of 54 and the percentage was 16.5%. The mean score of severity 1.35. So, the problem in performing daily activities were found mild difficulties.

Another finding from the study, the extent of difficulty students face during sleep because of the pain were mild. The mean score of severity was 1.41 in the extent difficulty during sleep.

Overall upper limb functional difficulty in students between the age range of 18-20, 21-23, and 24-26 was mild to severe and the percentage was 79.2%, 67.7% and 69.2%. In these age group, only 24-26 years students were found severe difficulties. Mild difficulties found

highest between the age of 18-20 years students and the percentage was 75%. No difficulties found highest between the age of 21-23 years students and the percentage was 32.3%.

Another finding from the study, upper limb functional difficulties were found in 69.7% among female and 67.7% in male whereas others authors found upper limb pain developed more among girls (20%) and compared to boys (10%)(Feldman et al., 2002). Current study revealed that females had more difficulty compared to males. However, the association between gender and severity of DASH score was not significant.

Overall upper limb functional difficulty in OT, PT, SLT and Diploma courses students was 78.6%, 56.3%, 75% and 60.6%. But another interesting finding from these research that severe and moderate difficulties was found highest in PT department whereas mild difficulties was in OT department. No difficulty was found highest in PT department whereas lowest in OT department. The association between educational department and severity of DASH score was significant.

Upper limb functional difficulties found 69% in rural areas and 67.9% in urban areas whereas others authors had 59.5% in urban areas and 40.49% in rural areas (Almomani et al., 2019). Our study revealed that rural areas students had more difficulty compared to urban areas students. However, the association between marital status and severity of DASH was not significant.

Another interesting finding of ULFD were 68.6% in unmarried students and 71.1% in married students whereas others authors had 94.6% in unmarried students and 5.4% in married students. Our study revealed that married students had more difficulty compared

to unmarried students whereas others authors found that unmarried students had more difficulty compared to married students (Almomani et al., 2019).

Cricket is very common game in university students. 76.3% students were mild difficulty to play cricket. 75% students were mild difficulty to play table tennis. Most of the students had difficulty at least one games such as, football, basketball, ceram, badminton, ludo etc.

Another interesting finding of ULFD were 68.5% students to living with family and 69.3% students not living with family. Our study revealed that students, who were not living with family had more difficulty compared to who were living with family. Other authors found students who were living with family (81.2%) had more difficulty rather than who were not living with family (18.8%) (Almomani et al., 2019).

Another interesting finding of ULFD were 68.5% students to did homework and 69.3% students to didn't homework. Our study revealed that students, who were not doing homework (69.7%) had more difficulty compared to who were doing homework (68.8%). Severe difficulty found only students who were doing homework. But interesting finding from this current study, moderate difficulty found in students who were not doing homework compared to who were doing homework.

Overall upper limb functional difficulty in students of daily working hours between range of 0-4, 5-9, 10-14, and 15-19 was mild to severe and the percentage was 74.5%, 63.4%, 69.6% and 88.9%. In these range, 0-4 hours and 5-9 hours students were found severe difficulties. Moderate difficulties found highest between the range of 15-19 hours students and the percentage was 11.1%. Mild difficulties found highest between the range of 15-19

hours students and the percentage was 77.8%. No difficulties found highest between the range of 5-9 hours students and the percentage was 36.6%.

Overall upper limb functional difficulty in students uses of hand at work between range of 0-4, 5-9, 10-14, and 15-19 hours was mild to severe and the percentage was 66.7%, 67.2%, 76.8% and 71.8%. In these range, 0-4 hours and 5-9 hours students were found severe difficulties to use of hand at work. Moderate difficulties found highest between the range of 15-19 hours students and the percentage was 22.2% to use of hand at work. Mild difficulties found highest between the range of 10-14 hours students and the percentage was 75% to use of hand at work. No difficulties found highest between the range of 0-4 hours students and the percentage was 33.3% to use of hand at work.

Overall upper limb functional difficulty in students for daily housekeeping between range of 0-2, 3-5, and 6-8 hours was mild to severe and the percentage was 69.3%, 69.5% and 58.3%. In these range, 0-2 hours and 3-5 hours students were found severe difficulties for daily housekeeping. Moderate difficulties found highest between the range of 0-2 hours students and the percentage was 4.1% for daily housekeeping. Mild difficulties found highest between the range of 3-5 hours students and the percentage was 65.3% for daily housekeeping. No difficulties found highest between the range of 6-8 hours students and the percentage was 41.7% for daily housekeeping.

Overall upper limb functional difficulty in students for daily sleeping between range of 0-4, 5-9, and 10-14 hours was mild to severe and the percentage was 71.4%, 68.9% and 68%. In these range, 5-9 hours students were found severe difficulties for daily sleeping and the percentage was 0.7%. Moderate difficulties found highest between the range of 10-14 hours students and the percentage was 4% for daily sleeping. Mild difficulties found

highest between the range of 0-4 hours students and the percentage was 71.4% for daily sleeping. No difficulties found highest between the range of 10-14 hours students and the percentage was 32% for daily sleeping.

