Faculty of Medicine

University of Dhaka

# RISK FACTORS OF NECK PAIN AMONG THE GRADUATE STUDENTS OF ENGINEERING THOSE WHO USE COMPUTER.


**Md. Wahedul Islam**

B.Sc.PT

Exam. Roll No : 101

Registration No: 6822

Session : 2014-2015

**Hasena**

B.Sc.PT

Exam. Roll No : 93

Registration No: 6809

Session: 2014-2015

Saic College of Medical Science and Technology

Department of Physiotherapy

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

Bangladesh


10 December, 2019.

We the under signed certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for the acceptance of this dissertation entitled.

**'Risk factors of neck pain among the graduate students of engineering those who use computer'.** Submitted by **Hasena** and **Md.Wahedul Islam** for partial fulfillment of the requirements for the degree of Bachelor of Science in Physiotherapy (B. Sc. PT).

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Dr. Md.Rejwan Gani Mazumder (PT)

B.Sc. PT, PGD (BKSP)

Lecturer

Department of Physiotherapy, SCMST.

Supervisor

……..

Dr. Bahauddin Bayzid (PT)

B.Sc. PT, M.Sc. PT

Assistant professor and Course Coordinator

Department of physiotherapy, SCMST.

…… ……..

Dr. S.M Mustofa kamal (PT)

B.Sc. PT, MPH

Lecturer

Department of physiotherapy, SCMST.

Dr. Rokeya Sultana

MBBS,MPH (DU)

Principle

Saic College of Medical Science and Technology,Mirpur-14, Dhaka.

## Declaration

We declare that the work presented here is our own. All sources used have been mentioned appropriately. Any mistake is our own. We also decline that for any publication, presentation or dissemination of information of the study. We bond to take written consent of our supervisor and Head of Physiotherapy Department of Saic College of Medical Science and Technology.

……..

Signature Date: / / /


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# Abstract

**Purpose:** Aim of study was to identify risk factors of neck pain among the graduate student of engineering those who use computer**.**

**Objective:** To determine the risk factor of neck pain among the graduate student of engineering those who use computer

**Methodology:** This descriptive type of cross sectional study is conducted risk factors of neck pain among the graduate student of engineer those who use computer with a structural questionnaire and checklist to collect information from sample size of 300 students are participated in this study. A pretested modified questionnaire was used to collect the data. All the data were entered and analyzed by using statistical package for social science (SPSS) software version. It is the Asymptotic Significance, or p- value, of the chi-square we've just run in SPSS. This value determines the statistical significance of the relationship we've just tested. In all tests of significance, if $p < 0.05$, we can say that there is a statistically significant relationship between the two variables.

**Result:** It is found that 48.7% had a history of neck pain. Most of the age range was <22 years (66.3%).From total respondent 92% (n=92.33) was unmarried and 8%(n=7.67) were married. From total respondent mild pain about 37.7% (n=113), followed by 55.3 % ( n=166) were moderate pain and 7% (n=21) were severe pain. Total respondents 28.3% (n=85) were shoulder pain, 11% (n=33) were wrist pain, 37.7% (n=113) were back pain, 16% (n=48) had elbow pain, 73 % ( n=219 ) had feel headache, 28.3% (n=85) were pareshesis, 26.3%n=79 had muscle cramp,20.7%(n=62) had muscle spasm. On the basis of the type of problem, the percentage was 73%(n=73.33) on a monthly basis, and the number as a year is 27% which were 26.7 and as a reference pain there was 29 percent 26.3 of them, 26 percent exercise daily among them, physical fitness was 75, which was 75 percent good.Amongst the participants, all of them using a computer were 9.33 people less than 1 hour, which is 1 percent, 1 to 3 hours 34% which is 33.7 participant and 57 percent of those who used more than three hours.

**Conclusions**:

In summary, the results showed that the high rate of musculoskeletal disorders of neck pain and shoulder areas is affected by risk factors such as age, gender, education, marital status, work experience, height, weight and workplace. It seems that holding training programs to provide the necessary awareness in order to reduce musculoskeletal disorders. According to the results, our country's health policymakers are suggested to pay attention to the objection of musculoskeletal disorders, try to decrease the problems and as a result increase the working of student, and decrease the cost of our health. An education program should be introduced for graduate students regarding how properly to do computer work to avoid neck pain.

**Key words:** Neck pain, Graduate student, Computer, Ergonomic.

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# Abbreviations

| | |
|---|---|
| SCMST | SAIC College of Medical Science & Technology |
| SPSS | Statistical Package for Social Sciences |
| ADL | Activities of Daily Living |
| WHO | World Health Organization |
| MSD | Musculoskeletal Disorder |
| BMRC | Bangladesh Medical Research Council |
| EECS | Upper Extremity Engineering and Computer Science |
| DCF | Deep Cervical Flexor muscles |
| CCFT | Cranial Cervical Flexion Test |
| WMSD | Work-Related Musculoskeletal Disorders |
| BMI | Body Mass Index |
| RMG | Resource Management Group |
| ROM | Range of Motion |

# Contents

# Chapter-I Introduction

## 1.1: Background

Neck pain is a very common conditions among the engineering graduate student those who use computer. The result of long hours seated in an unchanged position. Often with a poor posture or curved upper spine, are tight and painful neck muscles, neck stiffness and commonly associated headache. Headaches and neck pain are amongst the most prevalent musculoskeletal complaints in the general population and are considered to be a significant public health concern (Zwart et al., 2004).

A significant body of research has reported a high prevalence of headache and neck pain among adolescents over the previous decade. Although neck pain is common in young adulthood studies on predictive factors for its onset and persistence are scarce. For people who spend a great deal of time using computers, neck pain is a common problem. By computer, we include desktop, laptop, notebook, personal computer, video display units and terminals, to include the use of keyboards and associated painting device like a mouse or a trackball. Neck pain is an experienced anywhere room the base of the skull at ear level to the upper part of the back on the shoulder. Neck pain is common as lumbar pain and leads to disability and costly economic effects due to reduced ability to work and study (Siriluck Kanchanomai et al., 2011).

Musculoskeletal disorders continue to be a significant public health burden. Computer-related musculoskeletal symptoms and disorders are expected to play a significant role in work and study-related musculoskeletal health issues as more than half of American workers use a computer at work. A recent systematic review concluded computer use was positively associated with upper extremity musculoskeletal symptoms and several disorders of neck pain (Farzan Madadizadeh et al., 2017).

College students are a population known to experience computer-related upper extremity musculoskeletal symptoms. Forty-one percent of college students in a cross-sectional study of a private Northeastern University (NEU) reported experiencing computing-related musculoskeletal symptoms with 55% being limited in at least one college activity due to pain. Similar findings were found at a second university in a different geographic region of the United State. Finally, a dose-response relationship in

participating undergraduates was record file with symptom severity increasing as daily computing time increases. Coupled with the knowledge there are 15 million college students in the United States alone. These findings suggest college students should be included in epidemiological studies designed to examine computing-related upper extremity musculoskeletal symptoms and disorders and their risk factors. Recently, I reported musculoskeletal symptoms associated with the computer in graduate engineering students at a study college campus in Bangladesh. Graduate students represent a transitional period between education and working. Reported weekly computer use by graduate students that coincides with levels seen in a literature review that found increased computer use was associated with upper extremity of pain. The purpose of this study was to compare epidemiologic findings on upper extremity musculoskeletal symptoms, functional impairment and computer use in graduate engineering students at a private Southwestern University (SWU) with the previous graduate but expanded with questions pertaining to computer use among graduate students as reported (Schlossberg et al., 2004).

New employees who perform computer-intensive study are at risk for developing pain and musculoskeletal disorders at the wrist, forearm, and neck workplace risk factors include number of hours per week of computer use, working in abnormal body postures (e.g., reaching for mouse, looking up at a computer monitor), increasing age, and being the female. With the increasing use of computers by college students there is a concern that the young may also be at increased risk for disabling musculoskeletal disorders. A survey of 1544 graduating seniors at Harvard University, reported that over half of the students experienced symptoms with computer use, and 12.6 % experienced symptoms after computing for one hour or less. Risk factors were an academic concentration in computer science, female gender, and using a computer more than 20 hours per week. To date, no studies have estimated the reduction of neck pain upper extremity symptoms among graduate students. In 1995, there were over 2 million graduate engineering students enrolled in the United States. Graduate students may be at greater risk for musculoskeletal symptoms due to the intensive computer use required for data analysis and thesis writing. The purpose of this study was to determine computer use was associated with an increased risk of the upper extremity and neck pain among graduate students in Electrical Engineering and Computer Science at a large public university ( Ann E  Barr et al., 2004).

Musculoskeletal disorders are a series of inconveniences; harm and pain caused by different factors in different parts of the body and in the long term, prevent the sufferer from out general work day-to-day activities. Musculoskeletal disorders are multi-factorial created as a result of various risk factors. One of the risk factors is the inappropriate posture of the body. Even if the state is appropriate, a prolonged abnormal position can still increase damage. Today, with the increasing development of science and technology, incidence of and inactivity, fatigue and musculoskeletal disorders ( Zahra Akbar Nejad et al., 2017).

The work environment, due to non-compliance with some ergonomic principles is the grounds for major musculoskeletal disorders, and proper planning and management can significantly reduce the rate of these disorders. Feeling of pain and disability in various parts of the musculoskeletal system is among the main difficulties of working in study environments. Complications of neck and shoulder pains are the main reasons for absence in the study environment and have an office for more than half of workplace absences. In most of the administrative work that requires extensive use of the eyes, there are neck and shoulder disorders that are mainly caused due to prolonged use of computers. In studies conducted in different countries, a high prevalence of musculoskeletal disorders among the engineer students has been reported and the most affected areas have been neck and shoulders. Musculoskeletal disorders affect the performance of computer users in various forms, they affect, for example, the quality of the employee's performance and ability and sometimes undermine the respect and professional relationship between employees and clients. In America and Canada respectively 1.3% and 2.4% of revenue are spent. The prevalence of these disorders creates many human and financial losses. Which trace the roots of neck and shoulder areas, as well as influencing factors in graduate engineering students who use a computer? The population is considered among the popular universities of medical sciences in Iran. Therefore, it was a good choice for this study. This study aimed to identify risk to factors affecting the musculoskeletal disorders of neck and shoulder areas in the headquarters staff of Kerman University of Medical Sciences (Leila vali et al., 2017).

## 1.2: Justification of the study:

Most of the engineering graduate students work in abnormal posture, posture analysis demonstrated that forward flex to adapt ergonomically unfavorable posture such as prolong flexion of the neck and feel pain, particularly among females as a result, lost day work and work compensation claim. Some reports suggested that employers can reduce that cost and pain associated ergonomic hazard. This study will be expected to determine prevalence and risk factor associated with neck pain among engineering graduate student who uses the computer as well as to examine the magnitude of the problem. To minimize the problem associated with neck pain among engineering graduate students. This study also expects to communicate the finding of this study to take the necessary steps to minimize neck pain and reduce the cost and injuries associated with the ergonomic hazard of workers.

Spend a substantial amount of time using computers. Neck pains those who use among the desktop and laptop computer users graduate engineering students. The prevalence rate and the percentage of various positions used by computer users were assessed. This will result in negative effects on his or her physical workload, health and overall performance. Besides this, there is a reduction in nutritional exchanges at inter-vertebral discs which is an effect of postural fixity while sitting continuously for long hours and in the long run may promote their degeneration.

Neck pain is common and a major cause of degenerative disc disease, neck strain and poor posture in obese persons that are likely to increase over time. There is very little information about neck pain among the graduate engineer student in our country. The study will be identifying to determine prevalence and risk factors associated with neck pain among the graduate engineering students the study will help to examine the magnitude of this problem. This study also expects to disseminate the findings of this study to take necessary steps to minimize risk factors of neck pain. This study also expects to disseminate the finding of this study to take the necessary steps to minimize neck pain and reduce the cost and injuries associated with the ergonomic hazard of workers. The usage of computers is increasingly in the current generation, especially in student Population. If we can identify the risk factors, they will get better, if they obey them.

## 1.3: Operational definitions:

### Pain:

The subject's alert perception of adjusts nociceptive impulses that generate unpleasant sensory and emotional experiences related to actual or potential tissue damage or report in terms of such damage.

### Neck Pain:

Neck pain is a common complaint. Most causes of neck pain aren't determined neck muscles can be strained from poor posture. It is leaning into computer at work or hunching over workbench doing hobbies at home. Neck pain can be caused by inappropriate working aim abnormal posture.

### Posture:

The posture of the body, situation or disposition of the several parts of the body with respect to each other or for a particular or purpose especially (Fine Arts), the position of a finger with regard to the several principal members by which action is expressed.

### Musculoskeletal disorders:

Musculoskeletal disorders can act on the body's muscles, joints, tendon ligaments, and nerves, most work-related MSDs develop over time and are produced by the work itself on by the employees working environment. They can also result from fractures. Suffer in an accident. Typically, MSDs can affect the back, neck, shoulders, upper limb and less affected the lower limb.

### Prevalence:

The ratio for a given time period of the number of occurrences of a disease or even to the number of the unit at risk in the population. Medicine the total number of cause of disease in a given population at a specific the number of all new and old cases of a disease or occurrences of an event during a particular period. Prevalence is expressed as a ratio in which number of events is the numerator and the population at risk is the denominator.

## Ergonomics:

Ergonomics derives from two Greek words, organ meaning work, and gnomic meaning natural laws, to create a word that means the science of work and a person's relationship to that work. The International Ergonomics Association has adopted this technical definition ergonomics is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system and the profession that applies theory, principles data and methods to design in order to optimize human well-being and overall system fulfillment.

## 1.4: Research Question:

What are the risk factors of neck pain among the graduate student of engineering those who use computer?

## 1.5: Objectives of the study:

### 1.5.1: General objectives:

To determine the risk factor of neck pain among the graduate student of engineering those who use computer.

