



# INCREASED PREVALENCE OF LOW BACK PAIN AMONG PHYSIOTHERAPY STUDENTS COMPARED TO MEDICAL STUDENTS – A CROSS SECTIONAL STUDY

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## ABSTRACT

**BACKGROUND AND OBJECTIVES:** Some studies have demonstrated that physiotherapists have a high prevalence of LBP. The association between physiotherapy students, who are potentially exposed to the same LBP occupational risks as graduates and LBP has never been demonstrated. The objective of the study is to evaluate the association between physiotherapy students and LBP.

**METHODOLOGY:** The study design includes a cross-sectional study. This study was conducted among 202 physiotherapy and medical students from different colleges. Data was collected by mixed type of questionnaire. Descriptive statistics were used for data analysis which focused through table, pie and bar chart. Data were numerically coded and analysed through SPSS software program version 24

**RESULT:** LBP was measured as lifetime, 1-year and point prevalence. 56.93% (115) of the students had LBP at some point in their lives, 29.20% (59) in the last year and 13.86% (28) of them reported they were suffering from LBP at the moment of answering the questionnaire. Among all the participants in relation

to duration of pain 65.34% (132) students experienced Acute LBP; 17.32% (35) students experienced Sub-acute LBP and 17.32% (35) students experienced Chronic LBP.

**CONCLUSION:** In this survey there was a high prevalence of LBP among physiotherapy students compared to medical students. Physiotherapist must focus on proper technique posture and adhere to a regimen of self-care to reduce the risk of pain.

**KEYWORDS:** Low back pain, Occupational diseases, Risk factor, Physiotherapy, Students

## **ACRONYMS**

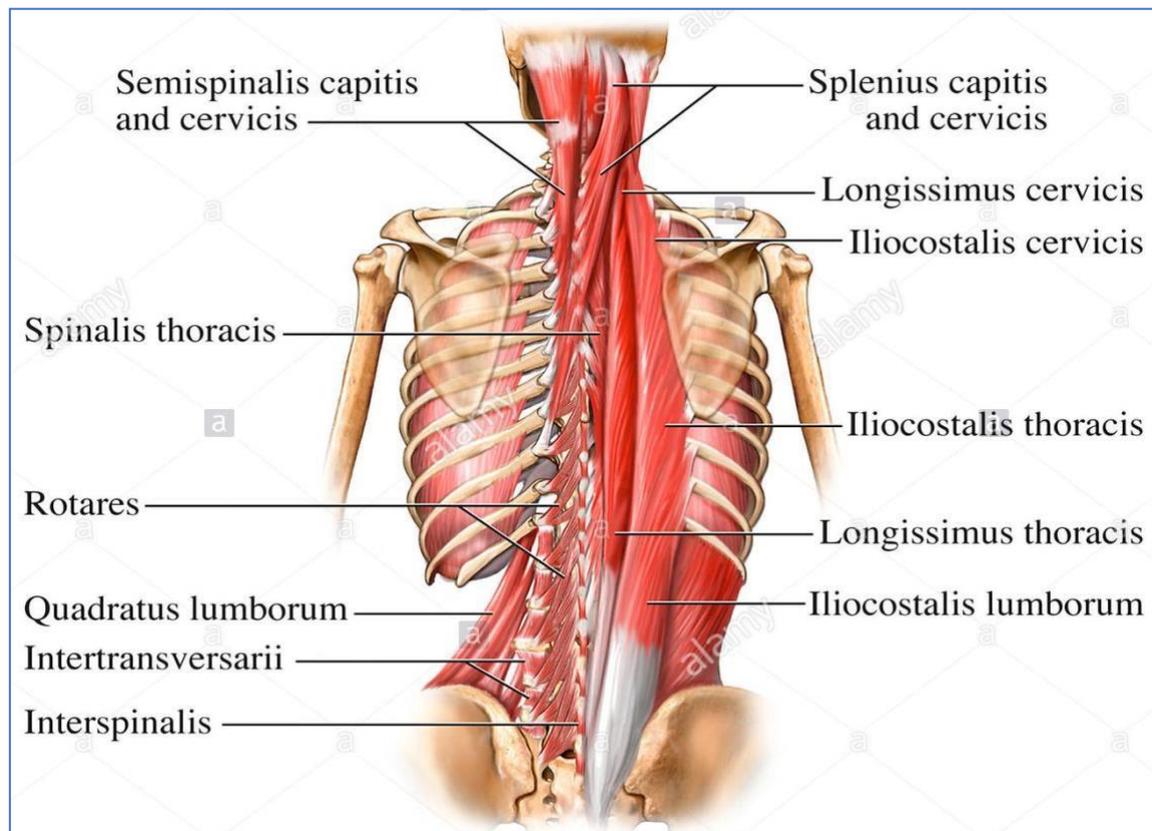
|       |                                               |
|-------|-----------------------------------------------|
| ADL   | Activities of Daily Living                    |
| BMI   | Body Mass Index                               |
| CLBP  | Chronic Low Back Pain                         |
| DM    | Diabetes Mellitus                             |
| HTN   | Hypertension                                  |
| IPAQ  | International Physical Activity Questionnaire |
| LBP   | Low Back Pain                                 |
| MSD   | Musculoskeletal Disorders                     |
| NPRS  | Numerical Pain Rating Scale                   |
| PA    | Physical Activity                             |
| WHO   | World Health Organization                     |
| WMSDs | Work Related Musculoskeletal Disorder         |

# INTRODUCTION

## 1.1 BACKGROUND

Low Back Pain (LBP) is the most common orthopedic problem worldwide. According to some estimates approximately 60 - 80% of the general population will suffer from LBP at some point in their lifetime. <sup>(1)</sup> It is developed by the national collaborating center for primary care (2009) that lower back is commonly defined as the area between the bottom of the rib cage and the buttock creases. There are different definitions of LBP depending on the source. According to the European Guidelines for prevention of low back pain, LBP is defined as “pain and discomfort, localized below the costal margin and above the inferior gluteal folds, with or without leg pain”. <sup>(2)</sup> Another definition, according to S.Kinkade, which resembles the European guidelines is that LBP is “ pain that occurs posteriorly in the region between the lower rib margin and the proximal thighs”. <sup>(3)</sup>