Overall upper limb functional difficulty in students for daily transportation between range of 0-2, and 3-5 hours was mild to severe and the percentage was 68.5% and 72.7%. In these range, 0-2 hours students were found severe difficulties for daily transportation and the percentage was 0.7%. Moderate difficulties found highest between the range of 0-2 hours students and the percentage was 4.1% for daily transportation. Mild difficulties found highest between the range of 3-5 hours students and the percentage was 72.7% for daily transportation. No difficulties found highest between the range of 0-2 hours students and the percentage was 31.5% for daily transportation.

CHAPTER VI: CONCLUSION

6.1 Strength and Limitations

6.1.1 Strength

The study time was effective for the researcher because the researcher had completed the study during the time period. Study response rate from this study was 80.4%. Study methods followed guidelines of STROBE statement. This statement was also used to prepare the thesis results. Before data collection the pre-test of questionnaire was applied among three students.

6.1.2 Limitations

Researcher tried to best systematic way to conduct the research. By considering these limitations, the researcher conducted the study. The researcher took the data from every class or department by the class monitor. The researcher hadn't fix one person for took the data from every class or department. It was the limitation for this study. The researcher hadn't included the students of CRP nursing college because of the time limitation.

6.2 Recommendation for future researcher

- To investigate the impact of body mass index, physical fitness and types of housekeeping activities with upper limb functional difficulty in this population.
- To investigate how the quality of life will be impact with upper limb functional difficulty in this population.

6.3 Conclusion

Upper limb functional difficulties were very common in student population. Prevalence rate of upper limb functional difficulties found from the study were 68.9%. Functional difficulties were decrease the participation in daily activities and could extend the difficulty during sleep. A variety of sociodemographic for upper limb functional difficulties in health professional students were investigated. Our research could have a global impact on university students because after this research they can aware about the prevalence of upper limb functional difficulties. The early diagnosis, screening, and prevention of upper limb disability among health professional students will be made less difficult by the identification of high-risk groups. Students will know about the sociodemographic variables that have impact of upper limb functional difficulties. If the students aren't aware about functional difficulties, it will be impact on their educational or academic performance.

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APPENDICES

Appendix A: Approval / permission letter



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

Ref: Date:

CRP/BHPI/IRB/09/22/635 28th September, 2022

Md Azim Hossain
 4th Year B.Sc. in Occupational Therapy
 Session: 2017-18, Student ID: 122170253
 BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of the thesis proposal "Prevalence and severity of upper limb functional difficulties among health professional students" by ethics committee.

Dear Md Azim Hossain
 Congratulations.
 The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above-mentioned dissertation, with yourself, Mohaya Akter as thesis supervisor. The Following documents have been reviewed and approved:

Sr. No.	Name of the Documents
1	Thesis Proposal
2	Questionnaire
3	Information sheet & consent form.

The purpose of the study is to determine "to estimate prevalence and severity of upper limb functional difficulties among health professional students". The study involves use of the disabilities of the arm, shoulder, and hand (DASH) questionnaire to explore the experience that may take approximately 15 to 25 minutes to answer for collection of specimens and there is no likelihood of any harm to the participants. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 8.30 AM on 27th August, 2022. at BHPI (32nd IRB Meeting).

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

Best regards,

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

পিয়ার্সন-চাপাইন, সবার, ঢাকা-১৩৪৩, বাংলাদেশ। ফোন: +৮৮ ০২ ২২৪৪৪৫৬৬-৫, +৮৮ ০২ ২২৪৪৪১৪০৪, মোবাইল: +৮৮ ০১৭৬০ ০৪৩৪৪৭
 CRP-Chapain, Savar, Dhaka-1343, Bangladesh. Tel: +88 02 22444566-5, +88 02 224441404, Mobile: +88 01730059647
 E-mail: principal-bhpi@crp-bangladesh.org, Web: bhpi.edu.bd

Permission letter

Date: 8-11-2022
 To
 Principal
 Bangladesh Health Professions Institute (BHPI)
 CRP-Savar, Dhaka-1343, Bangladesh

Subject: **Regarding permission for data collection for undergraduate research**

Sir,

With due respect I would like to draw your kind attention that I am a student of B.Sc. in Occupational Therapy student at Bangladesh Health Professions Institute (BHPI), an academic institute of Centre for the Rehabilitation of the Paralyzed (CRP) under faculty of Medicine of University of Dhaka. I would like to conduct research titled, "**Prevalence and severity of upper limb functional difficulties among health professional students.**" with myself, Mohuya Akter as my thesis supervisor. The purpose of the study is "to estimate prevalence and severity of upper limb functional difficulties among health professional students".

The Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire will be used in the study that will take approximately 15 to 25 minutes. Other related information will be collected from the participants. Data collectors will receive informed consents from all participants of BHPI students and data collection will be kept confidential. So, I will be obliged if you grant me permission to collect data.


Sincerely yours,

Md Azim Hossain

4th Year B.Sc. in Occupational Therapy

Session: 2017-18, Student ID: 122170253

Comments and Signature of the Principal



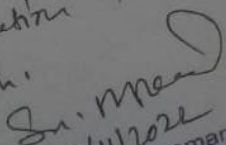
Professor Dr. Md. Omar Ali Sarker

Principal

Bangladesh Health Professions Institute

CRP, Savar, Dhaka-1343

Forwarded for your kind
 consideration & permission
 for data collection to conduct
 his research.