### 1.5.2: Specific objectives:

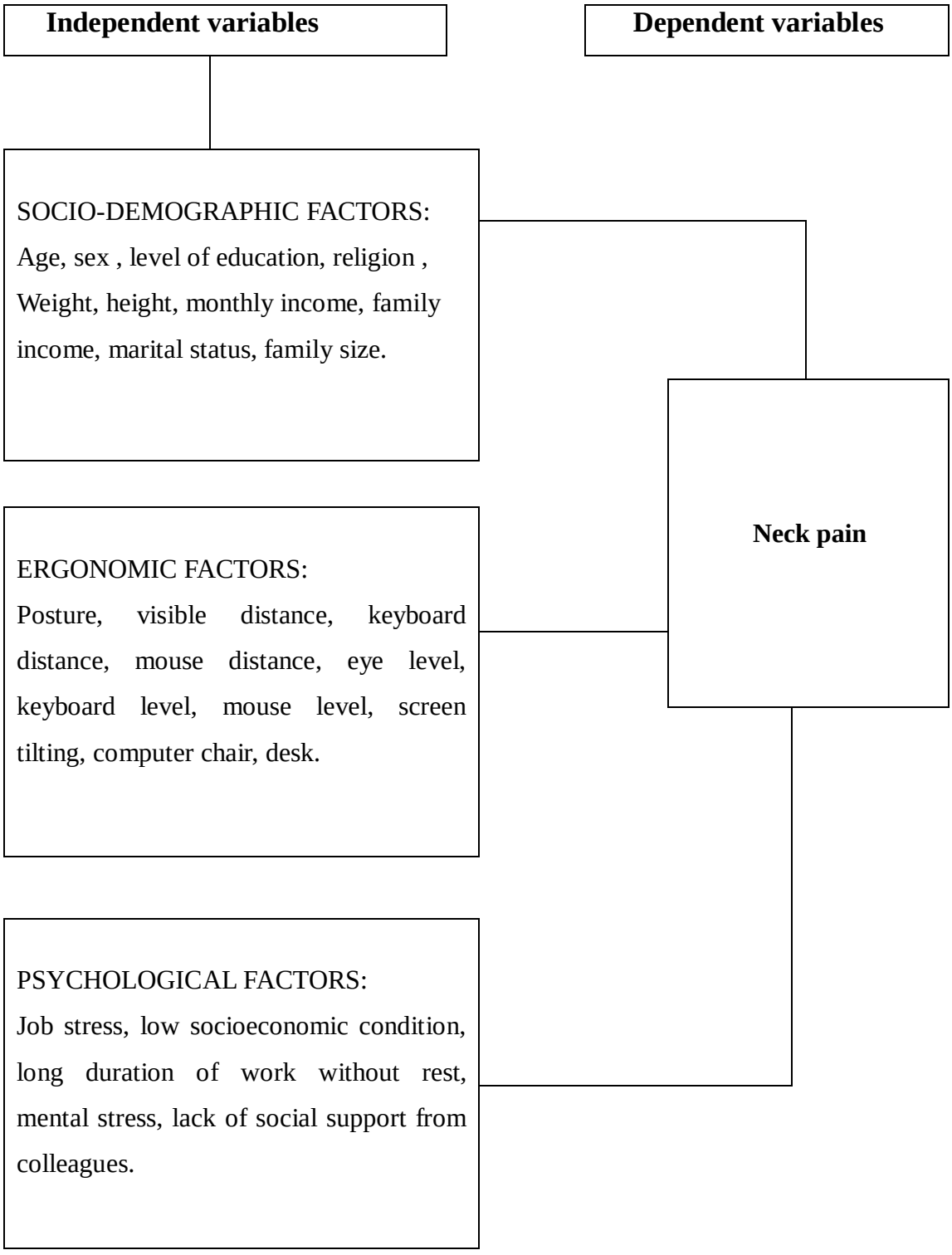
To find out the duration of ergonomic related factors associated with neck pain;

To determine the socio-demographic factors associated with neck pain;

To determine the specific type of treatment seeking due to neck pain among engineering graduate students who use computer;

To see the association between pain and study related factors of students.

## 1.6: Conceptual framework:



## Chapter – II Literature Review

The primary hypothesis was that hour of computer use per week (20 or more hours per Week). By computer science and electrical engineering graduate students are associated with an increased prevalence of self- reported persistent or recurrent upper extremity or neck pain. The population of the 304 graduate students randomly selected .206 completed the questionnaire (67% participation rate) with 69% completing the questionnaire online and 31% by telephone. The 98 non-participants were not significantly different in gender or age distribution from the participants. The respondents by year of graduate study were: year 1,54 (26% ): year 2,36 ( 17% ); year 3.32(16%); year 4.3(16%);year 5.26(13)%; and 25 (12%) were beyond the fifth year of study (Schlossberg et al., 2004).

Neck and upper limb symptoms are frequently informed by computer workers. More than 50% of the computer workers report symptoms in neck, shoulders, arms, wrists or fingers. In the year 2002, 28% of the general Dutch working population suffered from pain or stuffiness in the neck, shoulder, arms, hands or wrists in the previous 12 months. In Europe, the prevalence of work-related neck/shoulder pain was 25% and 15% for work-related arm pain. The total yearly rate of the neck and upper limb symptoms in the Netherland due to decreased productivity, sick leave, long term disability for work and medical costs were recently estimated at 2.1 billion euros (Morten Waersted et al., 2010).

Chiropractors frequently see patients with neck pain and headaches that can, at least in part, be blamed on the countless hours people spend sitting at computer work stations. As the work world has evolved (or devolved) into primarily sedentary tasks, so has the educational environment for many adolescents, who are now also spending far too much time on computers (not to mention video games, etc.). This age group was the focus of this study. To date, the literature suggests that a high percentage of adolescents experience neck pain, and the adolescent neck pain and headache is a primary predictor of chronic. Neck pain in adulthood, in fact, the point prevalence of neck pain in adolescents in developed countries is anywhere between 230 percent and 60 percent. Experts also suggest that sedentary lifestyles and prolonged computer use

may result in neck pain in this age group-1. Other exceptional risk factors for adolescent musculoskeletal pain (based on a variety of studies) include female gender, increasing age, Family history of back pain, smoking, involvement in competitive sports and psychosocial factors (Smith L. et al., 2010).

The lifetime prevalence of neck pain was 65.4 %( 95% confidence interval, 61.8%-69.0%).The 12-month prevalence was 53.6 %( 41.0% in male, 59.0% in female) (95% confidence interval,49.8%-57.4%). About 15.0% of these patients had moderate to severe pain, moreover, 4.5%of these subjects had to limit their social actives and 3.1% had to limit their work. Multiple logistic regression analysis showed that females, managers. Administrators and professionals have a high risk of neck pain in the population of Hong Kong (Caio Vitor Dos et al., 2017).

As with the 12- month symptom prevalence, the 1- week prevalence results reveled by pain. The neck and shoulder symptom was clearly more prevalent than the hand and elbow/forearm symptoms. With regard to the 12-month prevalence of the whole sample, the highest values were found in the neck (55%) and shoulder (38%) region. The least pronounced prevalence was found in the hand/wrist and elbow /forearm, with values of 21% and 15%, respectively. These results are similar to the findings of a study among computer office from the Netherlands using the Maastricht Upper Extremity Questionnaire (MUEQ).In this study, similarly to our findings, the most commonly Problems complaints were neck and shoulder symptoms (33% and 31%, respectively), Followed by upper arm complaints and hand (12% and 11%), and lower arm, wrist and elbow complaints (André Klussmann et al., 2008).

By means of the Nordic Questionnaire, the lifetime, 12-month, 1-month, 1-week and Point prevalence of neck, shoulder, elbow, and hand symptoms were determined. With regard to the 12-month prevalence of the whole sample, the biggest values as described in the neck (55% ) and shoulder region (38% ). The least pronounced occurrences were seen in the hand/wrist and elbow/forearm with values of 21% and 15%.respectively. Similarly, the 1-week prevalence was highest in the neck (21%) and shoulder region (15%) and lowest in the hand /wrist (7% ) and elbow /forearm 5%/In most of the symptoms types, women showed higher prevalence than men
( Hansjuergen Gebhardt et al., 2008).

This study assessed the effectiveness of a single intervention targeting work style and combined intervention targeting work style and physical activity on the recovery from neck and upper limb symptoms. Computer workers with frequent on long term neck and upper limb symptoms were randomized into the work style group (n=152), work style and physical activity group (WSPA, n=156), or usual care group (n=158) in the year 2002,28% of the general Dutch working population suffered from pain or stiffness in the neck, shoulder, arms. A survey conducted in 15 European countries showed a prevalence of 25% for work-related neck/shoulder pain and a prevalence of 15% for work (Bernaards et al., 2007).

Musculoskeletal disorders are a common complication among computer users. Many epidemiological studies had shown that usable factors and particular work organizations play an important role in the development of these disorders. We take out of a cross-sectional survey to estimate the generality of musculoskeletal symptoms among university students using personal computers and to investigate the feature of occupational viewpoint and the prevalence of symptoms throughout the study record (Sima Rafiei et.at, 2017).

The objective was to assess the student's level of knowledge of computer demands and related health risks. A questionnaire was distributed to 300 students attending the lectures for second and fourth-year courses of the Faculty of Architecture. Data regards personal characteristics, ergonomic and organizational aspects of computer use and the existence of musculoskeletal symptoms in the neck and upper limbs were collected. Detection to risk factors such as daily duration of computer use, time spent at the computer without breaks, duration of mouse use and poor workstation ergonomics were significantly higher among students of the fourth year course. Neck pain was the most commonly reported symptom (69%), followed by hand/wrist (53%), shoulder (49%) and arm (8%) pain. The prevalence of symptoms in the neck and hand/wrist area was significantly higher in the students of the 4-years course. In our study, we found a high prevalence of musculoskeletal disorders among university students using computers for long time periods on a daily basis. Detection to computer-related risk factors and the prevalence of musculoskeletal symptoms both abstract to increase significantly throughout the study course. More ever, we found that the level of perception of computer-related health risks among the students was

low. Our findings propose the need for preventive intervention consisting of education in computer uses (Lorusso et al., 2009).

Recent literature identified upper extremity musculoskeletal symptoms at a prevalence of > 40% in engineering students. The study objectives were to affect the weekly computer use and the aspect of upper extremity musculoskeletal symptoms in graduate students. Neck pain was unusually associated with more senior occupational type, working more than six hours per day on the computer, female sex and greater fear avoidance value of hard work, greater psychological pain, and decrease cervical flexion ROM. The low severity of the neck pain of the participants in this study may limit a fit determination of their association with the risk factor variables, but the studied sample is a practical representation of the office worker peoples (Cammie Chaumont Menéndez et al., 2009).

This study utilized a cross-sectional study design. Office workers with and without neck pain (n=384) were recruited. Participants completed a observe that included a Pain Numerical Rating Scale (dependent variable), and measures of independent variables including demographic, individual, work-related factors, neck/shoulder muscle strength, endurance, and range of motion (ROM). The relationships between the independent and dependent variables were studied in a logistic regression model. Neck pain was serious with more senior occupational categories, working more than six hours per day on the computer, female sex, greater fear-avoidance beliefs for work, greater psychological distress, and reduced cervical flexion ROM. The low severity of the neck pain of the participants in this study may limit a muscular determination of their association with the risk factor variables, but the studied sample is a realistic representation of the office worker population (Chen et al., 2008).

The follow-up questionnaire contained the same questions about the level of pain intensity and the level of pain-related disorders in the neck region as was used in the baseline questionnaire. Pain severity score and a pain-related disability score at the end of the study were calculated relatively as was made at baseline. A subject with a pain severity score <3 and a pain-related disability score <1 at the end of the study was considered to be symptom-free from neck/shoulder pain. Total numbers of participants were 150, out of which 80% were males, and 67 (44.7%) suffered from

musculoskeletal problems, affecting at least one of the four anatomical sites (neck, shoulder, wrist/hand). Common symptoms were headache, which was seen in 46% and neck pain in 41.3% of subjects.Whereas wrist pain was least commonly seen in 16% of subjects (Wilhelmus Johannes Andreas Grooten et al., 2007).

The Deep Cervical Flexor muscles (DCF) are judged to be an important stabilizer of the head-on-neck posture. It has been hypothesized that when muscle representation is weakened, the balance between the stabilizers on the posterior columns of the neck and the DCFs will be disordered, resulting in loss of individual alignment and position, which is then likely to contribute to cervical impairment. Therefore DCF training is recommended for increasing the tolerance of these postural muscles, leading to an increase in NP. Research prescribes that training that features the right method of DCF, before including strengthening of the global cervical spine musculature, is more useful in the rehabilitation of the cervical spine than the nonspecific strengthening of neck muscles. The cranial-cervical flexion test (CCFT) administration seems to be an absolute plan for correctly stimulating DCFs and reducing the increased activity of the SCM muscle. There is evidence that restoration of the supporting capacity of DCF parallels the decrease in neck pain and headache. So, DCF muscle training is recommended for the clinical control of neck pain (Zaheen Ahmed Iqbal et al., 2013).

With female respondents in our study around 25% described lower back pain (overall 22.41%) which was higher than the former study from Bangladesh (18%). Earlier experimental data also suggest that Resource Management Group (RMG) workers suffer from WMSDs, particularly of neck and back regions are the most commonly recorded. In extension to back and neck pain, WMSDs of other body parts were also common among operators are considered for 78.5% of all work-related illnesses and dysfunctions. Data explained that the use of small fractures can reduce the risk and presence of low back pain. More advanced some studies reported gender, age, length of service, nature, and posture of work were significantly associated with WMSDs that are also related to our study (Mohammad Didar Hossain et al., 2018).

## Chapter – III Methodology

**3.1: Study Design:** A descriptive cross-sectional study were conducted to determine the risk factors related to neck pain among engineering graduate students those who use the computer.

**3.2: Study Population:** The study population were include male and female engineering graduate students who use the computer with the age of 18-30 years, work in the office, computer lab and use a personal computer.

**3.3: Study Area:** The study was conducted in some selected areas of Dhaka city.

**3.4: Study Period:** The duration of the study was six to twelve months. The entire period was divided into different activities.

**3.5: Sample Size:**

Formula of one sample population are used for calculating sample

Here,

n= The desire sample size

z = The standard normal deviate usually set at 1.96 correspond to 95% confidence level

p= 0.5, The proportion of the target population estimated to have particular characteristics

q=1-p

=1-0.5

=0.5

d= Degree of accuracy desired, usually set as 0.05%

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

Now, required sample size will be:

N= $\frac{(1.96)^2 \times (0.5) \times (1-0.5)}{(0.05)^2}$

= 0.96/0.0025

= 384

Where,

z= confident level 95% for this study

P= estimated prevalence rate of common sports injury among the truck drivers is 384.

q= 1-p

d= desired decision level 0.05

n= desired sample size

### 3.6: Sampling technique:

The sample was selected purposively to interview the study population considering the inclusion & exclusion criteria. It was followed by the eligibility of study samples and sample size requirement all students who use the computer were selected purposively for collecting samples.

### 3.7: Data collection technique:

An interview administered a structured questionnaire designed to collect information on related neck pain associated with the use of a computer. That was prepared in advance and evaluated by the principal supervisor before data collection. The questionnaire was consists of 3 sections of items.

### 3.8: Data collection procedure:

Convenience sampling procedure. The data collection procedure involved face to face interviews and a checklist with the help of an interviewer-administered structured questionnaire.

### 3.9: Data management and analysis:

After collection of data, all interview questionnaires were checked for its completeness, correctness and internal consistency to exclude missing or inconsistent data and those were discarded. Corrected data enter into the computer. The data were analyzed by using the statistical software namely SPSS (statistical package for social science).

### 3.10: Inclusion criteria:

Consists of male and female engineering graduate students those who use the computer with age of 18-30 years;

Those who use the computer regularly more than 30 minutes;

Who use desktop computer / laptop ?

Duration of computer use more than 6 months.

### 3.11: Exclusion criteria:

Mentally retired students;

Occasionally computer users.

### 3.12: Ethical consideration:

Before data collection, permission for the ethical committee of state college of health science was taken and a request letter hand over to appropriate authorities of the study area for taking permission and seeking assistance for smooth access to data collection. All ethical issues related to research involving human subjects addressed according to guidelines of the medical research council and the ethical review committee of WHO. Prior to data collection, the objective of the study explained in understandable language to the study participant and their written informed consent were taken. The prospective participants gave free opportunity to receive summary information of the study in writing before giving consent and take part in the interview of the study. The participant's right to refuse and withdraw from the study was accepted. All questionnaires and the ethical document were translated into Bengali before the interview.

### 3.13: Limitation of the study:

As a student, this study conducted by our fund / finance so, there might had some limitation of finance aspect within this study;

There were less time to carry this study and thus calculated sample couldn't take;

This study does not represent whole population within country;

This research is a part of our academic study and we are not expert on statistical analysis. So there might have poor analytical effect.