**Figure 1.1 Muscle of Back.**

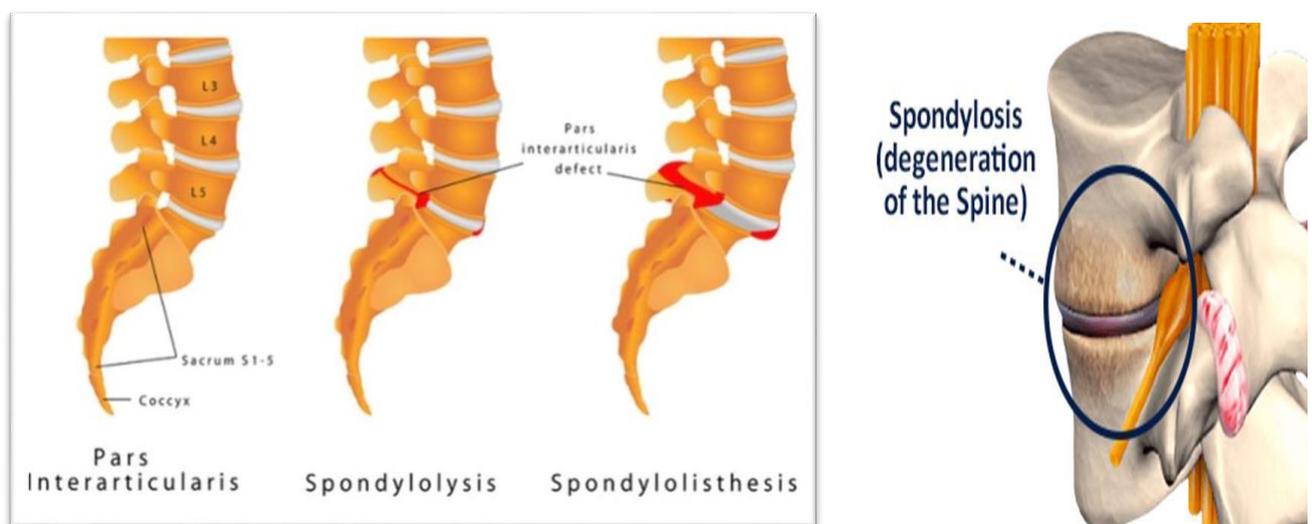


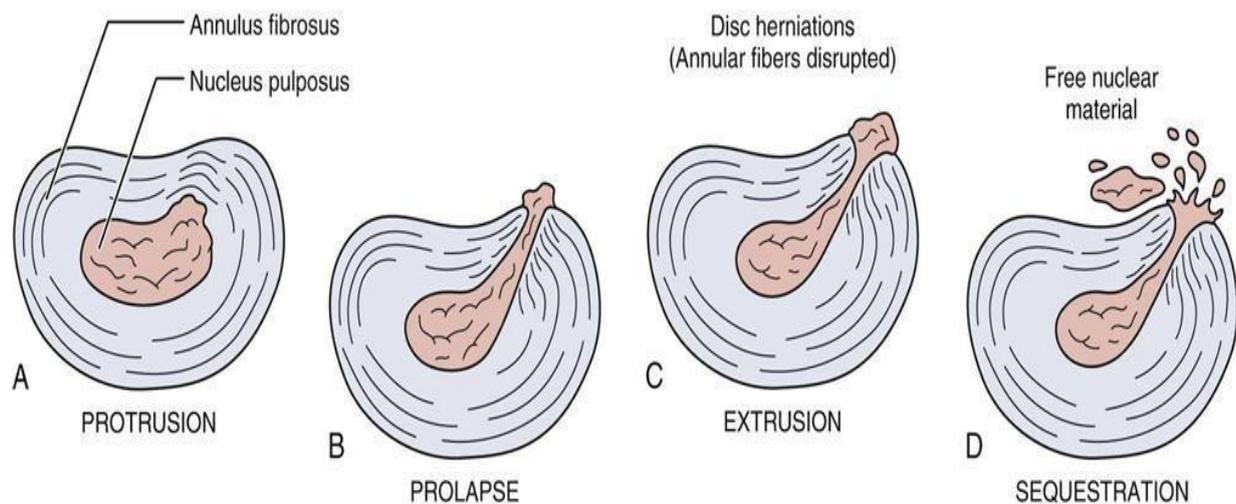
LBP is a global public health issue and one of the most frequent musculoskeletal disorders experienced in our daily lives. <sup>(2)</sup> LBP can be classified as “Specific” or “Non-specific” LBP. Non-specific LBP is defined as having symptoms of unknown origin or without identifiable pathology whereas Specific LBP is as one that caused by a specific pathological mechanism, such as disc prolapse or herniated nucleus

pulposus, infection, inflammatory arthropathy, tumour, osteoporosis or fracture. <sup>(3)</sup> Low back pain is usually categorized in 3 subtypes: Acute, Sub-acute, and chronic low back pain. This subdivision is based on the duration of the back pain. Acute LBP is an episode of LBP for less than 6 weeks, sub-acute LBP between 6 and 12 weeks and chronic LBP for 12 weeks or more. LBP that has been present for longer than three months is considered chronic. More than 80% of all health care costs can be attributed to chronic LBP. <sup>(4)</sup>

There are ten (five pair) facet joints (also called apophyseal or zygoapophyseal joints) in the lumbar spine. <sup>(5)</sup> These diarthrodial joints consists of superior and inferior facets and a capsule. The facets are located on the vertebral arches. With a normal intact disc, the facet joints carry about 20% to 25% of the axial load, but this may reach 70% with degeneration of the disc. The facet joints also provide 40% of the torsional and shear strength. <sup>(6)</sup> Injury, degeneration, or trauma to the motion segment (the facet joints and disc) may lead to Spondylosis <sup>(7)</sup> (degeneration of the intervertebral disc), Spondylolysis <sup>(8)</sup> (a defect in the pars interarticularis or the arch of the vertebra), Spondylolisthesis <sup>(8)</sup> (a forward displacement of one vertebra over another), or Retrolisthesis (backward displacement of one vertebra on another).

If there is an injury to the disc, four problems can result, all of which can cause symptoms. <sup>(9)</sup> There may be a protrusion of the disc (disc bulges posteriorly without rupture of the annulus fibrosus), disc prolapse (only the outermost fibers of the annulus fibrosus contain the nucleus), disc extrusion (the annulus fibrosus is perforated and part of the nucleus pulposus moves into the epidural space) and sequestered disc (formation of discal fragments from the annulus fibrosus and nucleus pulposus outside the disc proper). <sup>(10)</sup>



**Figure 1.2 LBP conditions.****Figure 1.3 Conditions of Injuries to Discs.**

LBP may not be a life-threatening condition but it does constitute a major health problem in the world. It is usually accompanied by the painful limitation of movement, often influenced by physical activities and posture, and may be associated with referred pain. <sup>(11)</sup> World Health Organization (WHO) has identified LBP as one of the top three occupational health problems to be targeted by surveillance within the WHO. <sup>(12)</sup>

LBP is among the greatest public health threats that individuals face around the world. It is a pain at the lower part of the back and is one of the musculoskeletal disorders and discomfort.

<sup>(13)</sup> LBP produces a considerable personal, community, and financial burden <sup>(14)</sup> and it is the most common reason for medical consultations globally. <sup>(15)</sup> It does not only suggest poor quality of individuals' life, but also showed decreased in labor productivity due to off-work absenteeism and early retirement. <sup>(16)</sup>

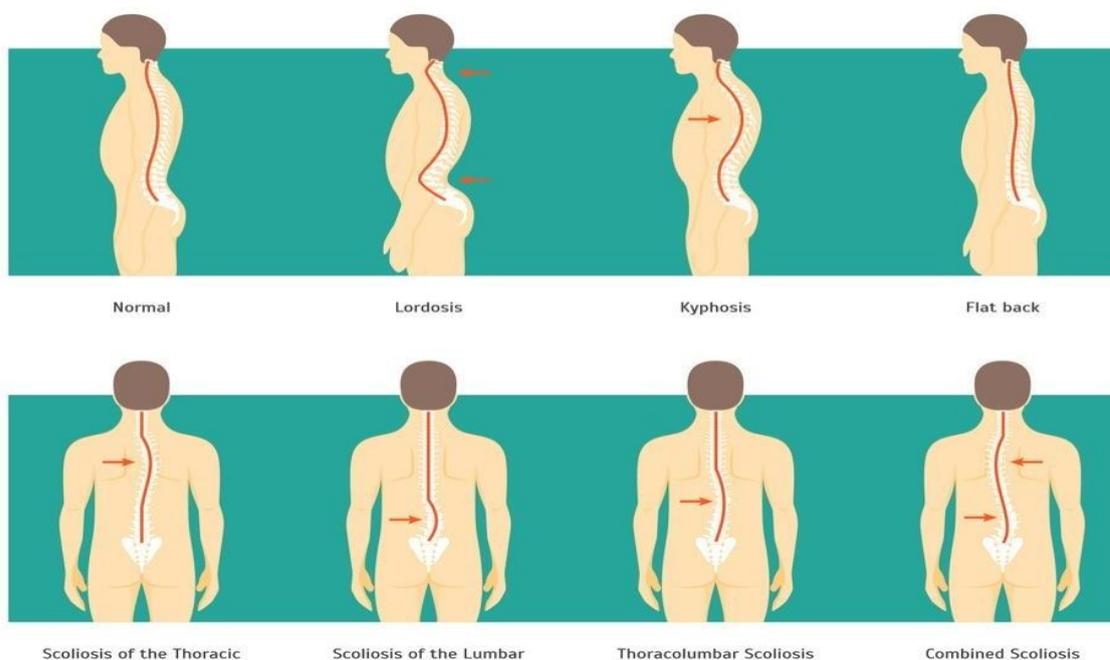
LBP is one of the most common health problems and affects people of all ages, from children to the elderly. <sup>(17,18)</sup> According to the Global Burden of Disease 2010 Study, the prevalence and burden of LBP are very high throughout the world. <sup>(19)</sup> Out of the 291 conditions studied, LBP was found to have the sixth highest burden and to cause more disability globally than any other condition. <sup>(19)</sup> In 2010 the age-standardized point prevalence was highest in Western Europe (15%) and North Africa/Middle East (14.8%). The age-standardized point prevalence in Central Europe, including Serbia, was 11.5% (12.6% in males and 10.3% in females) and ranked the fifth place. <sup>(19)</sup> However, it is estimated that over 80% of the population will experience an episode of LBP at some time during life, and that about 18% of the

population experienced LBP at any given moment. <sup>(20)</sup> Cross-sectional data demonstrate that initial onset of lower back pain commonly occurs around the age of 30 <sup>(21)</sup> and peaks in occurrence between the ages of 45 and 60 years. <sup>(21,22)</sup>

Many studies have attempted to identify and evaluate the contribution of different demographic, physical, socio-economical, psychological, and occupational factor to the development of spinal pain. It is interesting that 37% of LBP worldwide are attributable to occupational risk factors, which represent many potentially preventable sources of pain. <sup>(23)</sup>

The main risk factors for LBP are age, gender, obesity, lifestyle, psychosocial factor (stress, anxiety, and depression), psycho-social profile of a person's physical demands of the workplace, level of education, occupational factor, decreased flexibility and mobility of muscles, hypermobility, competition sports, type and way of carrying and transporting weight, postural habits, level of physical activity, smoking, and domestic factor such as watching TV and computer/videogame. <sup>(24,25)</sup> Recurrent weight lifting, using vibratory equipment, sedentary lifestyle, weakness of abdominal wall muscle, increase in lumbar lordosis, scoliosis, cardiovascular disorders, low socio-economic status, and high body mass index (BMI) also contribute to LBP.