 8/11/2022
 Sk. Moniruzzaman
 Associate Professor & Head
 Dept. of Occupational Therapy
 BHPI, CRP, Savar, Dhaka-1343

Appendix B: Information sheet & consent from



বাংলাদেশ হেলথ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)

অকুপেশনাল থেরাপি বিভাগ

সিআরপি-চাপাইন, সাভার, ঢাকা-১৩৪৩, টেলি: ০২-৭৭৪৫৪৬৪-৫, ৭৭৪১৪০৪, ফ্যাক্স ০৭৭৪৫০৬

কোড নংঃ

তথ্য পত্র

গবেষনার বিষয়: স্বাস্থ্য সেবামূলক পেশায় অধ্যয়নরত শিক্ষার্থীদের মধ্যে সম্পূর্ণ হাতের কার্যকরী অসুবিধার ব্যাপকতা এবং তীব্রতা।

গবেষক: মো আজিম হোসেন, বি.এস.সি ইন অকুপেশনাল থেরাপি (৪র্থ বর্ষ), সেশন: ২০১৭- ২০১৮ ইং, বাংলাদেশ হেলথ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই), সাভার, ঢাকা- ১৩৪৩

তত্ত্বাবধায়ক: মল্লয়া আক্তার,

লেকচারার, অকুপেশনাল থেরাপি বিভাগ, বাংলাদেশ হেলথ প্রফেশন্স ইনস্টিটিউট।

গবেষনার স্থান: বাংলাদেশ হেলথ প্রফেশন ইনস্টিটিউট।

পর্ব ১ তথাপত্র

ভূমিকা:

আমি মো আজিম হোসেন, ঢাকা বিশ্ববিদ্যালয়ে চিকিৎসা অনুষদের অধীনে বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউটে বি.এস.সি.ইন. অকুপেশনাল থেরাপি বিভাগে ৪র্থ বর্ষের ছাত্র হিসেবে স্নাতক শিক্ষাকার্যক্রম (২০১৭-২০১৮) সেশনে অধ্যয়নরত আছি। বিএইচপিআই থেকে অকুপেশনাল থেরাপি বি.এস.সি. শিক্ষা কার্যক্রমটি সম্পন্ন করার জন্যে একটি গবেষণা প্রকল্প পরিচালনা করা বাধ্যতামূলক। এই গবেষণা প্রকল্পটি অকুপেশনাল থেরাপি বিভাগের লেকচারার মহুয়া আক্তার এর তত্ত্বাবধায়নে সম্পন্ন করা হবে। এই অংশগ্রহণকারী তথ্য ও পত্রের মাধ্যমে গবেষণার প্রকল্পটির উদ্দেশ্য, উপাত্ত সংগ্রহের প্রানালি ও গবেষণাটির সাথে সংশ্লিষ্ট বিষয় কিভাবে রক্ষিত হবে তা বিস্তারিত ভাবে আপনার কাছে উপস্থাপন করা হবে। যদি এই গবেষণায় অংশগ্রহন করতে আপনি ইচ্ছুক থাকেন, সেক্ষেত্রে এই গবেষণার সম্পৃক্ত বিষয় সম্পর্কে স্বচ্ছ ধারণা থাকলে সিদ্ধান্ত গ্রহন সহজতর হবে। অবশ্য এখন আপনার অংশগ্রহন আমাদের নিশ্চিত করতে হবেনা। যে কোন সিদ্ধান্ত গ্রহনের পূর্বে, যদি চান, আপনার আত্মীয়-স্বজন, বন্ধু অথবা আস্থাভাজন যেকারো সাথে এই ব্যাপারে আলোচনা করতে পারেন। অপরপক্ষে, অংশগ্রহনকারী তথ্যপত্রটি পড়ে যদি কোন বিষয়বস্তু বুঝতে সমস্যা হয় অথবা যদি কোন কিছু সম্পর্কে আরো বেশি জানার প্রয়োজন হয়, তবে নির্দিধায় প্রশ্ন করতে পারেন।

গবেষণার প্রেক্ষাপট ও উদ্দেশ্য:

আপনাকে এই গবেষণায় অংশগ্রহন করার জন্য আমন্ত্রণ জানানো হচ্ছে কারণ যাতে করে সকলে সম্পূর্ণ হাতের কার্যকরী অসুবিধাগুলির প্রাদুর্ভাব জানতে পারবে যার ফলে তারা সম্পূর্ণ হাতের কার্যকরী অসুবিধাগুলি সম্পর্কে আরও সচেতন হবে। এই গবেষণাটি অংশগ্রহণকারীদের স্বাস্থ্য এবং সুস্থতার প্রচার করবে যে কোন ধরণের কাজ বা কার্যকরী ক্রিয়াকলাপ এবং জনসংখ্যাভিত্তিক কারণগুলি অংশগ্রহণকারীদের জন্য ঝুঁকিপূর্ণ। এটি তাদের একাডেমিক কর্মক্ষমতা বা ভবিষ্যতের ক্যারিয়ারের উন্নতি করবে এবং যথাযথ হস্তক্ষেপবিকাশে সহায়তা করবে।