# CHAPTER–IV RESULT

## 4.1. Socio-demographic information:

### 4.1.1. Age of the participants.

Here, 199 numbers of respondents less than 22 years old with 66.3% of total 300 participants. Between 22-27 years 300 participants of 99 were 33% and 2 of the 300 participants in greater than 27 years old were 0.7%, mean age 21.18 and standard deviation 2.03.

**Table no.1: Distribution of participants by age.**

| Age in years | Frequency | Percentage | Mean age | Standard deviation |
|---|---|---|---|---|
| <22 years | 199 | 66.3 | 21.18 | 2.03 |
| 22-27 Years | 99 | 33.0 | | |
| >27 Years | 2 | 0.7 | | |
| Total | 300 | 100.0 | | |

### 4.1.2. Sex of the participants.

Among total 300 participants the male 98 whose were 33% and the female were 67%.

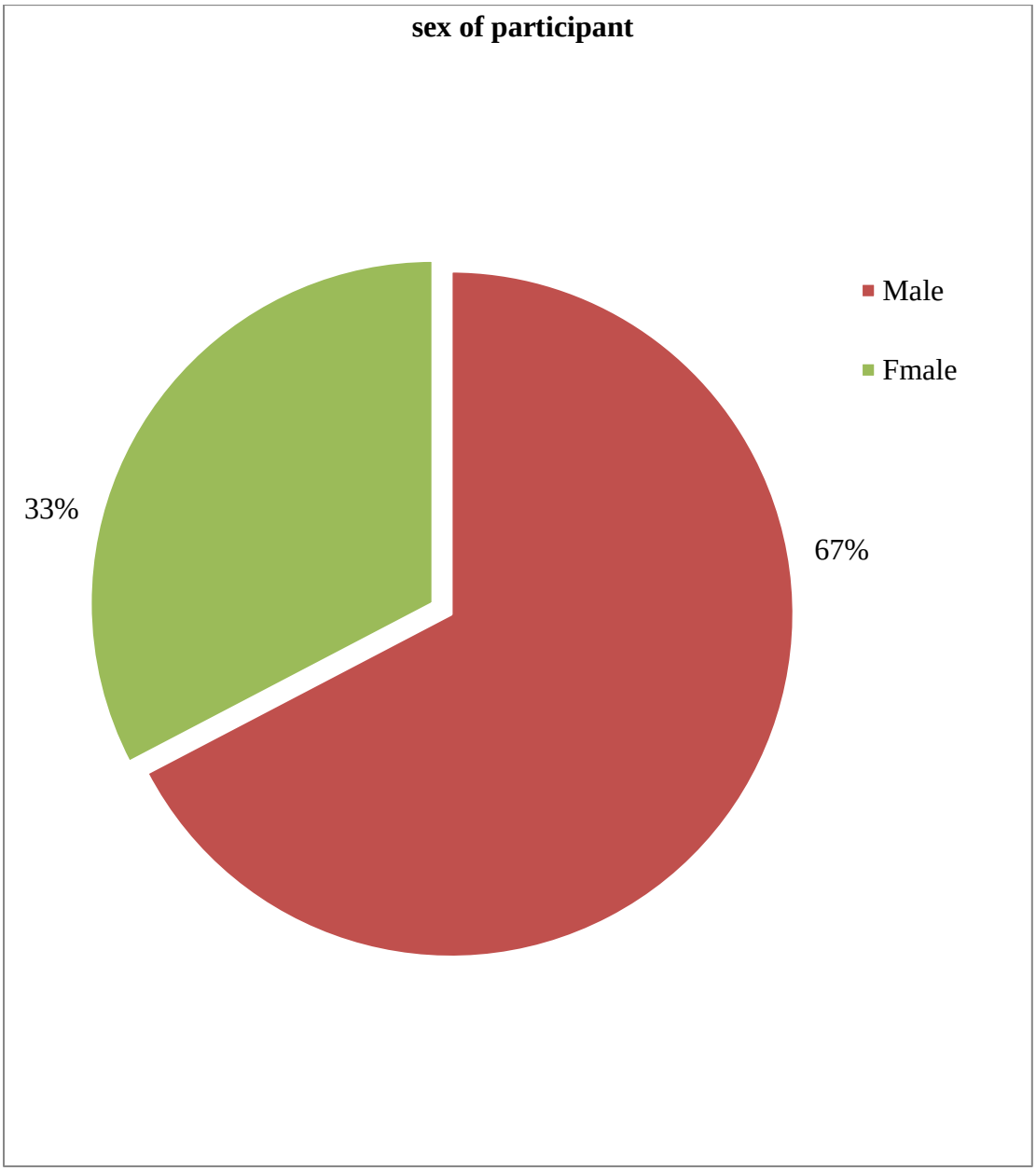



**Figure no.1: Distribution Sex of participant.**

### 4.1.3. Living area of participant.

Among total 300 participants, 251 respondents lives in urban whose were 84%, 7% of the rural and 9% of the semi urban.

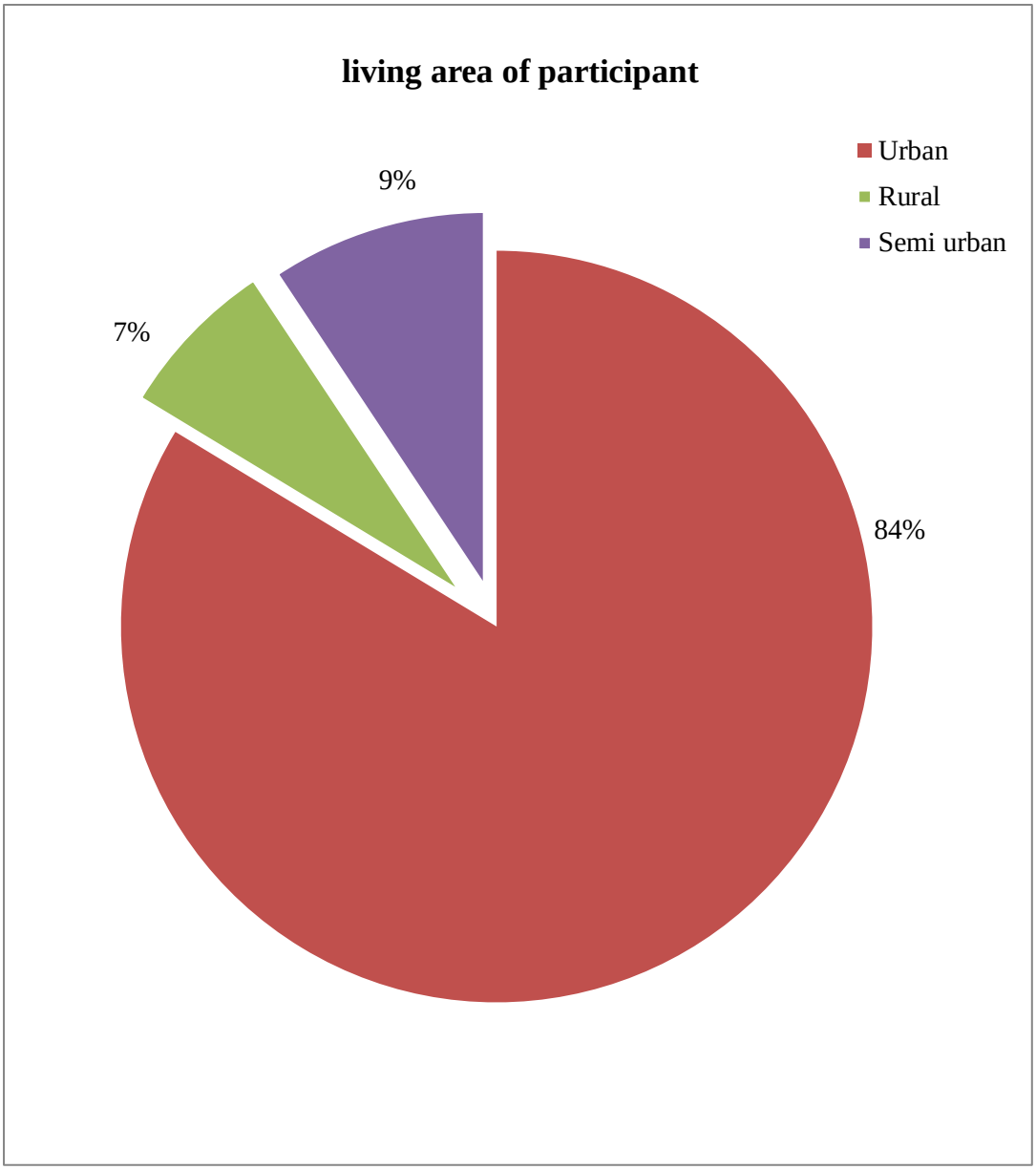



**Figure no.2: Distribution living area of participant.**

### 4.1.4. Marital status of participant.

Among total 300 participants, 92.33 respondents unmarried whose were 92% and 8% of married.

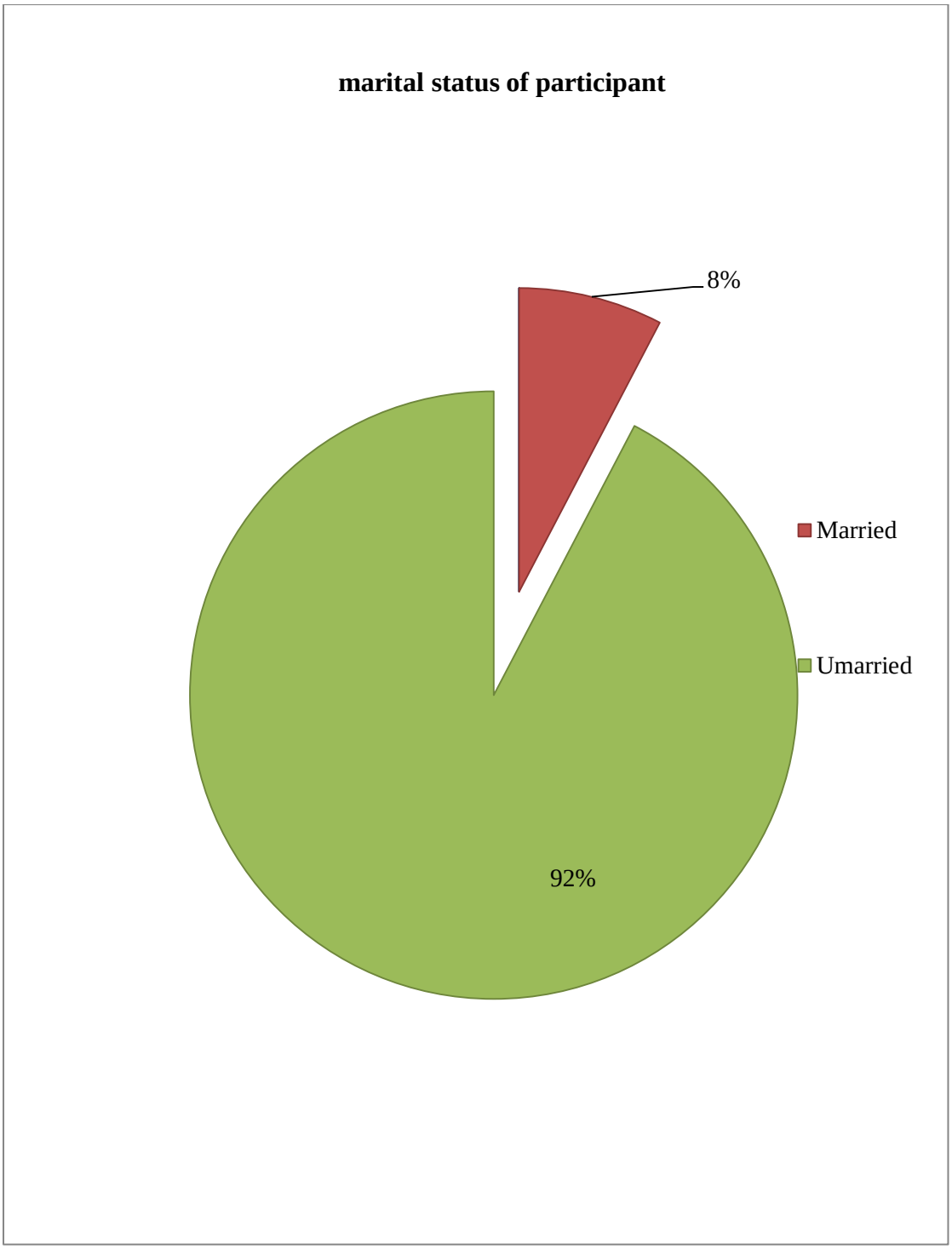



**Figure no.3: Marital status of participants.**

### 4.1.5. Education status of participant.

Among total 300 participants, 39.33 respondents HSC whose were 39 %, 34 % of the degree and 27 % of others.

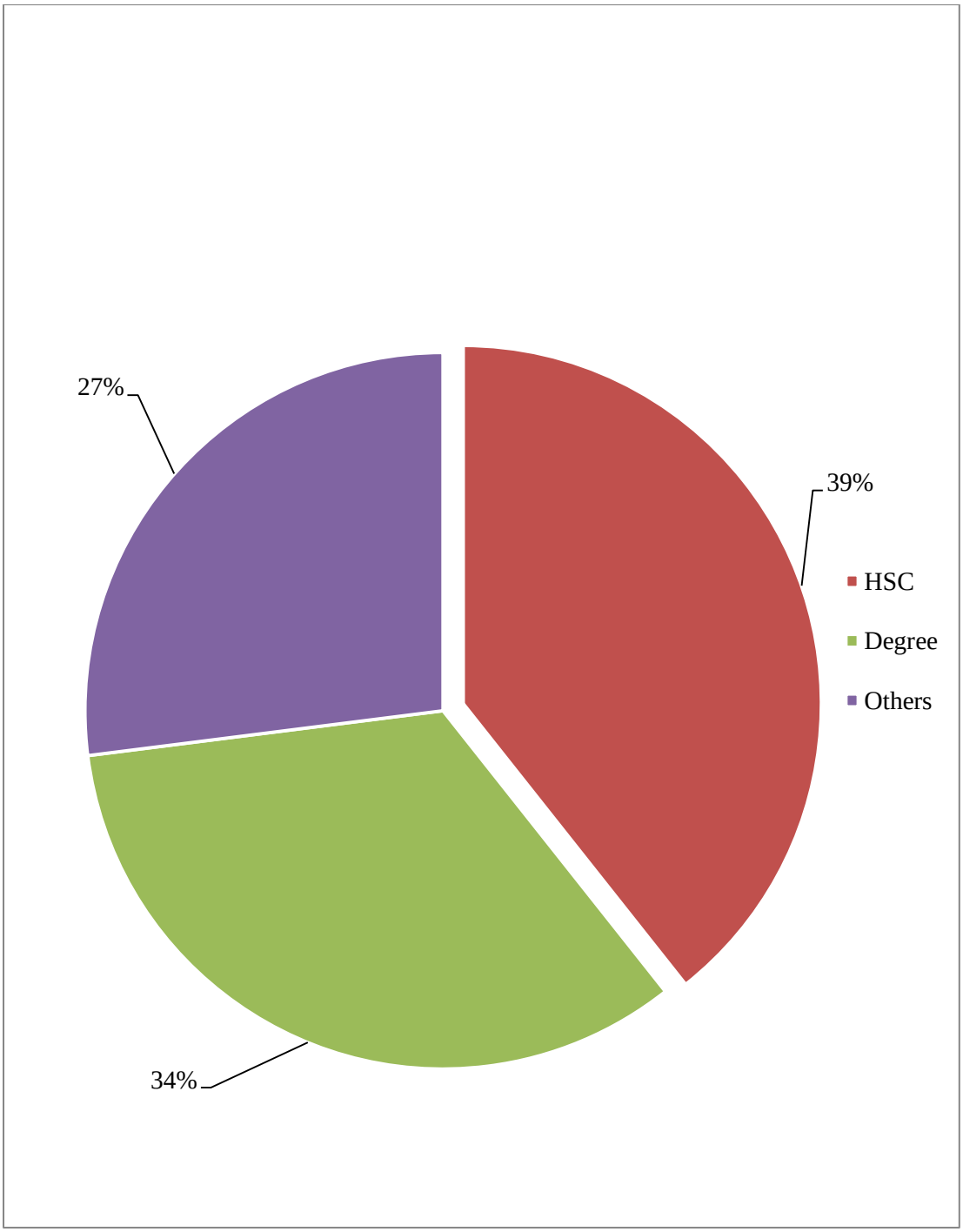



**Figure no.4: Education status of participants.**

### 4.1.6. Family type of participant.

55 of the 300 participants 33% were nuclear family and 67% were extended family.