## SPINAL CURVATURE



**Figure 1.4 Curvature of Spine**

Most of the mutable factors are occupation related: poor posturing, prolonged sitting, twisting, bending, stooping and lifting of heavy loads are some of the known risk factors for LBP. <sup>(26,27)</sup> It had been observed that individuals who suffered from LBP problem might develop major physical, social and mental disruptions, which could affect their occupations and their work ability. Physical impacts of low back pain may include the loss of physical function and deteriorated general health. <sup>(27,28)</sup> Recent studies have reported that psychological factors such as job-satisfaction or job-related strain also may be a risk factor of the LBP. <sup>(29)</sup> Work or job- related LBP denotes back pain originated in the context of work.

The mental impact of LBP includes anxiety, depression, irritability, sleeplessness, poor social interaction, poor physical performance and deterioration in general health status are the physical impact. LBP results in an inability to carry out social activities and it decrease the capability to perform occupational activities since it mostly affects adults of working age. <sup>(30)</sup> In adolescents, LBP has been found to be associated with growth spurts, hamstring and abdominal muscle flexibility, and smoking. It has also been correlated with discomfort in bed, physical inactivity, poor posture, and heavy backaches. <sup>(31)</sup>

LBP often begins in childhood, and the prevalence rate for adolescents approaches that seen in adults. <sup>(32)</sup> Epidemiological studies have shown an increase in LBP in children, teenagers, and young adults, <sup>(33)</sup> but studies exhibit great variability in prevalence rates. <sup>(32)</sup> It is challenging to compare the prevalence of LBP between population and over time due to methodological heterogeneity across studies such as the age of the sample, the sample size, the definition of LBP, the LBP recall period, the strategy for extracting data, the methodology used, and difficulties in obtaining true population estimates. <sup>(25,33)</sup> The direct and indirect costs of LBP in terms of quality of life, productivity, and employee absenteeism are enormous, thereby establishing this common condition as the single largest contributor to musculoskeletal disability world-wide. <sup>(34)</sup>

Some studies have demonstrated that physiotherapists have a high prevalence of LBP. <sup>(35-39)</sup>

The activities of these professionals are related to the development of this pain. <sup>(35,36,39)</sup> It is estimated that up to 60% of LBP events in this group occur as a consequence of work-related injuries. <sup>(35-39)</sup> Many physiotherapists report the onset of LBP during undergraduate course. <sup>(39)</sup> In fact, physiotherapy students are potentially exposed to the same LBP occupational risks as graduates, such as poor working postures and manual handling activities, often undertaken in difficult environments and with variable training regarding personal safety.



**Figure 1.5 Causes of Low Back Pain**

Medical schools tend to have highly time-consuming curriculum, possibly leading students more prone to a sedentary lifestyle, and increasing the prevalence of LBP. <sup>(40,41)</sup> A study by Moroder P et al. on Low Back Pain among undergraduate medical students in Austria found that the mean hours spent by medical students in recumbent or sitting posture was an average 12.0 ± 1.9 hours per day. <sup>(40)</sup> The undergraduate medical curriculum in India spans five and one-half class years, with 3820 hours. It calls for long hours of sitting during study hence, medical students are more predisposing to LBP <sup>(41)</sup>. Some studies reported a high prevalence

of LBP among medical students. <sup>(42-44)</sup> A recent study by Majra et al. <sup>(45)</sup> on health promoting lifestyle among medical students in southern India, revealed an increase in health risking behaviors and a decline in health promoting behaviors among students during their stay in medical colleges. In another study conducted in a medical school in Malaysia, Indian ethnicity concluded with the prevalence of overweight and obesity among the medical students is on the high risk than other ethnic groups. <sup>(46)</sup> Perception of health status, Lifestyle factors, including smoking behaviour, lack of physical exercise, awkward posture and short sleep hours are also considered to be risk factors of LBP. <sup>(47)</sup>

Due to highly demanding curriculum during the studies, medical students are exposed to stress, sedentary lifestyle, and long hours on hospital wards and clinics which may lead to the high prevalence of LBP in this population. Also, the presence of LBP can affect medical students' productivity, their attendance at lectures and medical training, and therefore their future career. Higher prevalence of LBP was observed

among students with five or more semesters, suggesting that advanced students who most often are exposed to practical activities are at increased risk for disease. <sup>(48)</sup>

## 1.2 NEED OF THE STUDY

Some studies have demonstrated that physiotherapy and medical students have high prevalence of LBP. The association between physiotherapy and medical students, who are potentially exposed to the same LBP occupational risk as graduates, and LBP has never been demonstrated. The objective of the study is to evaluate the association between undergraduate physiotherapy study and LBP. From this study final year physiotherapy and medical students will be able to identify the risks that can influence their physical activities and that causes their back pain. This study will also help to improve their awareness, especially about their sitting and standing posture when in class lectures or in practical sessions and patient handling during their placement time. From this study researcher can identify the physical activities of physiotherapy and medical students and posture which are harmful for the physiotherapy and medical students because physiotherapist have to do lifting and transferring. So the study may help to their awareness about their posture.

## 1.3 STATEMENT OF PROBLEM

What is the prevalence of low back pain among physiotherapy student compared to medical students?

## 1.4 AIMS AND OBJECTIVES OF THE STUDY

In 2016 Indian Council of Medical Research, Public Health Foundation of India and Institute for Health Metrics and Evaluation published Health of the Nation's States – The India State Level Disease Burden Initiative. This publication reported that LBP is among the top 20 diseases in India that account for large increase in DALYs (Disability-Adjusted Life Years) from 1990 to 2016.

### AIMS

Many studies have done about prevalence of LBP among the different occupations such as nurses, surgeons, medical students and physiotherapy students. But there is lack of researches about increased prevalence of LBP among the physiotherapy students compared to medical students. Therefore, this study

was aimed to investigate the prevalence of low back pain among undergraduate physiotherapy students compared to undergraduate medical students.

## **OBJECTIVES**

- To find out the increased prevalence of LBP among physiotherapy students compared to medical students.
- To identify the percentage of male and female students among the LBP sufferers.
- To measure the severity of pain at NPRS scale such as right now pain, usual level of pain, best level of pain and worst level of pain.
- To identify the pattern of onset of pain.
- To demonstrate which aged group were more affected.
- To identify physical activity among students.

## **1.5 OPERATIONAL DEFINITIONS**

### **PREVALENCE**

The degree to which something is prevalent, especially the percentage of a population that is affected with a particular disease at a given time.

### **LOW BACK PAIN**

Low back pain refers to pain felt in lower back. It may also have back stiffness, decreased movement of the lower back and difficulty standing straight.

### **PHYSIOTHERAPY**

Physiotherapy is health care. profession concerned with human function and movement and maximizing physical potential. It is concerned with identifying and maximizing quality of life and movement potential within the spheres of promotion, prevention, treatment/intervention, habilitation and rehabilitation.

## **REVIEW OF LITERATURE**

1. **Asdrubal Falavigna et al., 2010** studied on “**Increased prevalence of low back pain among physiotherapy students compared to medical students**” A Questionnaire based study was carried out with physiotherapy and medical students. This Cross-sectional study aimed to verify the existence of a higher prevalence of LBP in physiotherapy students. For this, medical students were chosen as a

comparative group. 416 students were evaluated,

207 being medical and 209 physiotherapy students. This study concluded that the physiotherapy students are 2.51 times more likely to have LBP in a sample composed of medical and physiotherapy students. The length of course exposure also in associated with the presence of LBP, with a risk of 2.55 times. These findings suggest that preventive activities should be performed during the undergraduate physiotherapy program in order to alleviate or minimize the impact of LBP in these students.

2. **Kashif M et al., 2017** studied on: “**Prevalence of Low Back Pain among Physiotherapy Students of Riphah College of Rehabilitation Sciences**”. To determine the prevalence of low back pain among physiotherapy students. This Cross-sectional study was conducted among 110 female students. Self-administered questionnaire was used and consisted of three sections: demographic information of participants, the standardized Nordic Musculoskeletal Questionnaire for the musculoskeletal complaints of low back and Visual Analogue Scale for pain intensity. This study concluded that the prevalence of LBP in physiotherapy students is high and the most common type of pain is nagging in nature. In addition, LBP is a major cause of absenteeism, hospital visit, reduced leisure and work activity among students.
  
3. **Md. Sabuj Sheikh** studied on “**Prevalence of Low Back Pain among Physiotherapy students**” This Cross-sectional study aimed to identify how many physiotherapy students experience of LBP, to explore male female ratio among physiotherapy students, evaluate the which age group are more affected for low back pain, to find out physical activity level among physiotherapy students. This study concluded that Low back pain is a common health problem. In this survey there was a high prevalence of LBP among physiotherapy students. Physiotherapist must focus on proper technique posture and adhere to a regimen of self-care to reduce the risk of pain.

4. **Leah Jane Nyland & Karen Anne Grimmer** studied on “**Is undergraduate physiotherapy study a risk factor for low back pain? A prevalence study of LBP in physiotherapy student**” and this study concluded that the risk of LBP for students in years 2-4 of the program was significantly greater with that for students in the first year of the program. Students aged 20 and 21 were more at risk of LBP than younger or older students. Students aged 20-21 mostly reflected those students who had entered the physiotherapy program straight from high school, and were in the final year of the program. They had thus been enrolled in the undergraduate program for the longest. Concurring with this was that students with more than two years of tertiary education were significantly more likely to experience LBP in the previous 12 months than students with less exposure. Educational exposures of ‘sitting looking down’ and ‘treating patients’ were related to recent occurrence of LBP.
  