এই গবেষণা কর্মটিতে অংশগ্রহনের সাথে সম্পৃক্ত বিষয় সমূহ কি সে সম্পর্কে জানা যাক:

আপনার থেকে অনুমতিপত্রে স্বাক্ষর নেওয়ার আগে, এই অংশগ্রহনকারী তথ্যপত্রের মাধ্যমে গবেষণা প্রকল্পটির পরিচালনা করার তথ্যসমূহ বিস্তারিত ভাবে আপনার কাছে উপস্থাপন করা হবে। আপনি যদি এই গবেষণায় অংশগ্রহন করতে চান, তাহলে সম্মতিপত্রে আপনাকে স্বাক্ষর করতে

হবে। এর পরে অংশগ্রহণকারীদের একটি আদর্শ প্রশ্নাবলী সম্পূর্ণ করতে বলা হবে যার জন্য ২৫-৩০ মিনিট সময় লাগতে পারে। এই প্রশ্নাবলীতে সামাজিক-জনসংখ্যাগত কারণগুলির উপর প্রশ্ন থাকবে (উদাহরণস্বরূপ: বয়স, লিঙ্গ, অভিজ্ঞতা)

সংগৃহীত তথ্যাদির গোপনীয়তা বজায় রাখা হবে এবং আপনার পরিচয় প্রকাশ করা হবে না।

যদি আপনি সম্মতি প্রদান না করেন তবে আপনাকে অংশগ্রহণ করতে হবেনা। আপনি সম্মতি প্রদান করা স্বত্বেও ডাটা অধিভুক্ত করার পূর্বসময় পর্যন্ত গবেষককে কোন ব্যাখ্যা প্রদান করা ছাড়াই নিজের অংশগ্রহণ প্রত্যাহার করতে পারবেন।

অংশগ্রহনের সুবিধা ও ঝুঁকি সমূহ কি?

গবেষণা প্রকল্পটি চলাকালীন সময়ে আপনার কিছু ব্যক্তিগত প্রশ্নের উত্তর দিতে হতে পারে যার কারণে আপনি অত্যন্ত অপ্রস্তুত বোধ করতে পারেন। আপনি যদি তা করতে না চান তাহলে আপনাকে অংশগ্রহণ করতে হবে না। অন্যদিকে, এই গবেষণায় অংশগ্রহণ করে আপনার সরাসরি কোনো লাভ নাও হতে পারে, তবে আপনার মূল্যবান অংশগ্রহণ স্বাস্থ্য সেবায় নিয়োজিত শিক্ষার্থীদের মধ্যে সম্পূর্ণ হাতের কার্যকরী অসুবিধার ব্যাপকতা এবং তীব্রতা জানতে সাহায্য করবে।

এখানে সংশ্লিষ্ট গবেষণায় অংশগ্রহণে কোন ধরনের বাড়তি ঝুঁকি, বিপত্তি অথবা অস্বস্তি নেই বলে আশা করা যাচ্ছে।

তথ্যের গোপনীয়তা কি নিশ্চিত থাকবে?

এই সম্মতি পত্রে স্বাক্ষর করার মধ্য দিয়ে আপনি এই গবেষণা প্রকল্পে অধ্যয়নরত গবেষণা কর্মীকে আপনার ব্যক্তিগত তথ্য সংগ্রহ ও ব্যবহার করার অনুমতি দিয়েছেন। এই গবেষণা প্রকল্পের জন্য সংগৃহীত যেকোন তথ্য, যা আপনাকে সনাক্ত করতে পারে তা গোপনীয় থাকবে। আপনার সম্পর্কে সংগৃহীত তথ্যসমূহ সাংকেতিক উপায়ে উল্লেখ থাকবে। শুধুমাত্র এর সাথে সরাসরি সংশ্লিষ্ট গবেষক ও তার তত্ত্বাবধায়ক এই তথ্যসমূহে প্রবেশাধিকার পাবেন। সাংকেতিক উপায়ে চিহ্নিত উপাত্ত সমূহ পরবর্তী উপাত্ত বিশ্লেষণের কাজে ব্যবহৃত হবে। তথ্যপত্র গুলো তালাবদ্ধ আলমারিতে রাখা হবে। বিএইচপিআই এর অকুপেশনাল থেরাপি বিভাগে ও গবেষকের ব্যক্তিগত ল্যাপটপে উপাত্ত সমূহের তথ্যাদি সংগৃহীত থাকবে।

প্রত্যাশা করা হচ্ছে যে, এই গবেষণা প্রকল্পের ফলাফল বিভিন্ন ফোরামে প্রকাশিত এবং উপস্থাপিত হবে। যে কোন ধরনের প্রকাশনা ও উপস্থাপনার ক্ষেত্রে তথ্যসমূহ এমন ভাবে সরবরাহ করা হবে, যেন আপনার সম্মতি ছাড়া আপনাকে কোনভাবেই সনাক্ত করা না যায়। তথ্য-উপাত্ত প্রাথমিকভাবে কাগজপত্র সংগ্রহ করা হবে।