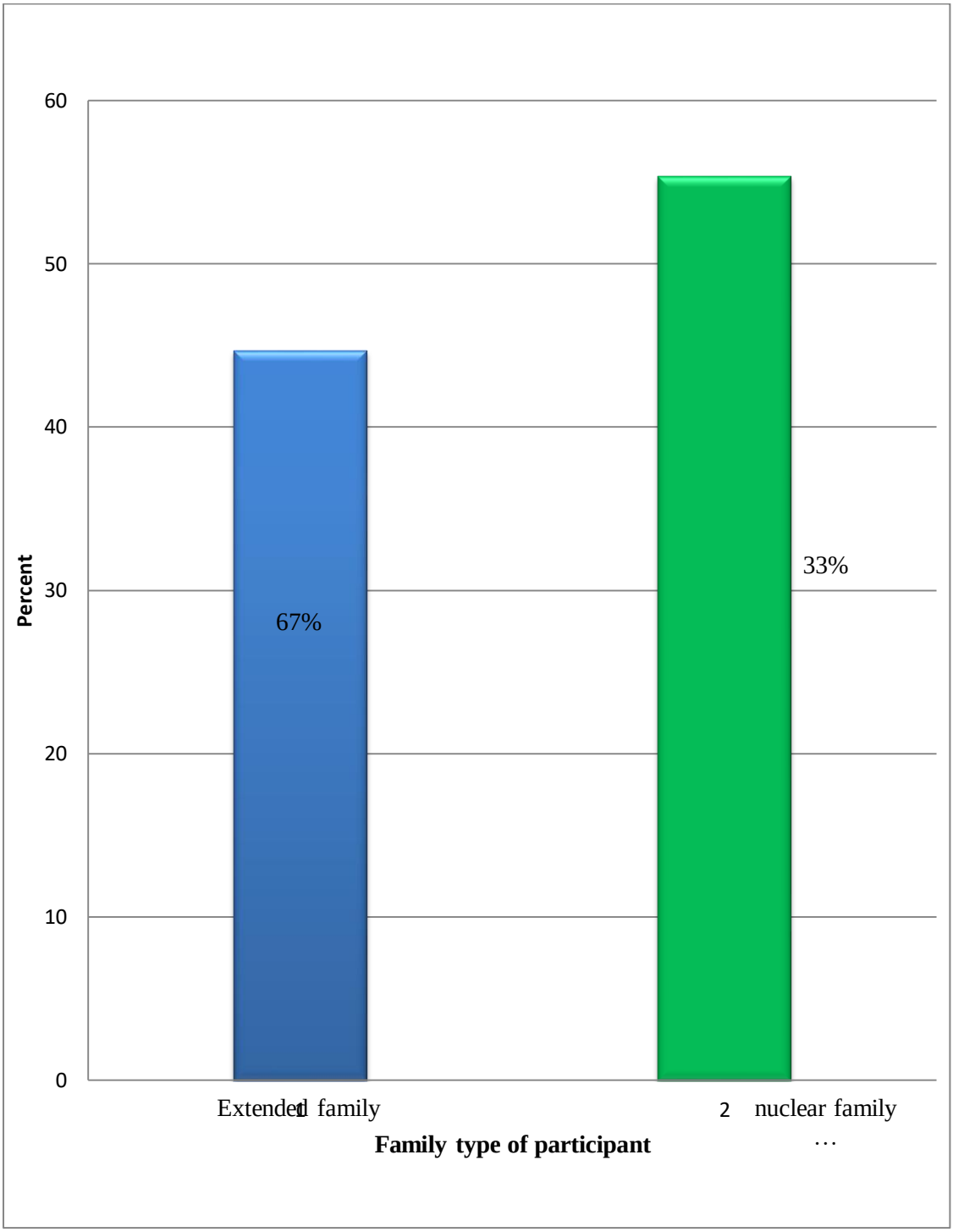



**Figure no.5: Family type of participants.**

### 4.1.7. Participant religion.

Among total 300 participants, 92 respondents Muslim whose were 67 % and 33 % of the Hindhu.

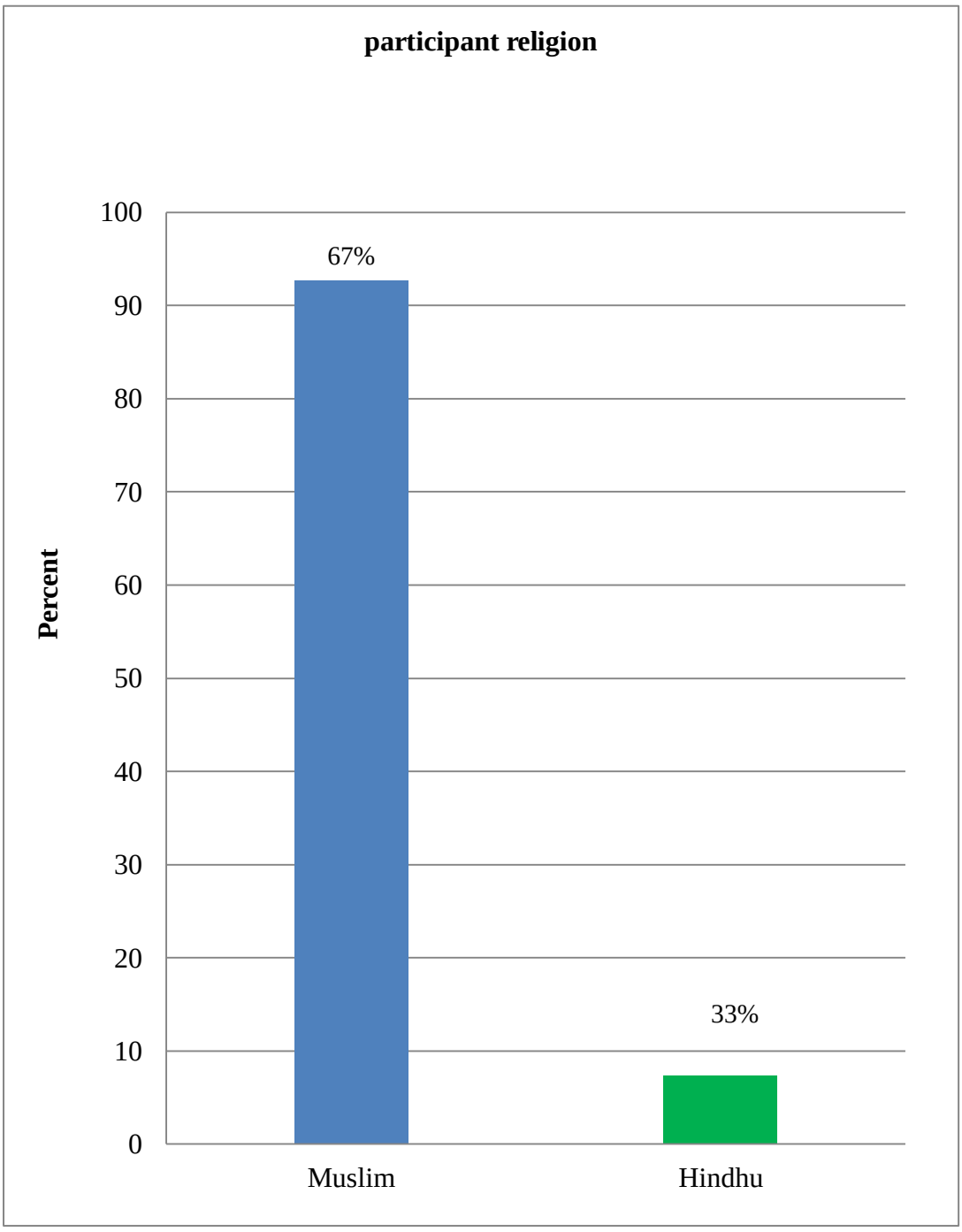



**Figure no.6: Religion of participants**

### 4.2. Pain related information:

#### 4.2.1. Participant feel pain any part of body.

Among total 300 participants, 71.67 respondents feel pain any part of body whose were 67 % and 28 % had no pain.

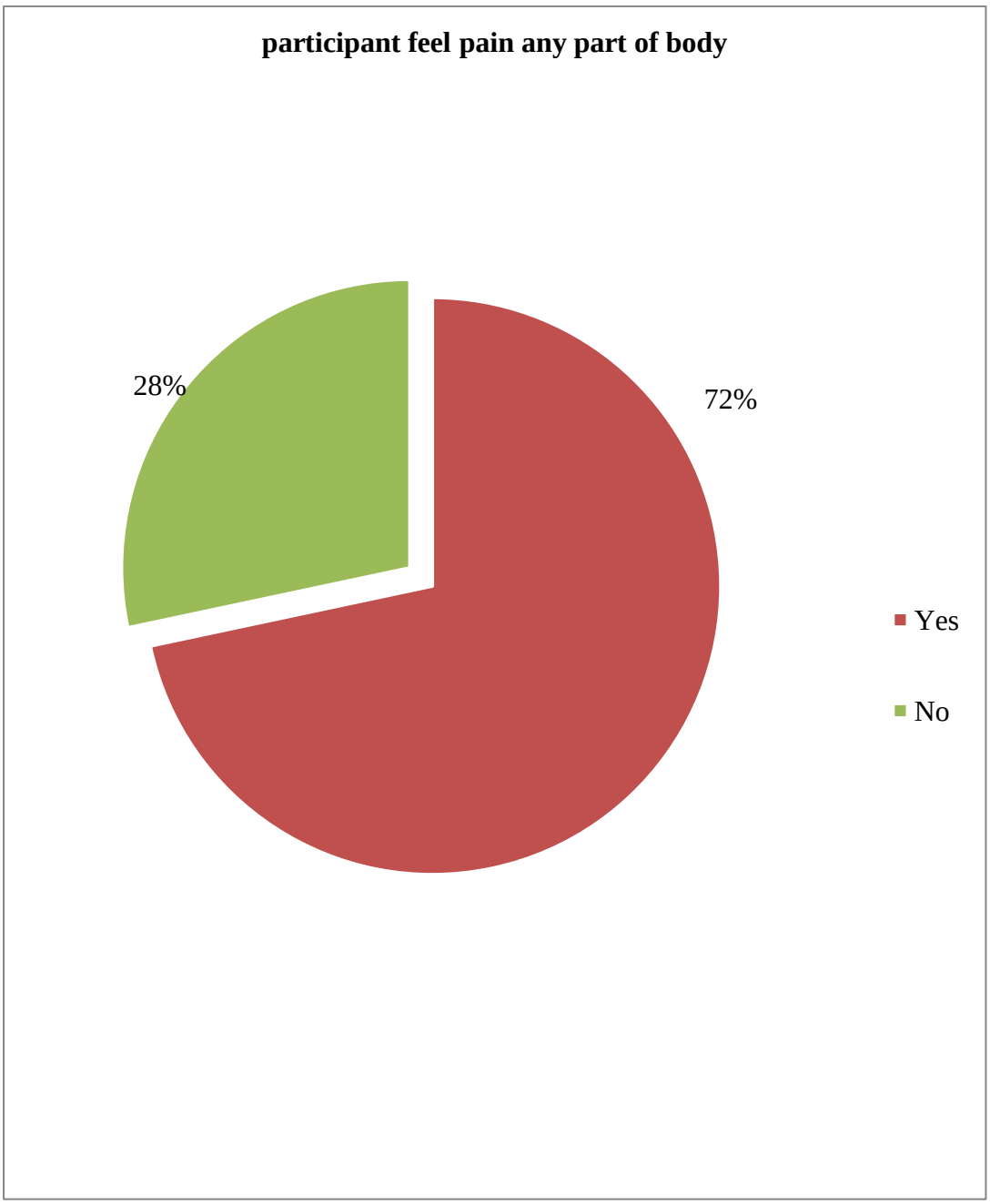



**Figure no.7: Distribution feel pain any part of body by participant.**

### 4.2.2. Distribution onset pain of participan

Many of our participants acute pain 36%, sub-acute 41% and chronic 23%.

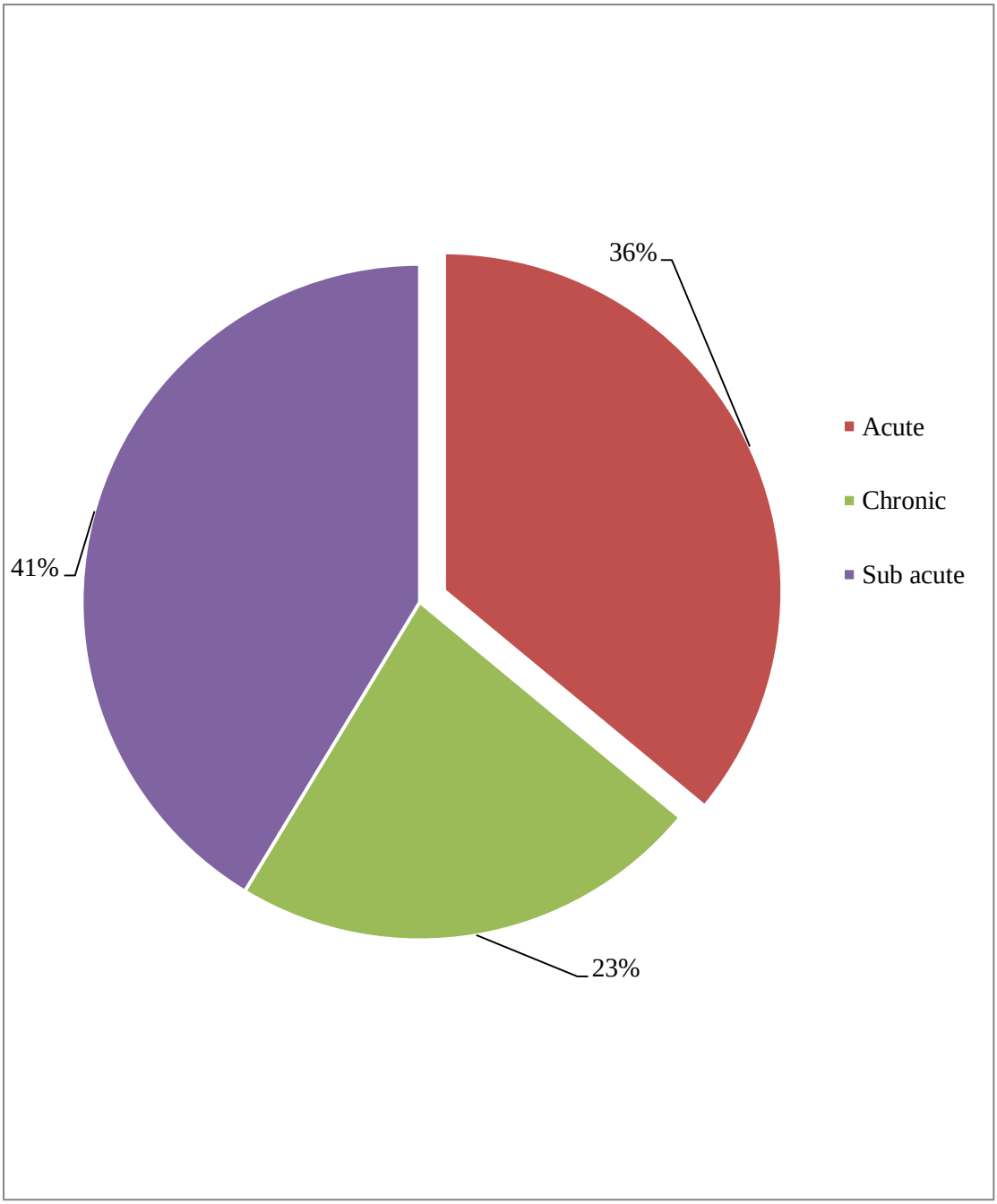



**Figure no.8: Distribution onset pain of participant.**

### 4.2.3. Distribution type of pain of participant.

Our total participants had sharp pain 63, dull pain 179, burning type of pain 44 and 14 shooting type of pain.