5. **Moroder P. et al., 2011** studied on “**Low Back Pain among medical students**”. The prevalence of this study was to evaluate the extent of sedentary lifestyle and the 12-months prevalence of LBP in a sample group of medical students in comparison to a random sample of physical education students. A retrospective study involving a questionnaire-based inquiry of 103 medical students showed that they were approximately 2.5 times less physically active than the 107 physical education students and spent 3 more hours per day sitting. These study concluded that high prevalence of LBP among students, which is rather alarming considering their young age. The prevalence of LBP was not higher in medical students than in physically more active students, in spite of their sedentary lifestyle. According to the literature, the sitting position is no longer considered as a risk factor for LBP.
  
6. **Nemanja Stojolovic et al.**, studied on “**low Back pain among medical students in Belgrade (Serbia): A Cross-Sectional Study**” To examine the prevalence of LBP, to identify self-perceived triggers of LBP, and to investigate the impact of perceived pain on the daily activities and mood among medical students. A Cross-Sectional study was conducted in 459 final year students at the faculty of Medicine in Belgrade. They concluded that prevalence of LBP is high among Belgrade medical student and significantly affects

their everyday functioning and mood. Female student has significantly higher 12-month and lifetime prevalence of LBP, compared to males.

7. **Katie J Horrell et al.**, studied on “**The prevalence of low back pain in under-graduate students with different educational exposures**”. This Cross-sectional study aimed to identify the prevalence of low back pain in undergraduate students with different educational exposure, and to investigate whether undergraduate study which involves physical manual handling is a risk factor for developing low back pain. A Questionnaire based study was carried out with 306 students, 180 being physiotherapy and 126 being dietetic students. This study concluded, that the prevalence of self-reported low back pain was similar amongst physiotherapy and dietetic undergraduate students. The percentage of students reporting back pain was comparable with reported rates within the general population. Exposure to physical manual handling techniques, which are an integral part of physiotherapy undergraduate education, did not impact significantly on the risk of physiotherapy students experiencing low back pain.
8. **Camille Tavares et al.**, studied on “**Low back pain in Brazilian medical students: A Cross-Sectional study in 629 individuals**” This study aimed to determine prevalence of LBP in Brazilian medical students and the associated factor. This study concluded that there is a high prevalence of LBP in medical students, mainly females, associated with bad posture habits. Physical dysfunction for LBP showed correlation with anxiety and depression.
9. **Aymeric Amelot et al.**, studied on “**Low Back Pain Among Medical Students: A Burden and an Impact to Considered**” This prospective study aimed to determine risk factors and consider impact of LBP for medical students. This study concluded that LBP among medical students is frequent, with serious consequences on their personal life and work. Properly exercising every week can prevent LBP and reduce the consumption of analgesics. Medical school authorities should be aware of this health issue and formulate corrective measures. We suppose that a brief educational support can improve medical students’ knowledge, attitudes, and beliefs towards LBP.

# **MATERIALS AND METHODOLOGY**

## **STUDY DESIGN**

A descriptive cross-Sectional study was conducted among 202 undergraduate physiotherapy and medical students in the age group of 20-25 years both males and female who are undergraduate physiotherapy and medical students of final year and internship. A pretested, self-administered, structured questionnaire has been mailed or send through social media to physiotherapy and medical students. After accepting to participate in the study and accepting the consent letter they will complete the questionnaire. The purpose of the study was to find out the prevalence of LBP among physiotherapy students. Cross sectional study design was selected for this study. This design involves identifying group of people and then collecting the information that researcher require when they will be use the particular service. Survey research is one of the most common forms of research that involves the researchers asking a large group of people questions about a particular topic or issue and these are related to the interest of the participant. Survey is a method of collecting data which involves the researcher measuring or systemic intervention. The cross sectional study design is usually cheaper and quicker and confounding variable can be controlled for during dataanalysis.

### **3.1 STUDY SETTING**

Study was conducted among medical and physiotherapy students of final year and internship.

### **3.2 POPULATION**

In this study population were final year and internship students of physiotherapy and medical students. Total 202 students evaluated 101 physiotherapy and 101 medical.

### **3.3 SAMPLE AND SAMPLING TECHNIQUE:**

Sample was taken by using convenience sampling method due to time limitation and as it is the one of the easiest, cheapest and quicker method of sample selection.

### **3.4 SEARCH DATA BASE:**

- Google Scholar
- PubMed

### **3.5 STUDY DURATION:**

6 Months

### **3.6 INCLUSION CRITERIA**

- Voluntary to participate in study.
- Both male and female was included.
- Final year and intern students of medical and physiotherapy was included.
- Age group is from 20 years to 25 years was selected.

### **3.7 EXCLUSION CRITERIA**

- Candidate who not willing to participate.
- Candidate who are not final year or intern students.
- Candidate who had kidney problem and accident were excluded because these are responsible for LBP.
- History of back fracture or surgery.
- History of any neurological signs and symptoms.

### 3.8 MATERIAL AND TOOLS

The materials and tools for this study were consent form, self-administered questionnaire SPSS (statistical Package for the Social Sciences) software-24 version to analyse data.

### 3.9 DATA COLLECTION TECHNIQUE AND TOOLS

A pretested, self-administered, structured questionnaire was used for data collection. It included items to record socio-demographic characteristics and assess the presence of risk factors for LBP among the physiotherapy and medical students. With the structured questionnaire, the following variables were collected: Age, Gender, Height, Weight, Stream, Study year, physical activity, Disability, Presence of LBP and its features. The students were asked about their height and weight; the body mass index (BMI) was calculated with these two variables.

Pain intensity was assessed by the Numerical Pain Rating Scale (NPRS), ranging from 0 (no pain) to 10 (worst pain) medication use and seeking care due to LBP were also assessed with the questionnaire.

The International Physical Activity Questionnaire (IPAQ) was used to classify the level of physical activity. This instrument was developed by the World Health Organization and it is frequently used worldwide. Its advantage is that IPAQ evaluates physical activity in many aspects of daily routine rather than in one isolated aspect (i.e. leisure time). The IPAQ evaluates the daily activity in four dimensions: professional, domestic, during transportation and leisure. Therefore, we were able to classify the physical activity as low, moderate or high.

The Modified Oswestry Low Back Pain Disability Questionnaire was used to evaluate the presence and severity of disability among students. This instrument consists of 10 questions, each question scores 0-5 with a total scoring from 0-50. It is considered completely disabled if the total score is 35-50, severe disability if score 25-34, moderate disability if score 15-24, mild disability if score 5-14 and no disability if the total score is 0-4.

The students were asked if they have ever suffered LBP at some point of their lives (lifetime prevalence), if they suffered LBP in the last year (1-year prevalence), and if they were suffering LBP at the moment they were fulfilling the questionnaire (point prevalence). People who had presented LBP in the last year were asked about duration of the pain, and it was classified as acute, if less than 3 weeks; sub-acute, from 3 weeks to 3 months; and chronic, if >3 months. It was asked if the pain irradiated to the lower limbs (sciatica) or stayed only in the lumbar region.

The students were also asked for which position they maintain most of the time during work, what factor makes the symptoms worse at work place, which type of pain they feel and which kind of treatment they take for LBP.

### **3.10 TIME TO ADMINISTER**

10 – 20 Minutes to administer.

### **3.11 PROCEDURE**

Comparative study was done on a total 202 students of the final year and interns of physiotherapy and medical students. All the students are selected randomly from the different colleges were asked to participate in the study and those who showed willingness and according to inclusion and exclusion criteria, self-administered

questionnaire was completed by students, that include question regarding the following like demographic details (age, gender, height, weight), Numerical pain rating scale (from 0 to 10) and Self-administered questionnaire within the period of data collection, significant and questionnaire filled.

### 3.12 DATA ANALYSIS

Descriptive statistics was used to analyse the data. Data was analysed with a software named Statistical Package for Social Science (SPSS) version 24. The raw data was analysed by SPSS and the results were shows by table, pie and bar charts.