গবেষণা সম্পর্কে জানতে কোথায় যোগাযোগ করতে হবে।

গবেষণা প্রকল্পটির বিষয়ে যোগাযোগ করতে চাইলে অথবা গবেষণা প্রকল্পটির সম্পর্কে কোন প্রশ্ন থাকলে এখন বা পরবর্তীতে যে কোন সময়ে জিজ্ঞাসা করতে পারেন। সেক্ষেত্রে আপনি গবেষকের সাথে উল্লিখিত ০১৫২১২১৫০৩৪ নাম্বারে যোগাযোগ করতে পারেন।

এই গবেষণা প্রকল্পটি বাংলাদেশ হেলথ প্রফেশন ইনস্টিটিউট, সাভারের প্রাতিষ্ঠানিক নৈতিকতা পরিষদ (সিআরপি- বিএইচপিআই/আই আর বি/০৯/২২/৬৩৫) থেকে পর্যালোচিত ও অনুমোদিত হয়েছে। এই গবেষণা প্রকল্প পরিচালনা প্রসঙ্গে যে কোন উদ্বিগ্ন অথবা অভিযোগকারী ব্যক্তি প্রাতিষ্ঠানিক নৈতিকতা পরিষদের সাথে এই নাম্বারে (৭৭৪৫৪৬৪-৫) যোগাযোগ করবেন।

গবেষণা থেকে নিজেকে প্রত্যাহার করা যাবে কি?

আপনি সম্মতি প্রদান করা স্বত্বেও ডাটা অধিভুক্ত করার পূর্ব সময় পর্যন্ত গবেষককে কোন ব্যাখ্যা প্রদান করা ছাড়াই নিজের অংশগ্রহণ প্রত্যাহার করতে পারবেন।

Consent from (Bangla)**সম্মতি পত্র**

এই গবেষণা অকুপেশনাল থেরাপি বিভাগের অধ্যয়নের একটি অংশ এবং গবেষকের নাম মোঃ আজিম হোসেন। তিনি বাংলাদেশের হেলথ প্রফেশন্স ইনস্টিটিউটের বি.এস.সি ইন অকুপেশনাল থেরাপি বিভাগের ৪র্থ বর্ষে অধ্যয়নরত একজন ছাত্র এবং তার গবেষণার বিষয় " স্বাস্থ্য সেবামূলক পেশায় অধ্যয়নরত শিক্ষার্থীদের মধ্যে সম্পূর্ণ হাতের কার্যকরী অসুবিধার ব্যাপকতা এবং তীব্রতা"।

এই গবেষণায় একজন অংশগ্রহনকারী এবং আমি এই গবেষণার উদ্দেশ্য পরিষ্কারভাবে বুঝতে পেরেছি। আমি এই গবেষণায় ডাটা অধিভুক্ত করার আগে যে কোন সময় আমার অংশগ্রহন প্রত্যাহার করতে পারি। এই জন্য আমি কারো কাছে জবাব দিতে বাধ্য থাকব না। আমি অবগত হয়েছি যে, এই গবেষণার অংশগ্রহন করার ফলে আমি কোন ধরনের ক্ষতির সম্মুখীন হবো না। এই গবেষণার সাক্ষাৎকারের সকল তথ্য গুলো গবেষণার কাজে ব্যবহৃত হবে, সেগুলো সম্পূর্ণ ভাবে গোপনীয় থাকবে এবং আমার নাম ও পরিচয় ছাপা হবে না।

আমি গবেষণার পদ্ধতি, জটিলতা অথবা সুফলের ব্যাপারে যে কোন প্রশ্নের উত্তর দানের জন্য এই গবেষণার তত্ত্বাবধায়কের সাথে আলোচনা করতে পারব। আমি উপরোক্ত সকল তথ্য সম্পর্কে জানি এবং এই গবেষণায় অংশগ্রহনে সম্মতি জানাচ্ছি।

অংশগ্রহনকারীর

স্বাক্ষরঃ.....।তারিখঃ.....।

অংশগ্রহনকারীর স্বাক্ষর/টিপসই।

গবেষকের

স্বাক্ষরঃ.....তারিখঃ.....।।

স্বাক্ষীর স্বাক্ষর/টিপসইঃ

তারিখঃ.....

Withdrawal Letter (Bangla)

অংশগ্রহণকারী প্রত্যাহার পত্র

(শুধুমাত্র স্বৈচ্ছায় প্রত্যাহার কারীর জন্য প্রযোজ্য)

প্রত্যাহারকারীর নাম:.....

প্রত্যাহার করার কারণ:

.....

.....

.....

.....

.....

প্রত্যাহারকারীর স্বাক্ষর:..... তারিখ:

স্বাক্ষীর নাম:।।

স্বাক্ষীর স্বাক্ষর: তারিখ:

Information sheet (English)



BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)

DEPARTMENT OF OCCUPATIONAL THERAPY

CRP-Chapain, Savar, Dhaka-1343, Telephone: 02-7745464-5. 7741404. Fax: 0774506

Code Number:

Research information

Research title: Prevalence and severity of upper limb functional difficulties among health professional students.

Researcher: Md. Azim Hossain, B.Sc. in Occupational Therapy (4th Year), Session: 2017-2018, Bangladesh Health Profession Institute (BHPI), Savar, Dhaka- 1343

Supervisor: Mohuya Akter,

Lecturer, Department of Occupational Therapy, Bangladesh Health Profession Institute.