**Table no.2: Distribution type of pain of participant.**

| | Frequency | Percentage (%) |
|---|---|---|
| Sharp | 63 | 21.0 |
| Dull | 179 | 59.7 |
| Burning | 44 | 14.7 |
| Shooting | 14 | 4.7 |
| Total | 300 | 100.0 |

### 4.2. 4: Distribution severity pain of participant.

Among total 300 participants had mild type of pain 113, Moderate 166 and severe 21.

**Table no.3: Distribution severity pain of participant.**

| | **Frequency** | **Percentage (%)** |
|---|---|---|
| Mild | 113 | 37.7 |
| moderate | 166 | 55.3 |
| severe | 21 | 7.0 |
| Total | 300 | 100.0 |

### 4.2.5. Distribution type of pain of participant.

Total 300 participants had neck pain 146, shoulder pain 85, wrist pain 33, back pain 113, knee 25, elbow 48, upper back 30, fingers pain 23, hip pain 38, others pain 29, headache 219, paresthsis 85, muscle cram 79 and muscle spasm 62.

**Table no.4: Distribution type of pain of participant.**

| Pain distribution at: | Yes | | No | |
|---|---|---|---|---|
| | Frequency | Percentage (%) | Frequency | Percentage (%) |
| Neck | 146 | 48.67 | 154 | 51.33 |
| Shoulder | 85 | 28.3 | 215 | 71.7 |
| Wrist | 33 | 11.0 | 267 | 89.0 |
| Back | 113 | 37.7 | 187 | 62.3 |
| knee | 25 | 8.3 | 275 | 91.7 |
| Elbow | 48 | 16.0 | 252 | 84.0 |
| Upper back | 30 | 10.0 | 270 | 90.0 |
| Fingers pain | 23 | 7.7 | 277 | 92.3 |
| Hip pain | 38 | 12.7 | 262 | 87.3 |
| Others pain | 29 | 9.7 | 271 | 90.3 |
| Feel headache | 219 | 73.0 | 81 | 27.0 |
| paresthesis | 85 | 28.3 | 215 | 71.7 |
| muscle cramp | 79 | 26.3 | 221 | 73.7 |
| muscle spasm | 62 | 20.7 | 238 | 79.3 |

### 4.2.6. Problems persist of participant.

Many of participants had problems persist 73.33 in every month and 26.67 had yearly.

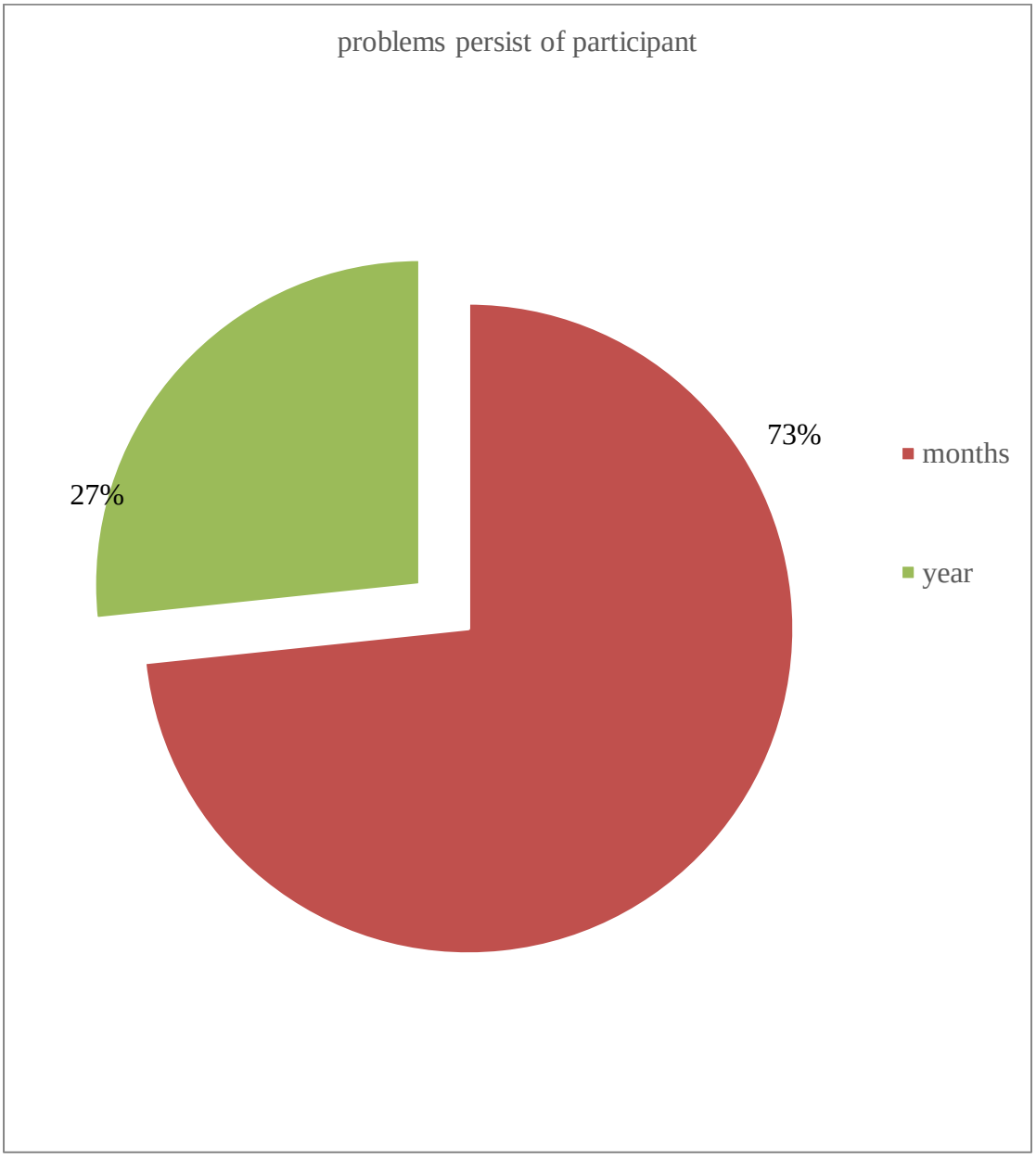



**Figure no.9: Distribution problems persist of participant.**

### 4.2.7. Distribution reference of pain of participant.

Reference pain of participant was 29% and 1% specifying.

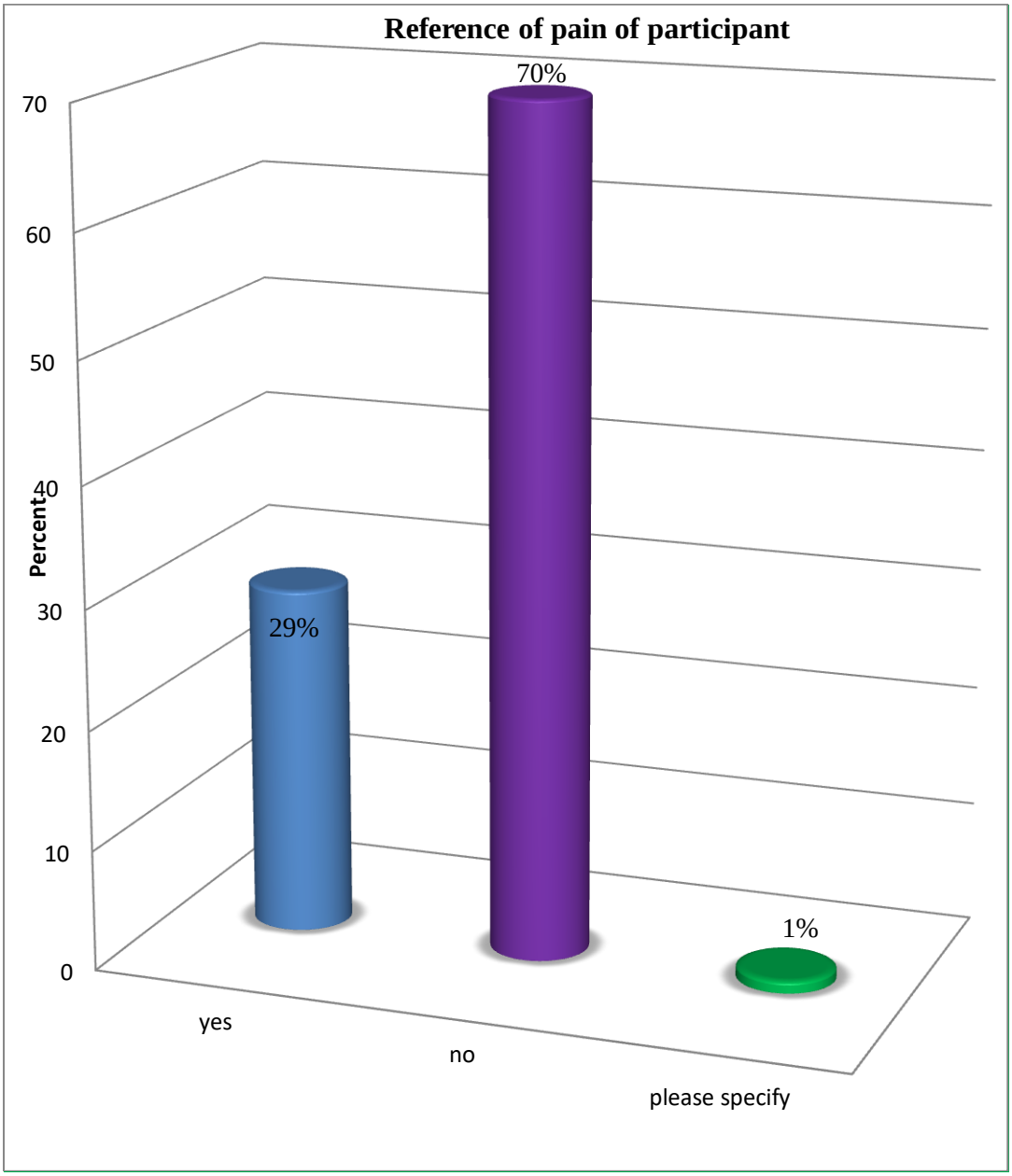



**Figure no.10: Distribution reference of pain of participant.**

### 4.2.8.. Exercise regularly participant.

Most of the participant did not exercise regularly which were 74% and did exercise regularly 26%.

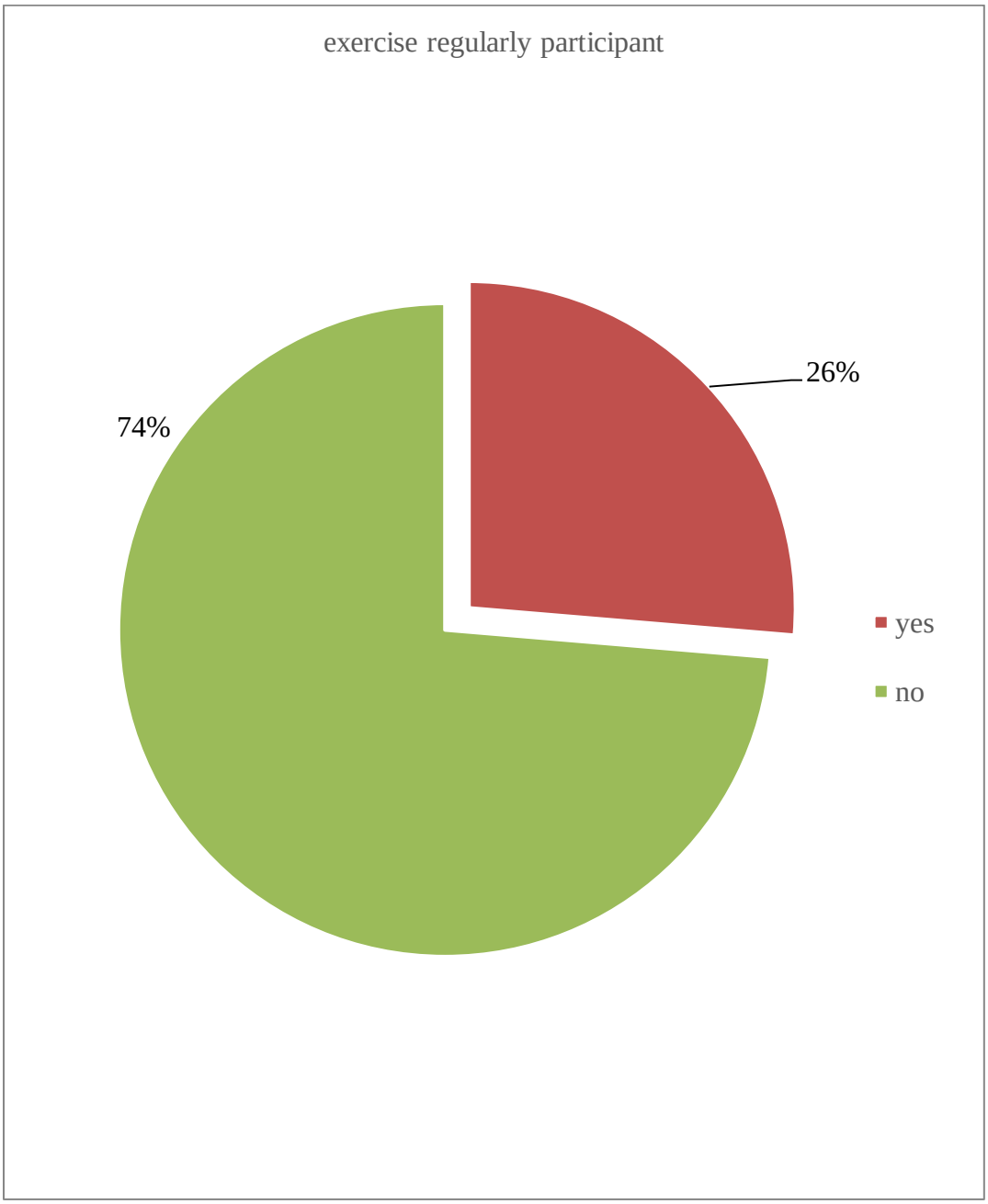



**Figure no. 11: Distribution regular exercise by participant.**

### 4.2.9. Distribution physical fitness of participant.

Most of the participant's physical fitness was good which were 75% and poor were 25%.