## DATA ANALYSIS & RESULT

### 4.1 Age of participants

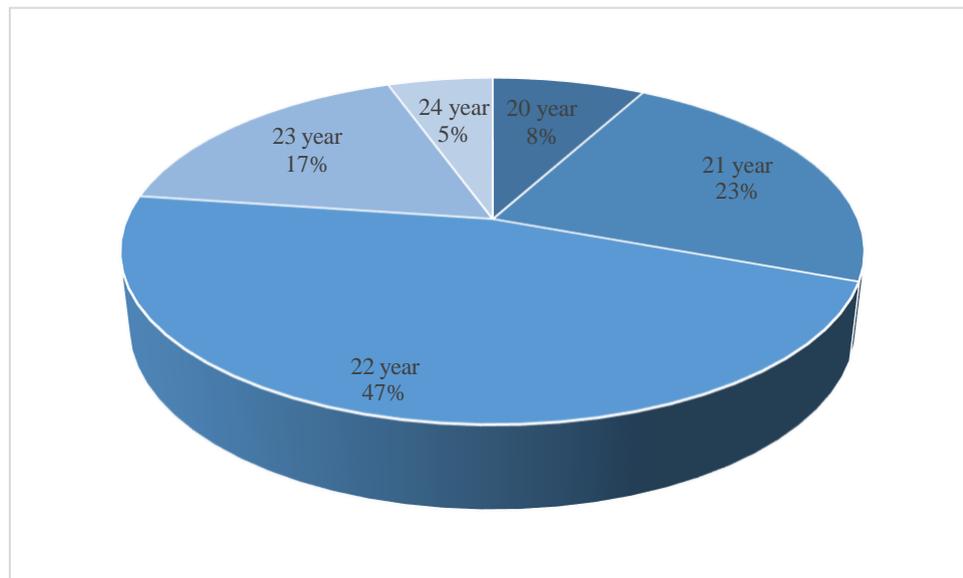
In this study 202 students were evaluated 50% (n=101) being Physiotherapy students and 50% (n=101) being medical students. The age range was 20-25 years of all participants and their mean age was 21.89 years. Among them in physiotherapy program has 20 years 7.92% (n=8), 21 years 33.66% (n=34), 22 years 38.61% (n=39), 23 years 16.83% (n=17), 24 years 2.97% (n=3) students and their mean age 21.73 years. In medical program has 20 years 7.92% (n=8), 21 years 11.88% (n=12), 22 years 54.45% (n=55), 23 years 17.82% (n=18), 24 years 7.92% (n=8) and their mean age 22.06 years.

**Table 4.1: Age frequency distribution**

| Age | Physiotherapy students | Medical students | Total |
|-----|------------------------|------------------|-------|
| 20  | 8                      | 8                | 16    |
| 21  | 34                     | 12               | 46    |
| 22  | 39                     | 55               | 94    |
| 23  | 17                     | 18               | 35    |

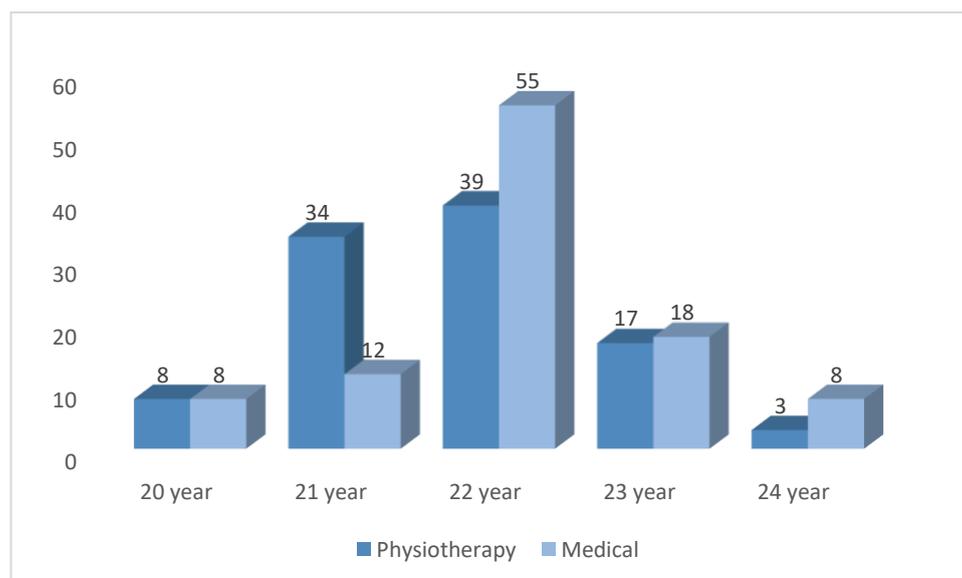
|    |   |   |     |
|----|---|---|-----|
| 24 | 3 | 8 | 11  |
|    |   |   | 202 |

Figure 4.1(a) represents the age of all the students of physiotherapy and medical students among which the greatest number of the students are from the age of 22 year (47%) and the least number of the students are from the age of 24 years (5%).



**Figure 4.1 (a): Age of all participants**

Figure 4.1(b) demonstrate the age of the all participant and comparison between the age of physiotherapy students and medical students. It is also observed that physiotherapy students are slightly younger than medical students.



**Figure 4.1 (b): Comparison of age between physiotherapy and medical students**

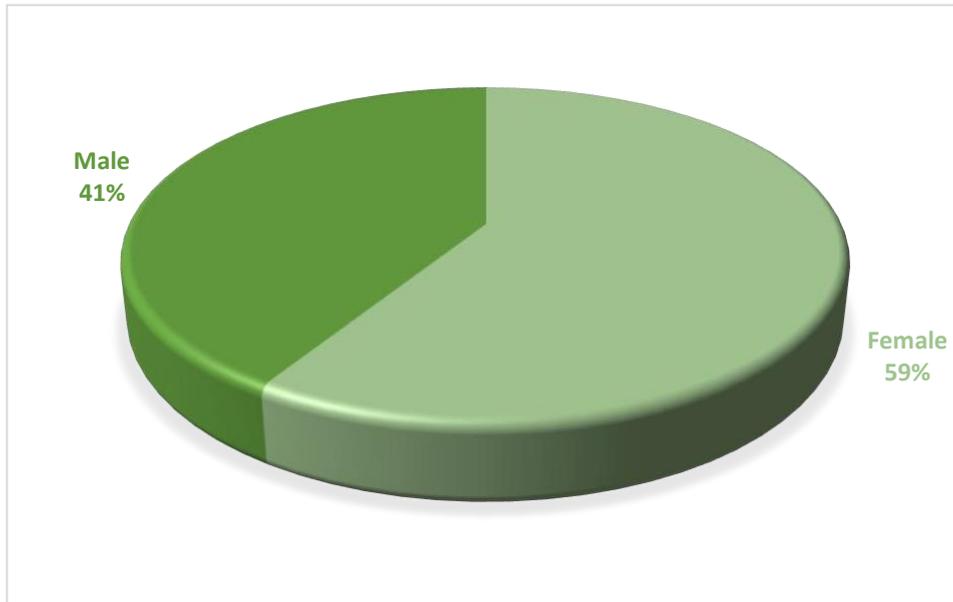
## 4.2 Gender of participants

Among all the participants female students were 58.91% (n=119) and male students were 41.08% (n=83). In physiotherapy students 87.12% (n=88) were female and 12.87% (n=13) were male, so majority of physiotherapy students were female. On the other hands in medical students 30.69% (n=31) were female and 69.30% (n=70) were male, so majority of medical students were male.

**Table 4.2: Gender frequency distribution**

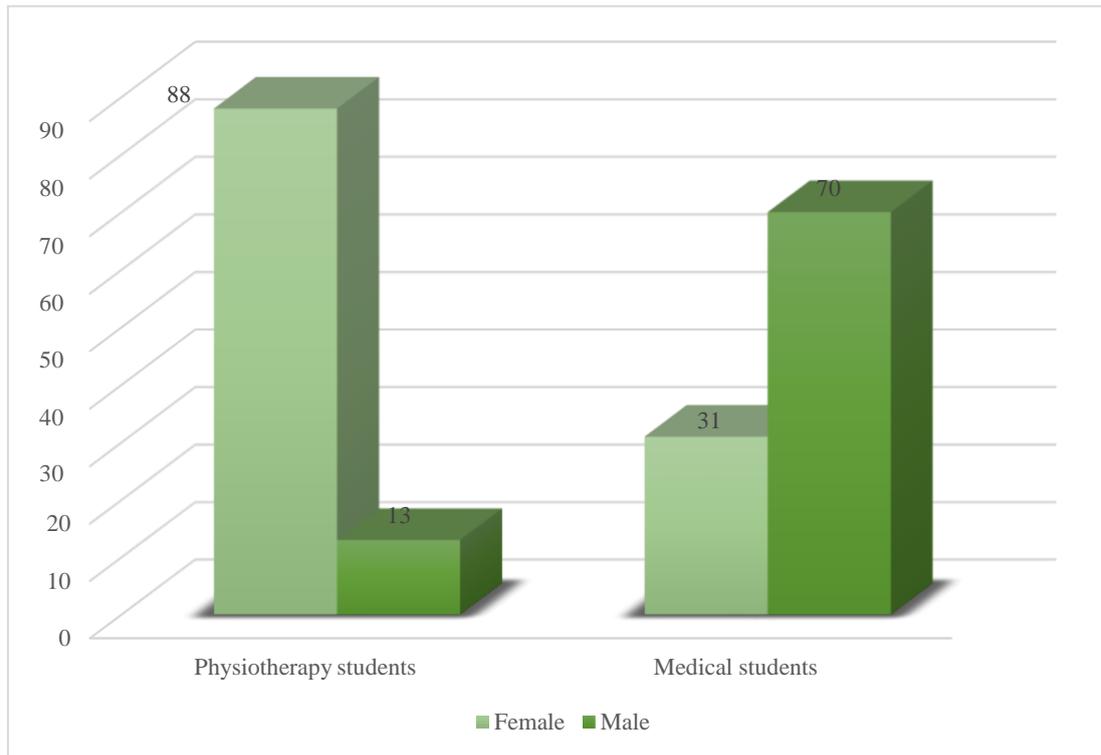
|        | Physiotherapy | Medical | Total |
|--------|---------------|---------|-------|
| Female | 88            | 31      | 119   |
| Male   | 13            | 70      | 83    |
|        |               |         | 202   |

Figure 4.2 (a) shown gender of all participants of physiotherapy and medical students. And also observed that female students were more participated than male students in this study.