Research place: Bangladesh Health Profession Institute.

Information sheet

Index:

I am Md. Azim Hossain, B.Sc. in occupational therapy at Bangladesh Health Professions Institute under the Faculty of Medicine, University of Dhaka. As a 4th year student in the Department of Occupational Therapy, I am studying in the undergraduate education program (2017-2018) session. It is mandatory to conduct a research project to complete the

education program of B.Sc. in Occupational Therapy from BHPI. This research project will be completed under the supervision of Mohuya Akter, lecturer of occupational therapy department. Through this participating information and paper, you will be presented in detail the purpose of the research project, the methodology of data collection, and how the topic related to the research will be maintained. If you are willing to take part in this study, then it will be easier to make decisions if you have a clear idea about the topics related to this research. Of course, we don't have to confirm your participation now. Before making any decision, if you wish, you can discuss this matter with your relatives, friends or confidants. On the other hand, if the participant is having trouble understanding any content by reading the information sheet or if there is a need to know more about something, feel free to ask questions.

Context and purpose of the research:

You are invited to take a part of this study so that everyone will know the prevalence of functional difficulties in the upper limbs so that they will be more aware of the functional difficulties of the upper limbs. This study will promote the health and well-being of the participants as to what kind of work or functional activity and demographic factors are at risk for the participants. This will improve their academic performance or future career and help develop appropriate interventions.

Let's know about the issues related to participating in this research work:

Prior to signing the license from you, information about the conduct of the research project will be presented to you in detail through this participating information sheet. If you want to participate in this study, you must sign the consent letter. Participants will then be asked to complete a standard questionnaire that may take 25-30 minutes. This questionnaire will contain questions on socio-demographic factors (for example: age, gender, experience).

The confidentiality of the information collected will be maintained and your identity will not be disclosed. If you don't give consent, you don't have to participate. You may withdraw your participation without providing any explanation to the researcher until the time before the data is approved.

What are the benefits and risks of participating?

During the course of the research project, you may have to answer some personal questions due to which you may feel extremely unprepared. If you don't want to do that, you don't have to participate. On the other hand, you may not benefit directly from participating in this study, but your valuable participation will help you to know the prevalence and severity of upper limb functional difficulties among students engaged in health care. It is expected that there is no additional risk, hazard or discomfort in participating in the relevant research here.

Is it certain that the information is confidential?

By signing this consent letter, you have allowed the research staff studying in this research project to collect and use your personal information. Any information collected for this research project, which can identify you, will remain confidential. The information collected about you will be mentioned in a symbolic way. Only the researcher and his supervisor directly associated with it will have access to this information. The data identified by the symbolic means will be used for further data analysis. The documents will be kept in a locked door. Electronic acquisition of the data will be collected in the Occupational Therapy Department of BHPI and on the personal laptop of the researcher.

It is expected that the results of this research project will be published and presented in various forums. In case of any type of publication and presentation, the information will be provided in such a way that you are not identified in any way without your consent. The data will be collected initially on paperwork.

Where to contact to know about the research.

If you want to contact about the research project or if you have any questions about the research project, you can ask now or at any later time. In that case, you can contact the researcher on the mentioned number 01521215034. This research project has been reviewed and approved by the Institutional Ethics Council of Bangladesh Health Profession Institute, Savar (CRP-BHPI/IRB/09/22/635). Any concerned or complainant in the conduct of this research project shall contact the Institutional Ethics Council on this number (7745464-5).

Can you withdraw yourself from research?

You may withdraw your participation without providing any explanation to the researcher until the time before the data is analysed.

Consent from (English)**Consent form**

This research is a part of Occupational Therapy course and the name of this researcher is Md Azim Hossain. He is a student of BHPI in Occupational Therapy in 4th year. The study is entitled as "Prevalence and severity of upper limb functional difficulties among health professional students".

In this study I'm agree to participate and participating voluntarily. The purpose and nature of the study has been explained to me clearly. I will not be bound to answer to anybody and I understand that I can withdraw from the study without repercussions at any time whether before it starts or while I am participating. I understand that it will have no influence on my present or future status as a patient in this clinic. I will receive the same care as any other patient seen in this institution. There will be no penalty or loss of benefits to which I am otherwise entitled. I also understand that all the information collected from interview used in the study would be kept safe and confidentiality. Only researcher will be eligible to assess in the information for her publication. I give permission for my interview with the researcher and I agree to quotation/publication of extracts from my interview. My name and address will not publish anywhere in this study. I can consult with researcher and research supervisor about the research process and I am willing to participate in the study with consent

Signature..... Date:.....