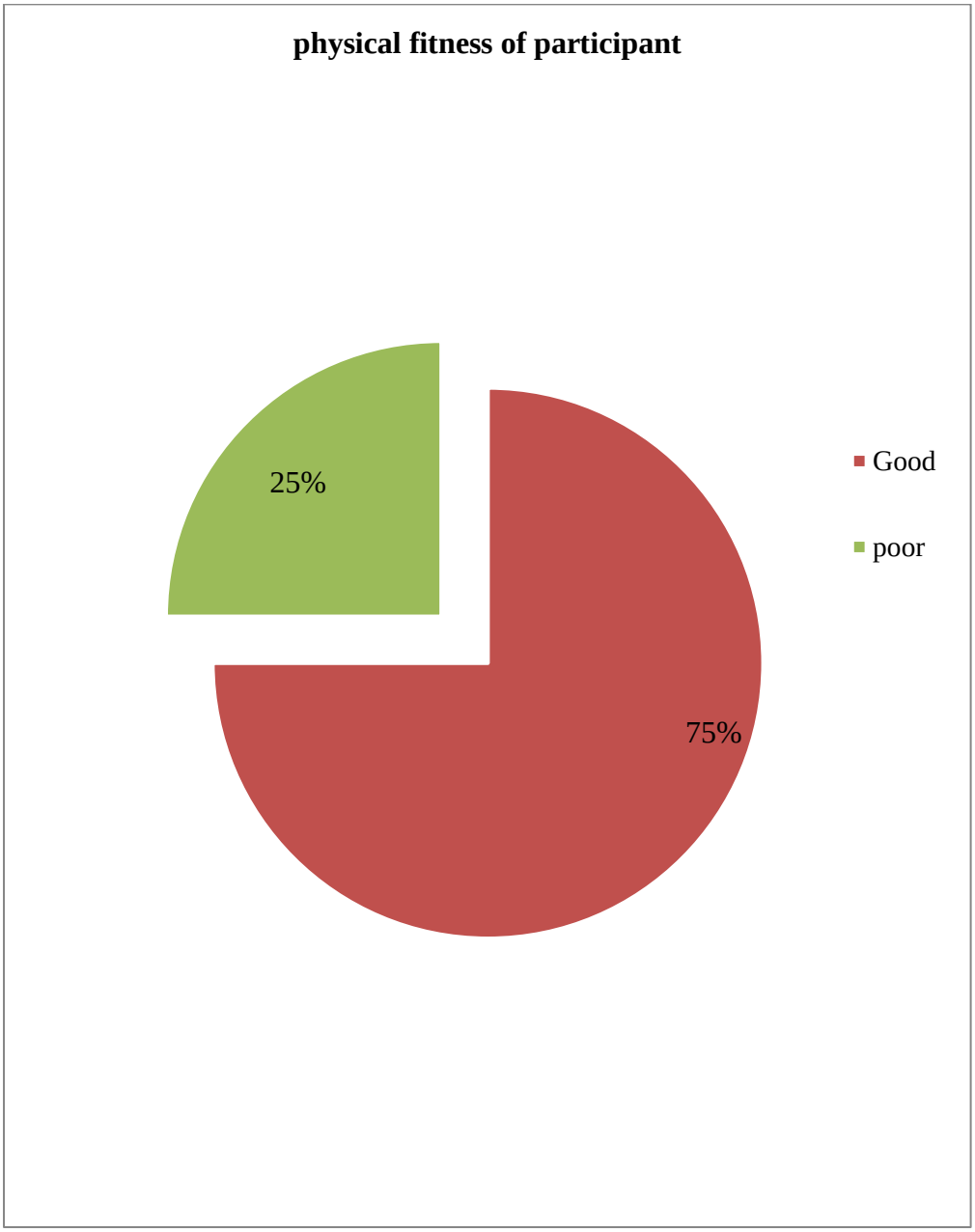



**Figure no.12: Distribution physical fitness of participant.**

## 4.3. Study & risk factors information:

### 4.3.1. Distribution posture of participant when study.

Among total 300 participants posture were when study time sitting 243, bending 37, squatting 12, standing 5 and walking 3.

**Table no.5: Posture of participant when study.**

| | **Frequency** | **Percentage (%)** |
|---|---|---|
| sitting | 243 | 81.0 |
| Bending | 37 | 12.3 |
| squatting | 12 | 4.0 |
| standing | 5 | 1.7 |
| walking | 3 | 1.0 |
| Total | 300 | 100.0 |

### 4.3.2. Distribution study without interval by participant.

Most of the participants were study without interval up to 1 hour 36%, 1 to 3 hours 34%, 3 to 5 hours 20% and 5 hours 10%.

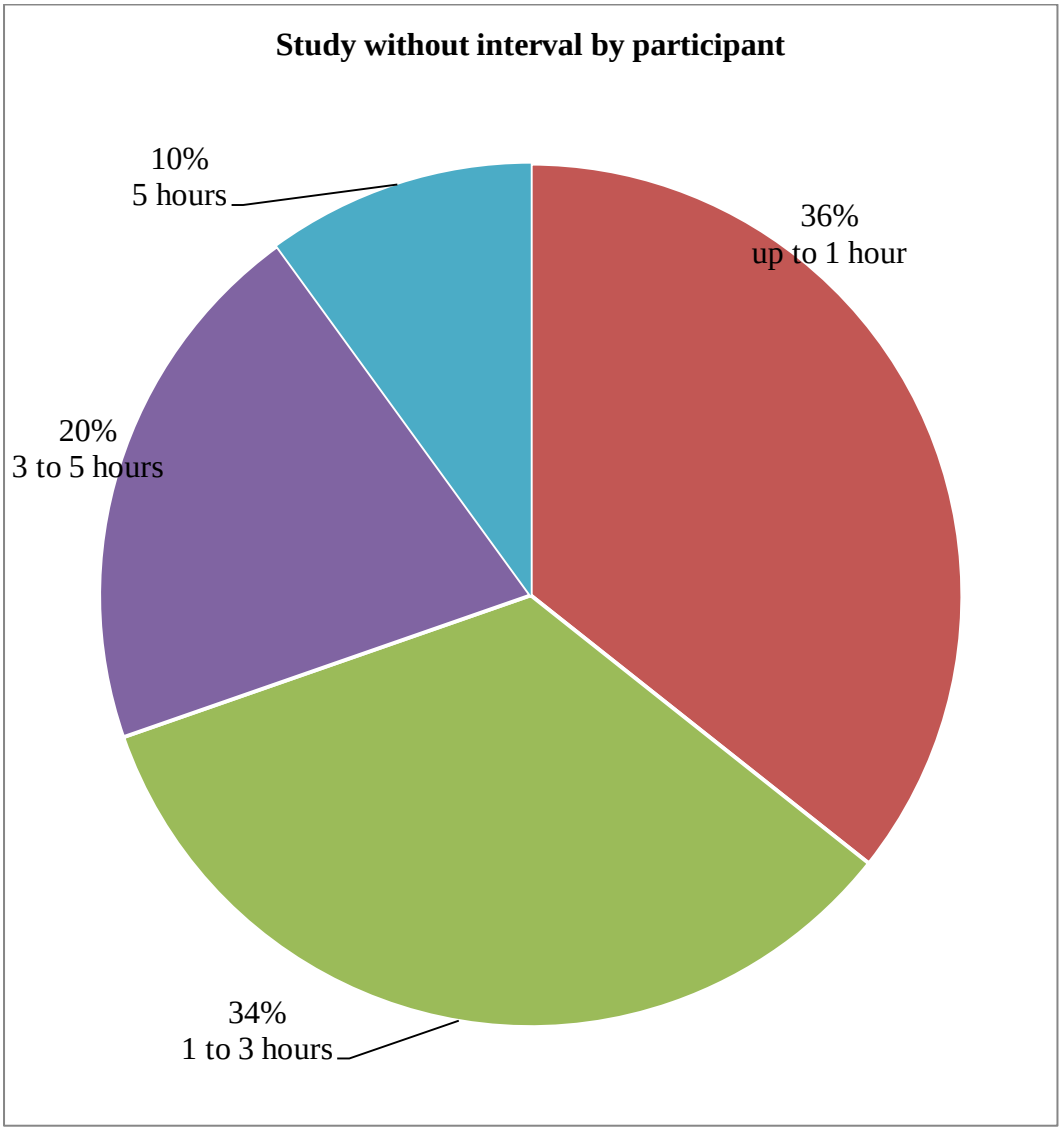



**Figure no.13: Distribution study without interval by participant.**

### 4.3.3. Distribution adjustable and comfortable chair of participant.

Most of the participant's chairs were adjustable and comfortable which were 67% and 33% not.

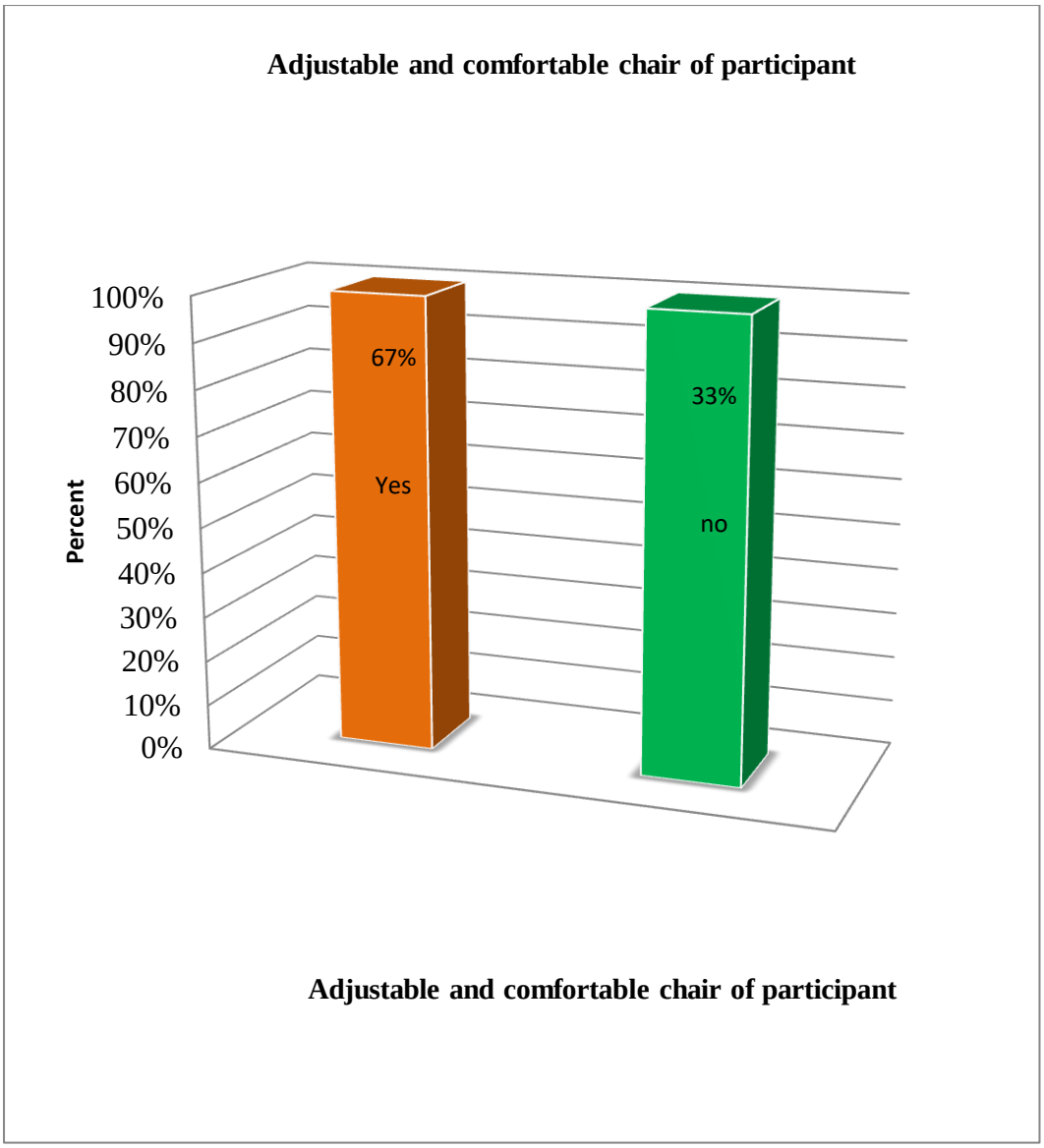



**Figure no.14: Distribution adjustable and comfortable chair of participant.**

### 4.3.4. Distribution neck stress of participant.

Among total 300 participants feel pain of neck stress were 56% and 44% not.

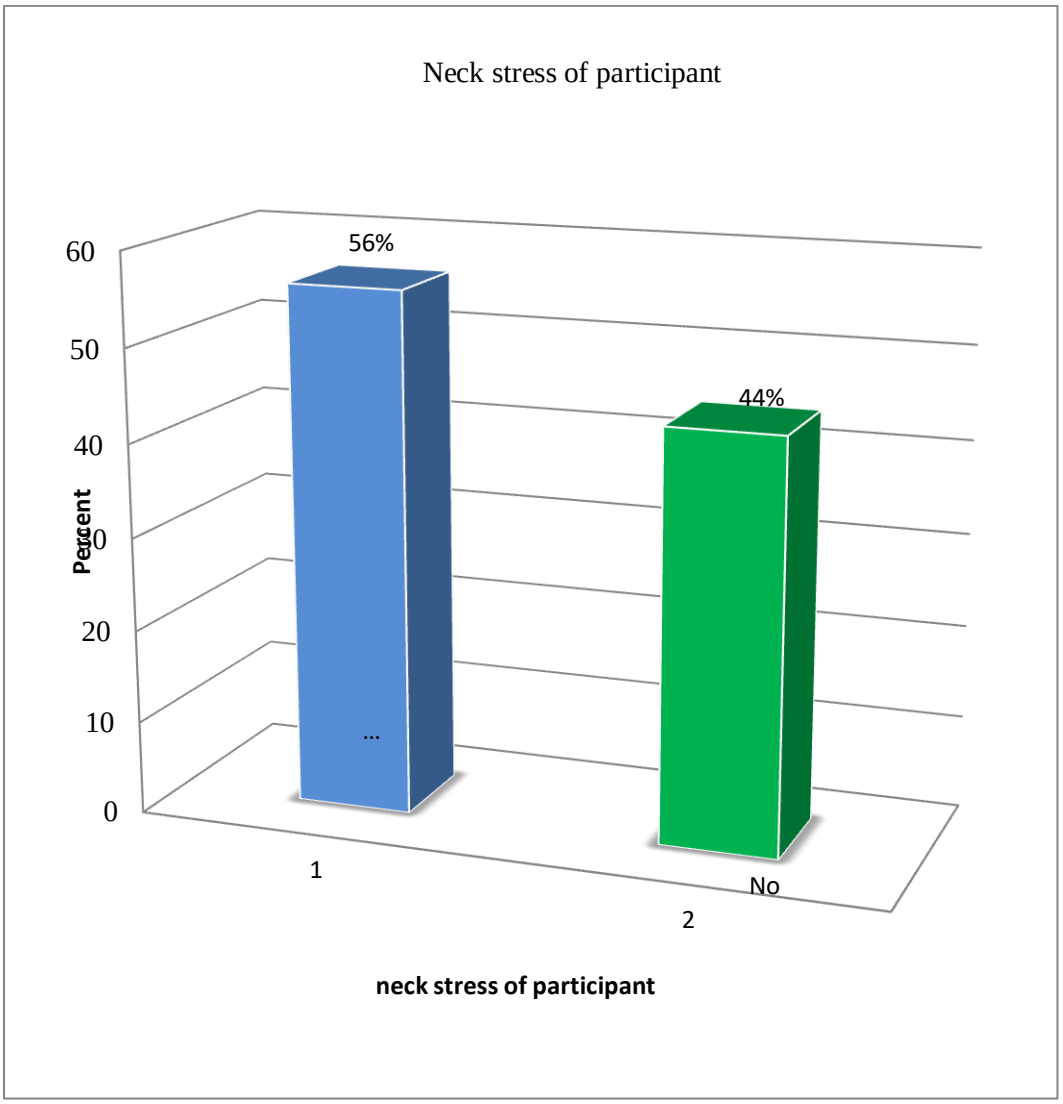



**Figure no.15: Distribution neck stress of participant.**

### 4.3.5. Distribution reading book by participant.

Most of the participant reading book in lying position which were 38%, sitting on chair 52% and 10 % others.