**Figure 4.2 (a) Gender of all participants**

Figure 4.2 (b) shown that comparison between the gender of the participants of physiotherapy and medical students. In physiotherapy stream female students are more than male students; whereas; In medical stream male students are more than female students. It is also observed that the proportion of the female were higher in the physiotherapy students than medical students and proportion of the male were higher in the medical students than in physiotherapystudents. The comparison has been shown in figure 5.2



**Figure 4.2 (b) Comparison of gender between physiotherapy and medical students**

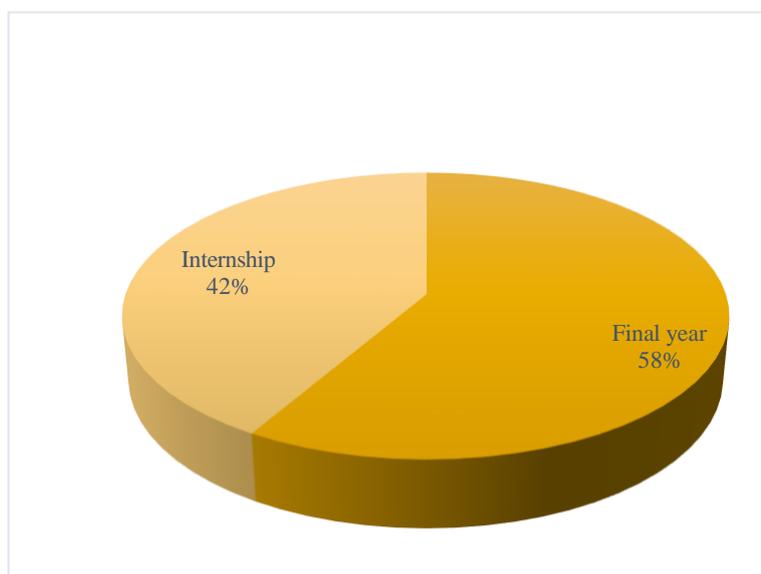
### 4.3 Study year of participants

Among all the participants internship students were 41.6% (n=48) and final year students were 58.4% (n=118). In physiotherapy students 67.32% (n=68) students from internship and 32.67% (n=33) students from final year. In medical students 15.84% (n=16) students from internship and 84.16% (n=85) students from final year.

**Table 4.3: Study year frequency distribution**

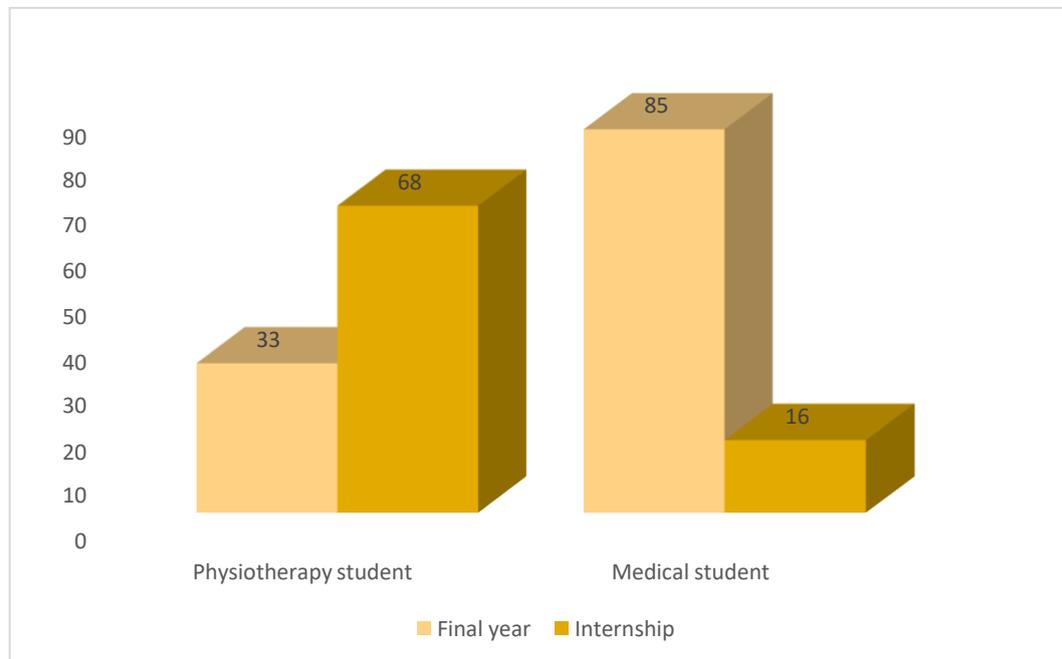
|                     | Physiotherapy |      | Medical |      | Total |
|---------------------|---------------|------|---------|------|-------|
|                     | Female        | Male | Female  | Male |       |
| Final year students | 30            | 3    | 23      | 62   | 118   |
| Internship students | 58            | 10   | 8       | 8    | 84    |
|                     |               |      |         |      | 202   |

Figure 4.3 (a) represents study year of all the participants of physiotherapy and medical students. Observed that greatest number of final year students were participated in this study.



**Figure 4.3 (a) Study year of all participants**

Figure 4.3 (b) demonstrated study year comparison of physiotherapy and medical students. And also observed that from physiotherapy stream Internship students more participated than final year students; whereas from medical stream final year students were more participated than Internship student.



**Figure 4.3 (b) Comparison of study year between physiotherapy and medical students**

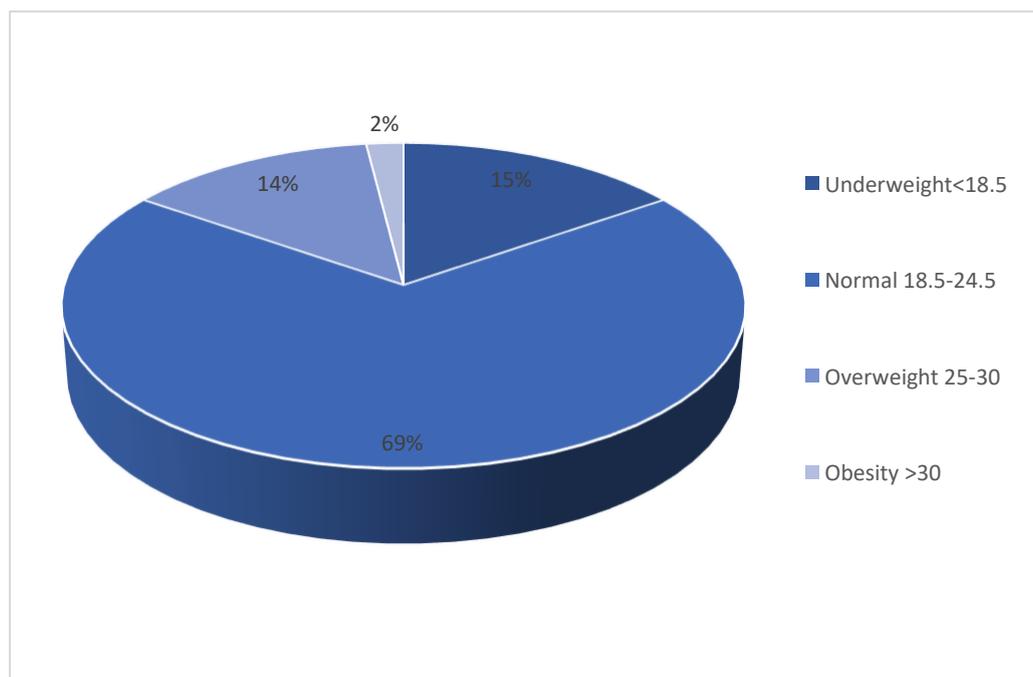
#### 4.4 BMI (Body Mass Index) of participants

BMI was calculated from the height and weight of all the participants. Among all the participants physiotherapy has Underweight 20.5% (n=18), Normal weight 63.6% (n=56), Overweight 14.8% (n=13) and obesity 1.1% (n=1). In medical has Underweight 29.0% (n=9), Normal weight 67.7% (n=21) and Overweight 3.2% (n=1).