Signature/finger print of the participant:

Signature of the researcher:

Signature/finger print of the witness:

Date:

Appendix C: Questionnaire

বালু, কাঁধ এবং হাতের (ড্যাশ) অক্ষমতার প্রশ্নাবলী

	কোন অসুবিধা নেই	হালকা অসুবিধা	মাঝামাঝি অসুবিধা	গুরুতর অসুবিধা	অক্ষম
১. একটি শক্ত অথবা নতুন কোটা খুলুন	১	২	৩	৪	৫
২. লিখুন	১	২	৩	৪	৫
৩. চাবি ঘুরান	১	২	৩	৪	৫
৪. একটি খাবার তৈরি করুন	১	২	৩	৪	৫
৫. একটি ভারী দরজাকে ধাক্কা দিয়ে খুলুন	১	২	৩	৪	৫
৬. আপনার মাথার উপরে একটি শেলফে / তাকে একটি বস্তু রাখুন	১	২	৩	৪	৫
৭. গৃহস্থালির ভারী কাজগুলি করুন (যেমন, দেয়াল পরিষ্কার করা, ঘর মোছা	১	২	৩	৪	৫
৮. বাগান বা উঠানে কাজ করুন	১	২	৩	৪	৫
৯. একটি বিছানা গুছান	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 উপর)	১	২	৩	৪	৫
১২. আপনার মাথার উপরে অবস্থিত লাইটবাল্বটি পরিবর্তন করুন	১	২	৩	৪	৫
১৩. আপনার চুল পরিষ্কার করুন বা বাতাসে শুকান	১	২	৩	৪	৫
১৪. আপনার পিঠ পরিষ্কার করুন	১	২	৩		৫
১৫. একটি সোয়েটার পরুন যা মাথার উপর দিয়ে টান দিয়ে পরতে হয়	১	২	৩	৪	৫
১৬. ছুরি ব্যবহার করে খাবার কাটুন	১	২	৩	৪	৫

১৭. বিনোদনমূলক কার্যক্রম করুন যেসবের জন্য অল্প পরিশ্রম হয় (যেমন, তাস খেলা, বুনন ইত্যাদি)	১	২	৩	৪	৫
১৮. বিনোদনমূলক কার্যকলাপগুলি করুন যেখানে আপনি আপনার বাহু, কাঁধ বা হাত দিয়ে কিছু বল বা আঘাত করেন (যেমন, গলফ, হাতুড়ি, টেনিস খেলা)	১	২	৩	৪	৫
১৯. বিনোদনমূলক কার্যকলাপগুলি করুন যেখানে আপনি আপনার বাহু অবাধে নাড়াতে পারেন(যেমন, ফ্রিসবি খেলা, ব্যাডমিন্টন খেলা ইত্যাদি)	১	২	৩	৪	৫
২০. যাতায়াতের সময় আপনার যানবাহনের ব্যবস্থা করুন (এক স্থান থেকে অন্য স্থানে যাওয়া)	১	২	৩	৪	৫
১১. যৌন কার্যকলাপ	১	২	৩	৪	৫
	একদমই না	সামান্য	মাঝামাঝি	অনেক	অত্যধিক
২২. গত সপ্তাহে আপনার হাত, কাঁধ বা কজির সমস্যাগুলি পারিবারিক ও সামাজিক পরিবেশে আপনার কার্যকলাপকে কতটা বাধাগ্রস্ত করেছে?	১	২	৩	৪	৫
	একেবারেই সীমাবদ্ধ নয়	সামান্য সীমিত	মাঝামাঝি সীমিত	খুব সীমিত	অক্ষম
২৩. গত সপ্তাহে আপনার হাত, কাঁধ বা কজির সমস্যার কারণে কি দৈনন্দিন কোন কাজে সমস্যা হয়েছিল?	১	২	৩	৪	৫
	কোনটিই নয়	সামান্য	মাঝামাঝি	গুরুতর	অত্যধিক
২৪. বাহু, কাঁধ বা হাতে ব্যথা।	১	২	৩	৪	৫
২৫. কোন নির্দিষ্ট কাজ করার সময় কখনো আপনার বাহু, কাঁধ অথবা হাত ব্যথা করে	১	২	৩	৪	৫

২৬. কোন কিছু করার সময় কি আপনার হাতের, কাধের বা কজিতে চিনচিন ব্যাথা করে?	১	২	৩	৪	৫
২৭. আপনার বাহু, কাধ বা হাতে দুর্বলতা	১	২	৩	৪	৫
২৮. আপনার বাহু, হাত বা কাধে কঠোরতা	১	২	৩	৪	৫
	কোন অসুবিধা নেই	হালকা অসুবিধা	মাঝামাঝি অসুবিধা	গুরুতর অসুবিধা	এত কষ্ট যে আমি ঘুমাতে পারি না
২৯. গত সপ্তাহে আপনার বাহু, কাধ বা হাতে ব্যাথার কারণে আপনার ঘুমাতে কতটা অসুবিধা হয়েছে?	১	২	৩	৪	৫
	দৃঢ়ভাবে একমত নয়	একমত নয়	একমত বা একমত নয়	একমত	দৃঢ়ভাবে একমত
৩০. আমার বাহু, কাধ বা হাতের সমস্যার কারণে আমি কম সক্ষম, কম আত্মবিশ্বাসী, কম দরকারী বোধ করি	১	২	৩	৪	৫

ড্যাশের অক্ষমতা/ লক্ষনের স্কোর = [(প্রতিক্রিয়া n এর যোগফল / n) - ১] * ২৫, যেখানে n হল সম্পূর্ণ প্রতিক্রিয়ার সংখ্যা।