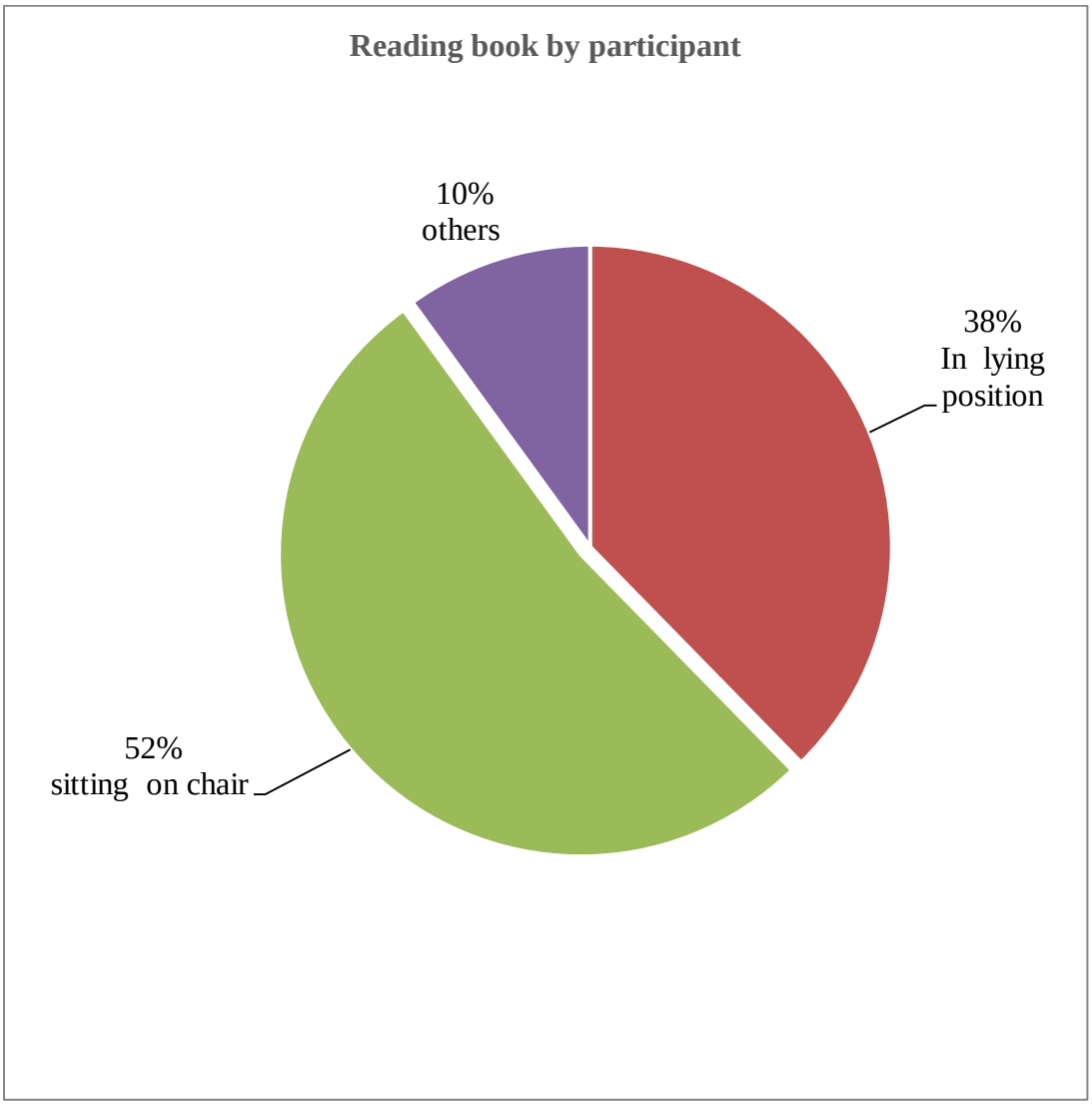



**Figure no.16: Distribution reading book by participant.**

### 4.3.6. Distribution pain hampers study of participant.

Among 300 participants, pain hampers studying activities in 148 which were 49.3% and 50.7% not.

**Table No.6: Distribution pain hampers study of participant.**

| Frequency | | Percentage (%) |
|---|---|---|
| Yes | 148 | 49.3 |
| No | 152 | 50.7 |
| Total | 300 | 100.0 |

### 4.3.7. Use computer by participant.

Among 300 participants all are used computer which were 100%.

**Table No.7: Use computer by participant.**

| Frequency | | Percentage (%) |
|---|---|---|
| Yes | 300 | 100.0 |
| No | 00 | 00 |

### 4.3.8. Distribution how long use computer by participant.

Among 300 participant's, they are used computer >3 hours which were 57%, <1 hours 9% and 1-3 hours 34%.

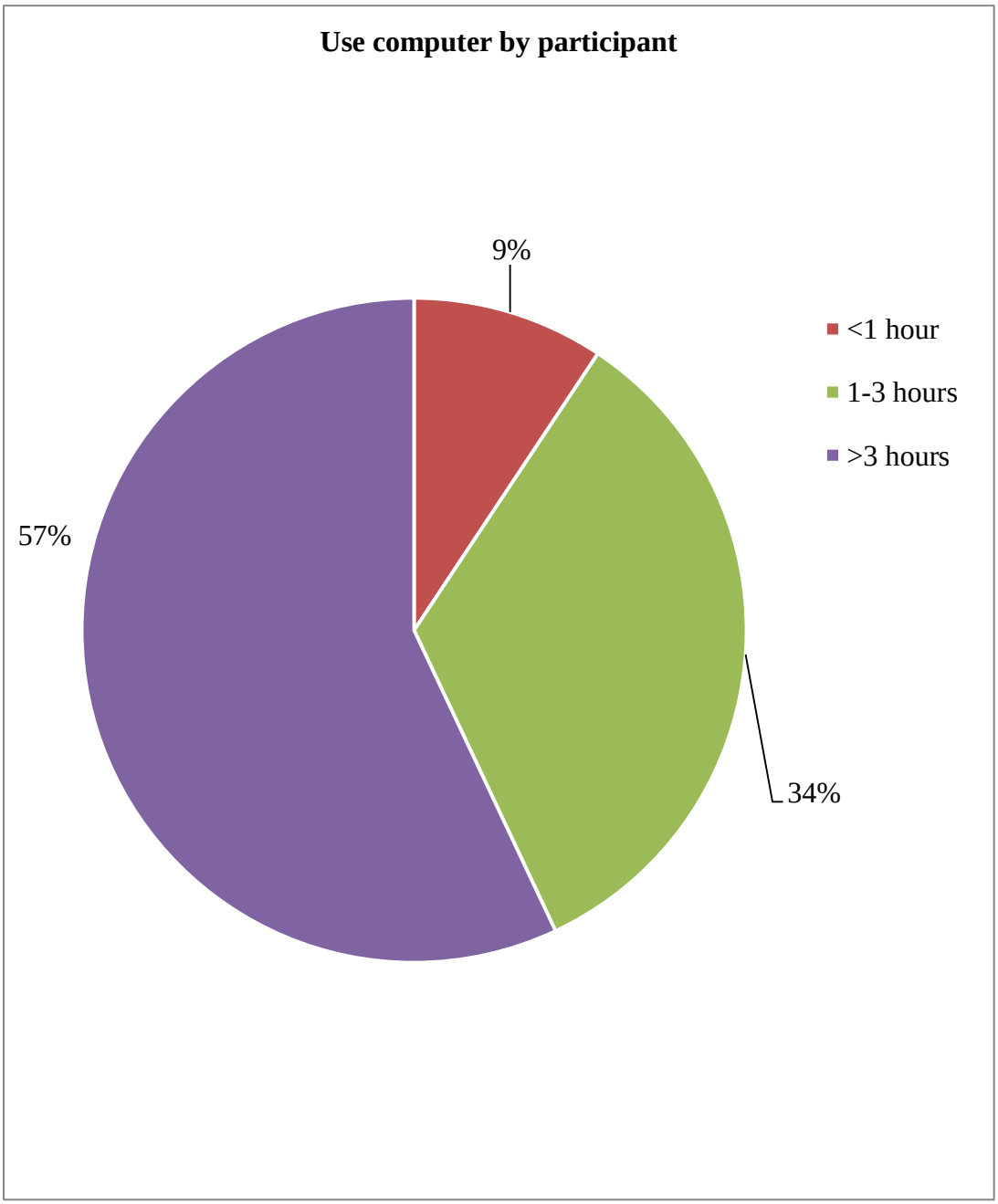



**Figure no.17: Distribution how long use computer by participant.**

**Association:**

### 4.3.9. Association between feel pain any part of body and posture of participant when study.

Here, Chi-value 12.83 and P = 0.012 < 0.05 represents as significant and indicate that those significant relation between feel pain any part of body and posture of participant when study.

**Table no: 8: Feel pain any part of body and posture of participant when study.**

| | | posture of participant when study | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Sitt-ing | Bend-ing | Squatt-ing | Stand-ing | Walking | Total | Chi-value | P-value |
| participant feel pain any part of body | Yes | 173 | 31 | 9 | 2 | 0 | 215 | 12.83 | 0.012 |
| | No | 70 | 6 | 3 | 3 | 3 | 85 | | |
| Total | | 243 | 37 | 12 | 5 | 3 | 300 | | |

**4.3.10. Association between feel pain any part of body and how long study without interval by participant.**

Here, Chi-value 9.814 and P = 0.02 < 0.05 represents as significant and indicate that those significant relation between feel pain any part of body and how long study without interval by participant.

**Table no: 9: Feel pain any part of body and how long study without interval by participant.**

| | | how long study without interval by participant | | | | Total | Chi-value | P-value |
|---|---|---|---|---|---|---|---|---|
| | | Up to 1hours | 1-3 hours | 3-5 hours | 5 hours | | | |
| participant feel pain any part of body | Yes | 83 | 78 | 36 | 18 | 215 | 9.814 | 0.02 |
| | No | 24 | 24 | 25 | 12 | 85 | | |
| Total | | 107 | 102 | 61 | 30 | 300 | | |

### 4.3.11. Association between feel pain any part of body and adjustable and comfortable chair of participant.

Here, Chi-value 5.648 and P = 0.018 < 0.05 represents as significant and indicate that those significant relation between feel pain any part of body and adjustable and comfortable chair of participant.

**Table no: 10: feel pain any part of body and adjustable and comfortable chair of participant.**

| | | Adjustable and comfortable chair of participant | | Total | Chi-value | P-value |
|---|---|---|---|---|---|---|
| | | Yes | No | | | |
| participant feel pain any part of body | Yes | 117 | 98 | 215 | 5.648 | 0.018 |
| | No | 59 | 26 | 85 | | |
| Total | | 176 | 124 | 300 | | |

### 4.3.12. Association between feel pain any part of body and pain hamper study of participant.

Here, Chi-value 5.241 and P = 0.022 < 0.05 represents as significant and indicate that those significant relation between feel pain any part of body and pain hamper study of participant.

**Table no: 11: Feel pain any part of body and pain hamper study of participant.**

| | | pain hamper study of participant | | Total | Chi-value | P-value |
|---|---|---|---|---|---|---|
| | | Yes | No | | | |
| participant feel pain any part of body | Yes | 115 | 100 | 215 | 5.241 | 0.022 |
| | No | 33 | 52 | 85 | | |
| Total | | 148 | 152 | 300 | | |

### 4.3.13. Association between feel pain any part of body and reading book by participant.

Here, Chi-value 3.812 and P = 0.149 < 0.05 represents as significant and indicate that those significant relation between feel pain any part of body and reading book by participant

**Table no: 12: Feel pain any part of body and reading book by participant.**

| | | habit reading book of participant | | | Total | Chi value | P-value |
|---|---|---|---|---|---|---|---|
| | | In lying position | Sitting on chair | Other | | | |
| participant feel pain any part of body | Yes | 88 | 108 | 19 | 215 | 3.812 | 0.149 |
| | No | 25 | 49 | 11 | 85 | | |
| Total | | 113 | 157 | 30 | 300 | | |

### 4.3.14. Association between feel pain any part of body and how long use computer by participant.

Here, Chi-value 0.820 and P-value 0.67< 0.05 represents as significant and indicate that those significant relations between feel pain any part of body and how long use computer by participant.

**Table no: 13: Feel pain any part of body and how long use computer by participant.**

| | | how long use computer by participant | | | Total | Chi-value | P-value |
|---|---|---|---|---|---|---|---|
| | | <1 hour | 1-3 hours | >3 hours | | | |
| participant feel pain any part of body | Yes | 19 | 70 | 126 | 215 | 0.820 | 0.67 |
| | No | 9 | 31 | 45 | 85 | | |
| Total | | 28 | 101 | 171 | 300 | | |

## Chapter – V Discussion

In the longitudinal study among computer office workers, we found that the report of complaints in the neck region was similar to shoulder complaints, however, much higher than forearms/hands complaints, which corresponds with the results of previous studies. Found in a Dutch cohort of general practice patients incidence rates of 23.1 cases per 1,000 person-years for neck symptoms, followed by 19.0 cases per 1,000 person-years for shoulder symptoms. Furthermore, a survey in the Netherlands showed that in 2002 and 2004, 28% of the working population reported neck/shoulder or elbow/hand symptoms in the previous 12 months and that these symptoms were at least partly caused by work. Another study in the USA indicated that among 416 employees 63% reported neck-shoulder pain compared to 34% reporting arm or hand pain (Shahla Eltayeb et al., 2009).

In this study, total 300 participants had neck pain 146, shoulder pain 85, wrist pain 33, back pain 113, knee 25, elbow 48, upper back 30, fingers pain 23, hip pain 38, others pain 29, headache 219, paresthsis 85, muscle cram 79, muscle spasm 62, sharp pain 63, dull pain 179, burning type of pain 44 and 14 shooting type of pain.