**Table 4.4: BMI frequency distribution**

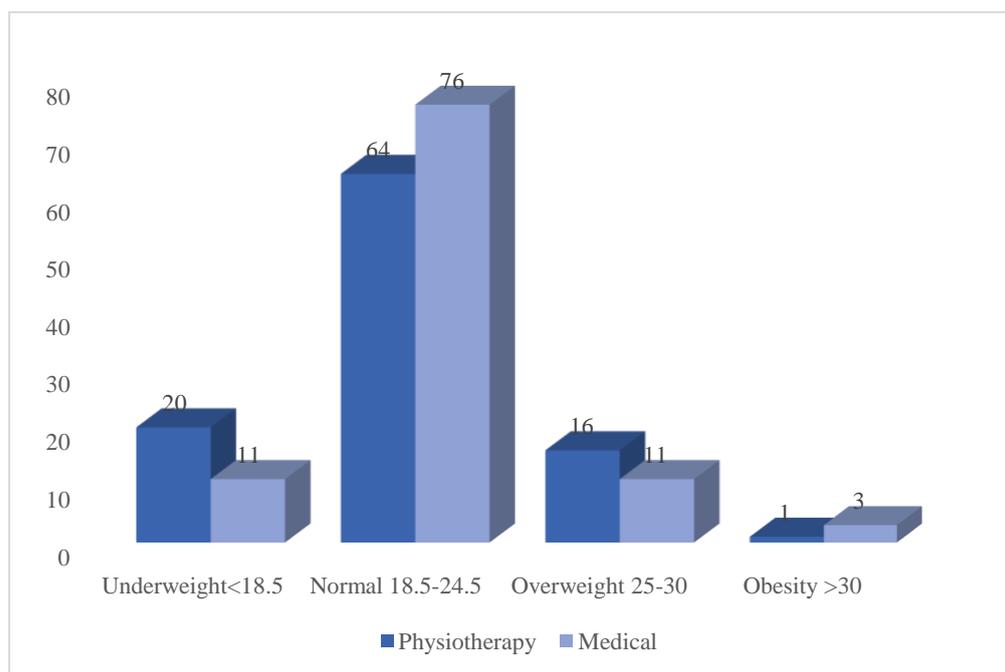
|                   | Physiotherapy |      | Medical |      |
|-------------------|---------------|------|---------|------|
|                   | Female        | Male | Female  | Male |
| Underweight <18.5 | 18            | 2    | 9       | 2    |
| Normal 18.5-24.9  | 56            | 8    | 21      | 55   |
| Overweight 25-30  | 13            | 3    | 1       | 10   |
| Obesity >30       | 1             | 0    | 0       | 3    |
| Total             | 88            | 13   | 31      | 70   |
|                   |               |      |         | 202  |

Figure 4.4 (a) represents the BMI of all the participants of physiotherapy and medical students.



**Figure 4.4 (a): BMI of all participants**

Figure 4.4 (b) demonstrate that the comparison of BMI between physiotherapy and medical students.



**Figure 4.4 (b): Comparison of BMI between physiotherapy and medical students**

### 4.5 Prevalence of pain on NPRS scale

From the study we have found that among the all participants 27.5% (n=55) experienced pain 0 in the NPRS scale (0 to 10). In physiotherapy students 33.66% (n=34) and in medical students 20.79% (n=21) experienced pain 0 in NPRS scale.

#### 4.5.1 How would you rate your pain RIGHT NOW

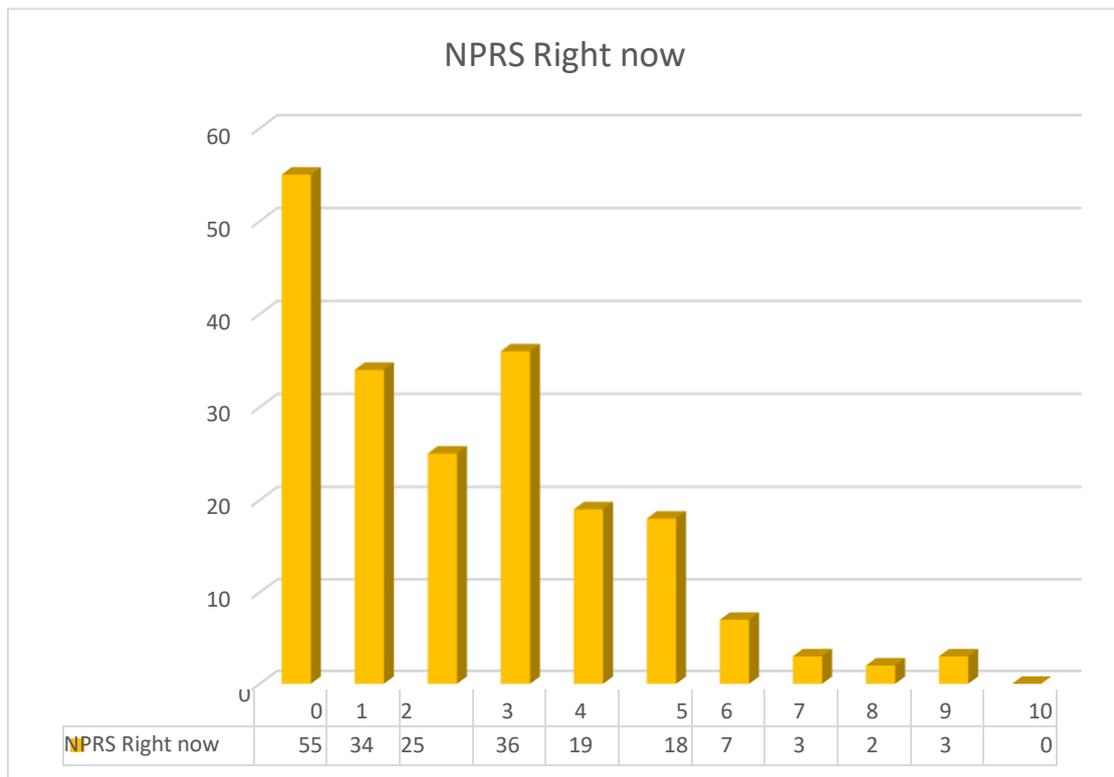
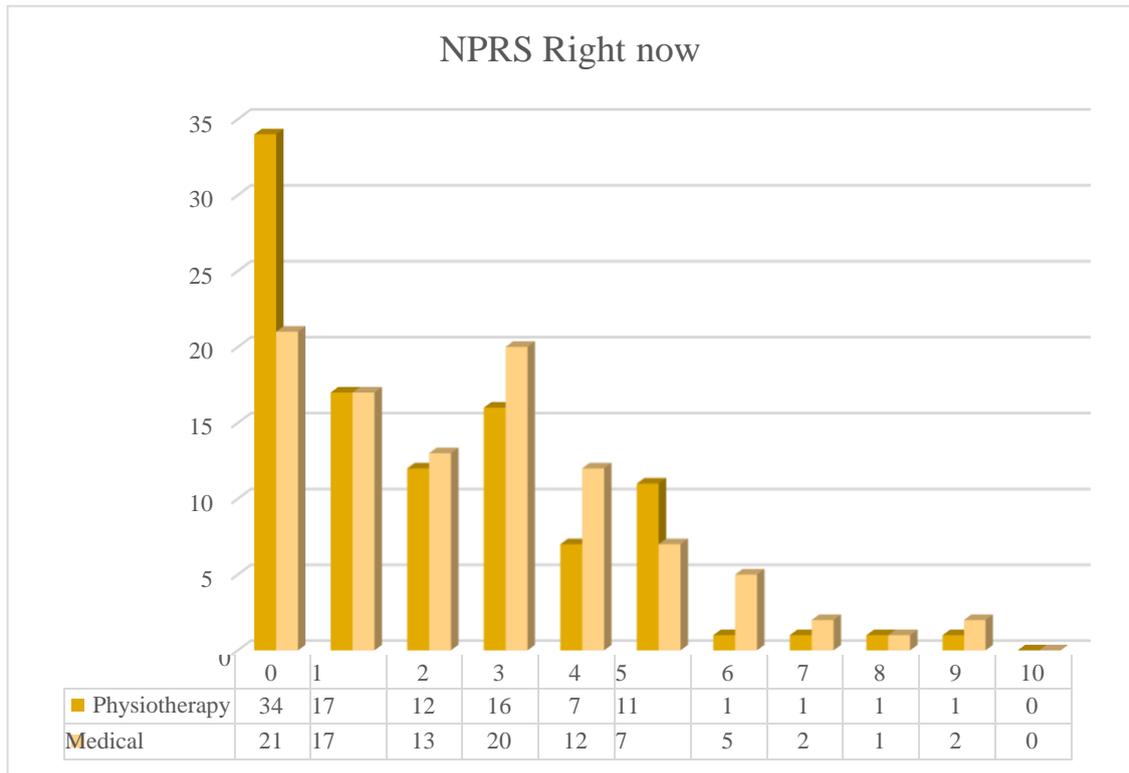
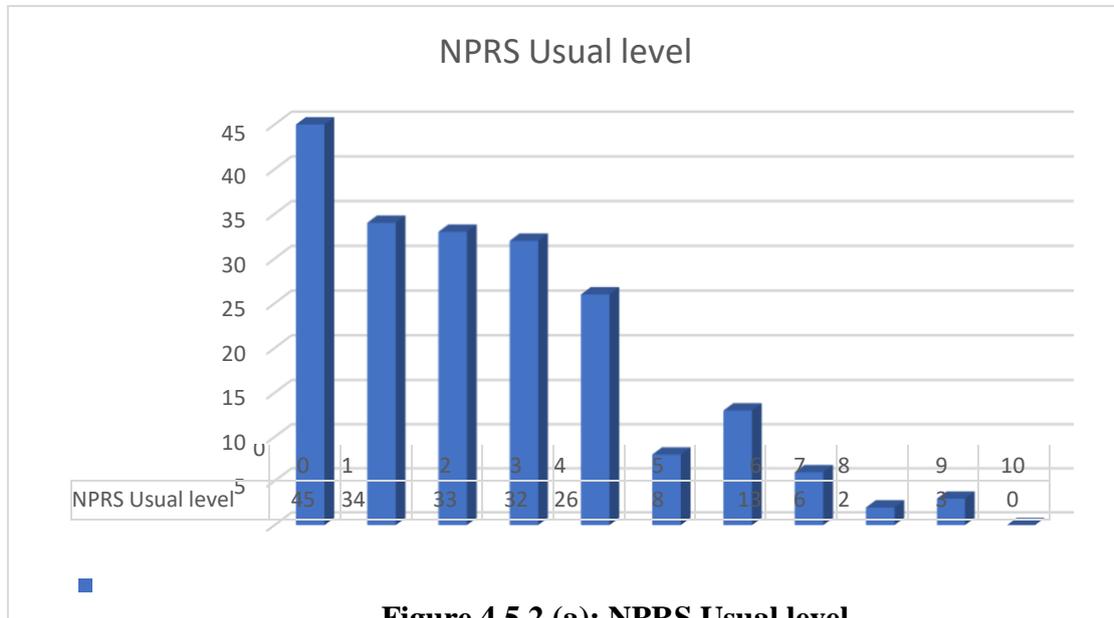