সামাজিক-জনসংখ্যাগত চলকসমূহ

- আপনি কোন ডিপার্টমেন্টে লেখাপড়া করেন? অকুপেশনাল থেরাপি / ফিজিওথেরাপি / স্পিচ এন্ড ল্যাংগুয়েজ থেরাপি / ডিপ্লোমা
- আপনি কত তম বর্ষে পড়ালেখা করছেন? ২য় / ৩য় / ৪র্থ
- বয়স:
- লিঙ্গ: পুরুষ / মহিলা
- কোন খেলাটি আপনি সবচেয়ে বেশি খেলেন? ক্রিকেট / ফুটবল / বাস্কেটবল / টেবিল টেনিস / কেরাম / ব্যাডমিন্টন / লুডু / অন্যান্য
- আপনি কি ধরনের এলাকায় থাকেন? গ্রামীণ / শহুরে
- বৈবাহিক অবস্থা: বিবাহিত / অবিবাহিত

- আপনি কি পরিবারের সাথে থাকেন? হ্যাঁ / না
- আপনি কি পড়াশোনা ছাড়াও অন্য কোনো কাজ করেন (টিউশন / দোকানদার/ মার্কেটিং)? হ্যাঁ / না
- আপনি প্রতিদিন কত ঘন্টা কাজ করেন?
- কর্মক্ষেত্রে কাজের জন্য কত ঘন্টা হাত ব্যবহার করা হয়?
- আপনি কি হোমওয়ার্ক করেন? হ্যাঁ / না
- দিনে কত ঘন্টা গৃহস্থালির কাজ করেন?
- দৈনিক কত ঘন্টা ঘুমান?
- বিশ্ববিদ্যালয়ে যাওয়ার জন্য আপনি কি ধরনের পরিবহন ব্যবহার করেন? গাড়ি / বাস/ হাটা/ মোটরসাইকেল
- দৈনিক পরিবহনে কত ঘন্টা সময় ব্যয় করেন?

Questionnaire (English)

**THE DISABILITIES OF THE ARM, SHOULDER, AND HAND (DASH)
QUESTIONNAIRE**

	No Difficulty	Mild Difficulty	Moderate Difficulty	Severe Difficulty	Unable
1. Open a hard or new can	1	2	3	4	5
2. Write	1	2	3	4	5
3. turn the 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 (eg, cleaning walls, mopping the house).	1	2	3	4	5
8. Work in the garden or yard	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 (over 10 lbs.)	1	2	3	4	5
12. Change the lightbulb above your head	1	2	3	4	5
13. Clean or air dry your hair	1	2	3	4	5
14. Clean your back	1	2	3	4	5
15. Wear a sweater that is pulled over the head	1	2	3	4	5
16. Cut food using a knife	1	2	3	4	5
17. Do recreational activities that require little effort (eg playing cards, knitting, etc.)	1	2	3	4	5

18. Recreational activities where you hit or hit something with your arms, shoulders, or hands (eg, golf, hammer, tennis).	1	2	3	4	5
19. Do recreational activities where you can move your arms freely (eg, playing Frisbee, playing badminton, etc.)	1	2	3	4	5
20. Arrange your vehicle while traveling (moving from one place to another)	1	2	3	4	5
21. Sexual activity	1	2	3	4	5
	Not At All	Slightly	Moderately	Quite A Bit	Extremely
22. How much did your hand, shoulder, or wrist problems interfere with your activities in family and social settings during the past week?	1	2	3	4	5
	Not Limited at All	Slightly Limited	Moderately Limited	Very Limited	Unable
23. Did your hand, shoulder, or wrist problems make any daily activities difficult during the past week?	1	2	3	4	5
	None	Mild	Moderate	Severe	Extreme
24. Arm, shoulder or hand pain.	1	2	3	4	5

25. Sometimes your arm, shoulder or hand hurts while doing certain tasks	1	2	3	4	5
26. Does your arm, shoulder or wrist ache while doing something?	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 Difficulty	Mild Difficulty	Moderate Difficulty	Severe Difficulty	So Much Difficulty That I Can't Sleep
29. How much difficulty did you had sleeping because of pain in your arm, shoulder, or hand last week?	1	2	3	4	5
	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
30. Problems with my arm, shoulder or hand make me feel less capable, less confident, less useful	1	2	3	4	5

DASH DISABILITY/SYMPTOM SCORE = [(sum of n responses (/ n) - 1] x 25, where n is the number of completed responses.)

Socio-demographic variables

- Which department do you study in? Occupational Therapy / Physiotherapy / Speech and Language Therapy / Diploma

- What year are you studying? 2nd / 3rd / 4th
- Age:
- Gender: Male / Female
- Which sport do you play the most? Cricket / Football / Basketball / Table Tennis / Keram / Badminton
- What kind of area do you live in? Rural / Urban
- Marital Status: Married / Single
- Do you live with family? yes / no
- Do you do any other work apart from studies (Tuition / Shopkeeper / Marketing)?
yes / no
- How many hours do you work per day?
- How many hours are hands used for work at work?
- Do you do homework? yes / no
- How many hours a day do housework?
- How many hours sleep daily?
- What kind of transport do you use to go to the university? Car / Bus / Walking / Motorcycle
- How many hours of time spent in daily transportation?