The findings of this study support our hypothesis that several individual and work-related factors influence the presence of neck pain in office workers, most of which are modifiable. In order of the strength of the relationship, the presence of neck pain was significantly associated with the more senior occupational categories, working more than six hours on the computer per day, female sex, the belief that work may cause neck pain (fear avoidance), greater psychological distress, and reduced cervical flexion ROM. Overall these findings have been derived from a large sample of office workers from multiple organizations, suggesting that the etiology and persistence of neck pain in office workers may be influenced by multiple factors. These factors include those that are specific to work but also some that are specific to the individual worker. Importantly some of these factors are potentially modifiable, providing some insight into how neck pain in the most common of occupations, office work, may be addressed ( Xiaoqi Chen et al., 2018).

In this study, the majority of our participants were male 67% in number 202 of them and females were 33% which is considered 98 and they used the computer less than one hour in number 9, one to three hours in number 33 and used more than three hours in number 57.

This study had some additional limitations that should also be considered. First, because data collection was quite involved, taking place over eight months, we assigned participants to their low/high reward/over-commitment groups based on their scores relative to others in their department rather than relative to the entire study population. However, our approach of recruiting participants within the highest and lowest textiles of their department allowed there to be adequate differences in scores between the low/high groups in the overall study population, with almost no overlap for the final cohort. Second, we were unable to recruit participants with very low reward scores <24 or very high over-commitment scores >23 from any department. The reduced variability in reward and over-commitment scores in this study may lead to estimates of the effects of reward and over-commitment that are smaller than in a population with more diverse scores. However, there were no differences in the reward or over-commitment scores of the workers who filled out the survey and were willing to participate compared to those who were not willing to participate in the study. Third, because this was an observational study, we cannot conclude that psychosocial stress caused the increases that we observed in trapezius muscle activity or neck flexion. However, this finding corroborated the results of prospective laboratory studies, lending credence to our results. Fourth, our measurements due to technical and feasibility aspects were only two hours and only examined muscle activity and postures during computer interactions. For example, wireless systems were chosen to allow participants to move freely and to leave their workstations, but for this reason, data was only collected while participants were close to their computers. Thus, questions regarding exposure during non-computer interaction times and variance of the data from day to day remain unanswered. Additionally, we were limited in the number of muscles that we could measure using EMG. We chose to prioritize the trapezius muscle because many previous laboratory studies have focused on the effects of psychosocial stressors on the trapezius. Finally, because we performed a large number of significance tests for the interaction and main effects, few of which produced significant results-2/28 for interaction and 1/26 for main

effects. We cannot rule out the possibility that our significant findings occurred by chance. However, we do feel that the results presented here for the trapezius muscle activity and neck flexion posture are plausible, as they were in line with our hypothesis and may help to explain a large number of neck and shoulder musculoskeletal complaints observed among office workers. Regardless of the limitations, this was the first study to measure psychosocial stress and neck and upper limb muscle activities and postures directly in a large population of office workers performing their own computer work and to report a positive association amongst these factors (Keith Palmer and Julia Smedley, 2007).

We also had a technical problem as the supervisor on research. The problem was data collection. Many times engineering students refused to give their information. This was a trip for us. Additionally, we were limited in the number of research data.

# Chapter – VI Conclusions and recommendation

## 6.1: Conclusions

In summary, the results showed that the high rate of musculoskeletal disorders of neck pain and shoulder areas is affected by risk factors such as age, gender, education, marital status, work experience, height, weight and workplace, and women were more disorders than men and also increasing work experience, height, and weight were associated with the risk rate of these musculoskeletal disorders. It seems that holding training programs to provide the necessary awareness in order to reduce musculoskeletal disorders. According to the results, our country's health policymakers are suggested to pay attention to the objection of musculoskeletal disorders in health sectors and by considering the variables affecting the musculoskeletal disorders, try to decrease the problems and as a result increase the working efficiency of staff, increase services of health field, and decrease the cost of our health. An education program should be introduced for graduate students regarding how properly to do computer work to avoid neck pain.

**6.2: Recommendation:** Based on study findings following recommendation are enlisted-

To control risk factors;

Regular walking & taken some physical exercise to remove disability;

Proper position maintains;

Regular follow up by physicians and physiotherapist;

To maintain a proper and healthy life style;

Keep moving, but avoid jerking or painful activities. This helps calm your symptoms and reduce inflammation;

Do slow range-of-motion exercises, up and down, side to side, and from ear to ear. This helps to gently stretch the neck muscles;

Try sleeping on a firm mattress without a pillow or with a special neck pillow;

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**সম্মতিপত্র**

উত্তর দাতার আই ডি নম্বর ☐

প্রিয় অংশগ্রহণকারী,

আসসালামু-আলাইকুম,আমার নাম মোঃ ওয়াহিদুল ইসলাম এবং আমার গবেষণার অংশীদার হাসিনা, আমরা এই গবেষণাটি সাইক কলেজ অব মেডিকেল সায়েন্স এন্ড টেকনোলজি, ঢাকা বিশ্ববিদ্যালয়ের চিকিৎসা অনুষদ এর অধীনে করছি যা আমাদের ফিজিওথেরাপি স্নাতক কোর্স ও আংশিক অধীভুক্ত, যার শিরোনাম হল **"কম্পিউটার ইঞ্জিনিয়ার ছাত্রদের আগত ঘাড় ব্যাথার জন্য দায়ী ঝুকিপূর্ন বিষয় সর্মূহ"**। আমরা এক্ষেত্রে কিছু ব্যক্তিগত এবং ঘাড় ব্যাথা সম্পর্কে আনুসঙ্গিক কিছু তথ্য জানতে চাচ্ছি। ফরমে উল্লেখিত কিছু প্রশ্ন উত্তর দেওয়ার জন্য আন্তরিক অনুরোধ করছি যা আনুমানিক ১৫ থেকে ৩০ মিনিট সময় নিবে। আমরা এই তথ্য সংগ্রহের জন্য শুধুমাত্র একবারই আপনার সাথে স্বাক্ষাত করব।

এই অধ্যায়নের লক্ষ্য হল ঘাড় ব্যাথার জন্য দায়ী ঝুকিপূর্ন বিষয় সমূহ সম্পর্কে জানা। যদি এই গবেষণাটি সম্পুর্ন ভাবে সফল হয় তবে ঘাড় ব্যাথা হওয়ার জন্য দায়ী বিষয় সমূহ থেকে বিরত থেকে উপকৃত হবেন উভয়ই যারা ঘাড় ব্যাথায় ভুগছেন অথবা ভুগছেন না। এই ভাবে প্রতিরোধ মূলক ব্যবস্থা গ্রহণের মাধ্যমে সমাজের সাধারন জনগণের স্বাস্থ্য, সুখ-সমৃদ্ধি এবং উন্নতি সাধন হবে।

আমরা আপনাকে অবগত করছি যে,এটা কেবল মাত্র আমার অধ্যায়নের সাথে সম্পর্কযুক্ত এবং অন্য কোন উদ্দেশ্যে ব্যবহৃত হবে না। আমরা আপনাকে আরও নিশ্চয়তা প্রদান করছি যে,সকল তথ্য প্রদান করবেন তার গোপণীয়তা বজায় থাকবে এবং তথ্যের উদ্দেশ্য অপ্রকাশিত থাকবে।

এই অধ্যায়নে আপনার অংশগ্রহণ স্বেচ্ছা প্রণোদীত এবং আপনি যে কোন সময় এই অধ্যায়ন থেকে কোন নেতিবাচক ফলাফল এবং বিব্রতবোধ ছাড়াই নিজেকে প্রত্যাহার করতে পারবেন। এছাড়া নির্দিষ্ট কোন প্রশ্ন অপছন্দ হলে, উত্তর না দেওয়ার অধীকার আপনার আছে।

এই স্বাক্ষাতকার শুরু করার আগে আপনার কি কোন প্রশ্ন আছে ?

আমরা আপনার অনুমতি নিয়ে এই স্বাক্ষাতকারটি শুরু করতে যাচ্ছি ?

হ্যাঁ ☐ না ☐

অংশগ্রহণকারীর নাম ঃ.....

স্বাক্ষর ও তারিখ : / / / মোবাইল নং----------

## Consent Form

Responded ID No: ☐

Dear participant,

Assalamualaikum, My name is Md.Wahedul Islam and my research partner Hasena. We conducting a study for partial fulfillment of Bachelor of Science in Physiotherapy degree title on "Risk factors of neck pain among the graduate students of Engineering those who use computer" for the Saic college of medical science & technology from Bangladesh Health professions Institute under medicine faculty of University of Dhaka. We would like to know about some personal and other related information about your problems. You are humble requested to answer some questions that are mentioned in this form.

This will take approximately 15-30 minutes. We need to meet you just once to collect entire information. The aim of study is to see the risk factors of neck pain. If the study can be completed successfully patient, who are suffering from neck pain or who are at sick both will benefited by avoiding the factors, that are responsible for developing neck pain. Thus the health and well-being of the community people would be improved through following prophylactic measure. We would like to inform you that are a purely academic study and obtained information will not be used for any other purpose. All information provided by you will be kept confidential and also the source of information will remain anonymous.

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

Do you have any questions before we start?

"So may we have your consent to proceed with the interview?

Yes ☐ No ☐

Respondent name:…….

Signature and date:…….....

Mobile ……

# Questionnaire (English)

## Title:

**Risk factors of neck pain among the graduate students of engineering those who use computer.**

Code no : Date:

Participant name .....

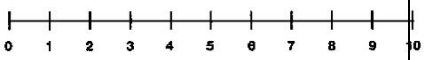
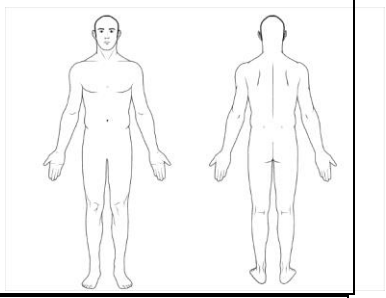
Address .....

Mobile no .....

**Part:-01**

| Socio-demographic information | | |
|---|---|---|
| Question No: | Question | Response |
| 01. | What is your age ? | ……..years |
| 02. | Sex | 1. Male<br>2.Female |
| 03. | What is your living area ? | 1.Urban<br>2.Rural<br>3.Semi urban |
| 04. | What is your marital status ? | 1.Married<br>2.Unmarried<br>3.Divorced<br>4.Separated<br>5.Widow |
| 05. | What is your education status ? | 1.Illiterate<br>2.PSC<br>3.JSC<br>4.SSC<br>5.HSC<br>6.Degree<br>7.Others |
| 06. | What type of family you have ? | 1.Extended family<br>2.Nuclear family |
| 07. | What is your religion ? | 1.Muslim<br>2.Hindu<br>3.Buddhist<br>4.Christan<br>5.Others. |

## Part : 02. Pain related information

| Question No: | Question | Response |
|---|---|---|
| 01. | Do you feel pain in any part of body ? | 1.yes<br>2.No |
| 02. | How onset your pain ? | 1.Acute<br>2.Chronic<br>3.Sub acute |
| 03. | What type of pain ? | 1.Sharp<br>2.Dull<br>3.Burning<br>4.Shooting |
| 04. | What is the severity of your pain? | 1.Mild<br>2.Moderate<br>3.Severe<br>**NPRS Scale**<br>  <br>**Reference:**<br>Mc Caffery, M. Beebe, A., Et Al, (1989). Pain Clinical Manual for Nusing Practhe, Mosby St. Louis. Mo. |
| 05. | Where do you feel pain ? | 1.Neck<br>2.Shoulder<br>3.Wrist<br>4.Back<br>5.Knee<br>6.Elbow<br>7.Upper back<br>8.Fingers<br>9.hip<br>10.Others<br>  |
| 06. | How long the problems persist ? | .....Months/Years |
| 07. | Do you feel headache ? | 1.Yes<br>2.No |
| 08. | Do you have paresthesis ? | 1.Yes<br>2.No |
| 09. | Do you have muscle cramp ? | 1.Yes<br>2.No |
| 10. | Do you have muscle spasm ? | 1.Yes<br>2.No |
| 11. | Reference of your pain ? | 1.Yes<br>2.No<br>3.If yes please specify. |
| 12. | Do you exercise regularly ? | 1.Yes<br>2.No |
| 13. | Physical fitness ? | 1. Good<br>2. Poor |

| Part : 03. Study & risk factors related information | | |
|---|---|---|
| 01. | Which posture do you study most of the time ? | 1. sitting<br>2. Bending<br>3. Squatting<br>4. Standing<br>5. walking |
| 02. | How long do you study without interval ? | 1.Up to 1 hour<br>2.1 to 3 hours<br>3.3 to 5 hours<br>4.5 hours |
| 03. | Is your chair is adjustable and comfortable ? | 1.Yes<br>2.No |
| 04. | Do you feel Pain of neck when over stress ? | 1. Yes<br>2. No |
| 05. | Do you think pain cause reduce / hamper your studying activities ? | 1. Yes<br>2. No |
| 06. | Habit of reading book ? | 1.In lying position<br>2.Sitting on chair<br>3.Others |
| 07. | Do you use computer / Laptop ? | 1.Yes<br>2.No |
| 08. | How long you use computer / Laptop ? | 1. <1 hour<br>2. 1-3 hours<br>3.>3 hours |

# SAIC INSTITUTE OF MEDICAL TECHNOLOGY (SIMT)

(A Sister Concern of Saic Educational Society) Reg. S-2711 (124)/2002

*Ref :–*

*Date :* 21.05.19

21th May 2019

To

Hasena and Wahedul Islam

4th Professional B.Sc. in Physiotherapy

SAIC Institute of Medical Technology (SIMT)

Mirpur-13, Dhaka-1216.

Sub: Permission to collect data

Dear Hasena and Wahedul Islam,

Ethical review board (ERB) of SIMT pleased to inform you that your proposal has been reviewed by ERB of SIMT and we are giving permission you to conduct study entitle of "Risk factors of neck pain among the graduate student of engineer those who used computer" and for successful completion of this study you can start data collection from now.

Wishing you all the best.

Thanking You.

21.05.19

Chairman

Ethical Review Board

SAIC Institute of Medical Technology

21.05.2019

Principal

SAIC Institute of Medical Technology

Mirpur-13, Dhaka-1216

**Office :**
**Saic Tower, M-1/6**
**Mirpur-13, Dhaka-1216.**

Mobile : **01936005804**
**01715067370**

## Gantt Chart :

| Activities | Dec. 2018 | Jan. 2019 | Feb. 2019 | March 2019 | April 2019 | May 2019 | June 2019 | July 2019 | Aug 2019 | Sept. 2019 | Oct. 2019 | Nov. 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Proposal Presentation | | | | | | | | | | | | |
| Introduction | | | | | | | | | | | | |
| Literature review | | | | | | | | | | | | |
| Methodology | | | | | | | | | | | | |
| Data collection | | | | | | | | | | | | |
| Data analysis | | | | | | | | | | | | |
| Result | | | | | | | | | | | | |
| 1st progress presentation | | | | | | | | | | | | |
| Discussion | | | | | | | | | | | | |
| Conclusion and recommendation | | | | | | | | | | | | |
| 2nd progress presentation | | | | | | | | | | | | |
| Communication with supervisor | | | | | | | | | | | | |
| Final submission | | | | | | | | | | | | |