Figure 4.5.1 (a): NPRS Right now

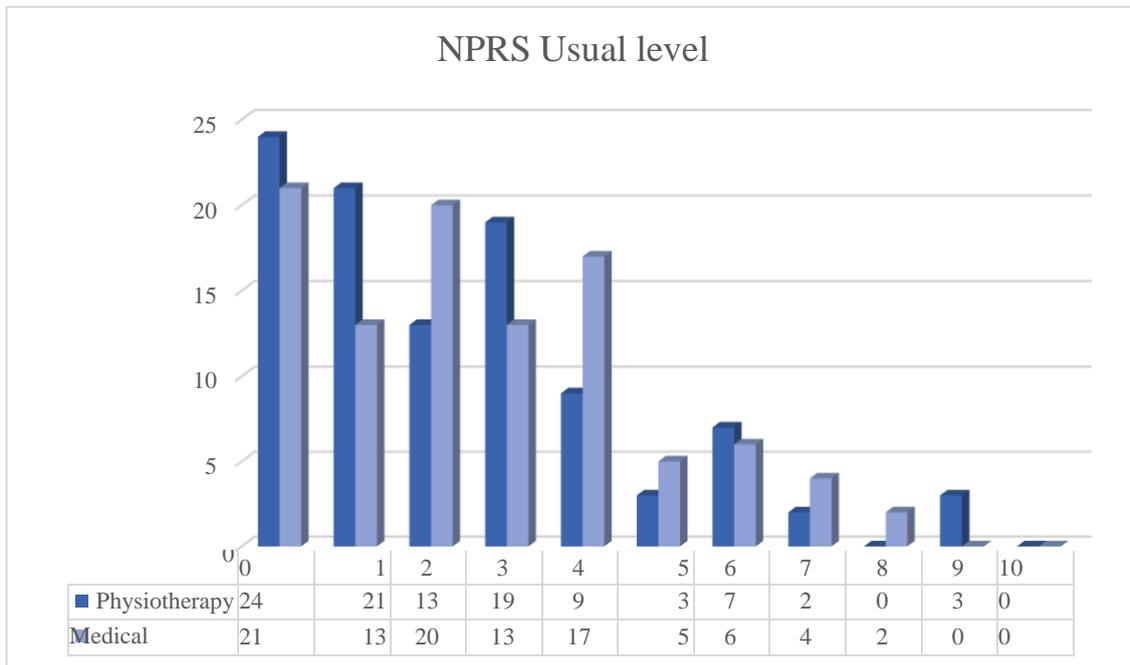


Comparison of NPRS Right now between physiotherapy and medical students

**4.5.2 How would you rate your USUAL LEVEL of pain during the LASTWEEK**



**Figure 4.5.2 (a): NPRS Usual level**



**Figure 4.5.2 (b): Comparison of NPRS Usual level between physiotherapy and medical students**

### 4.5.3 How would you rate your BEST LEVEL of pain during the LASTWEEK

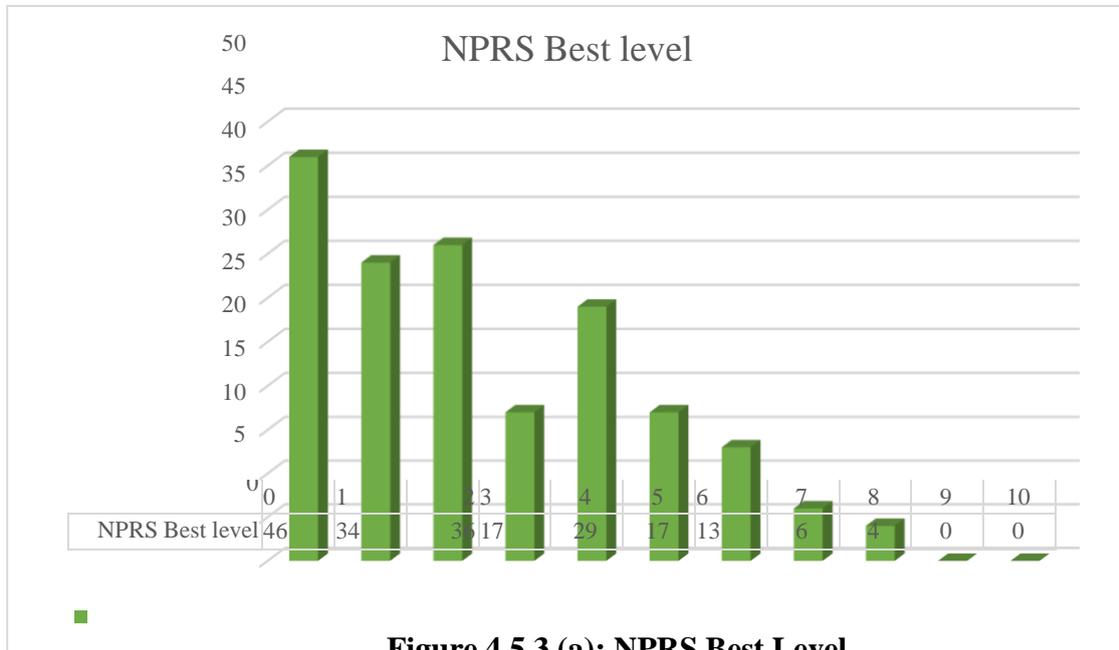


Figure 4.5.3 (a): NPRS Best Level

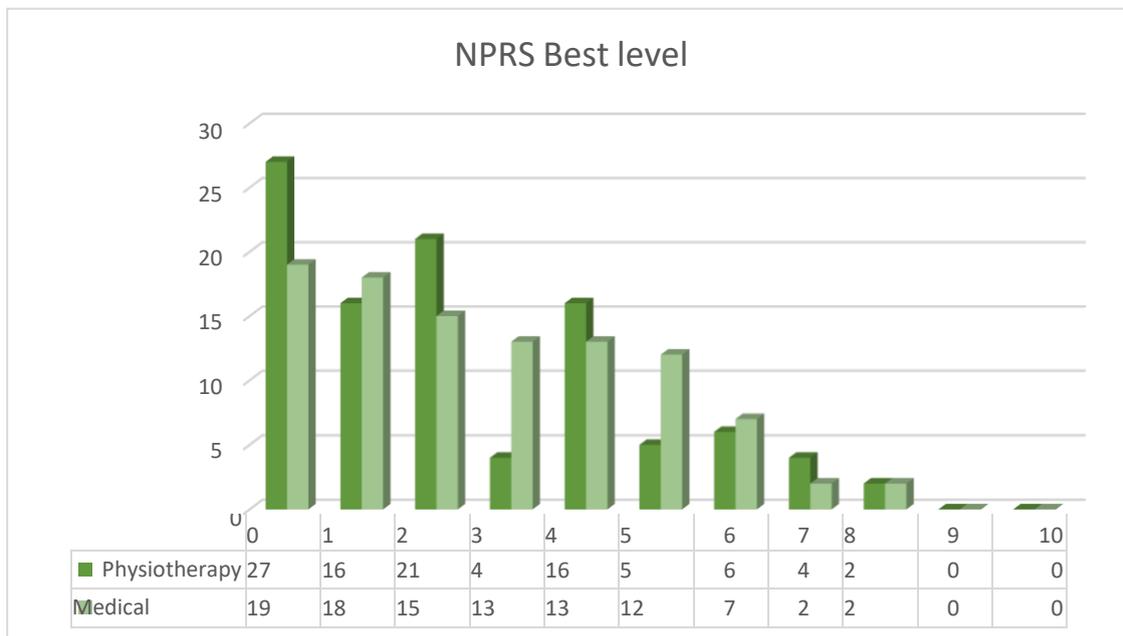
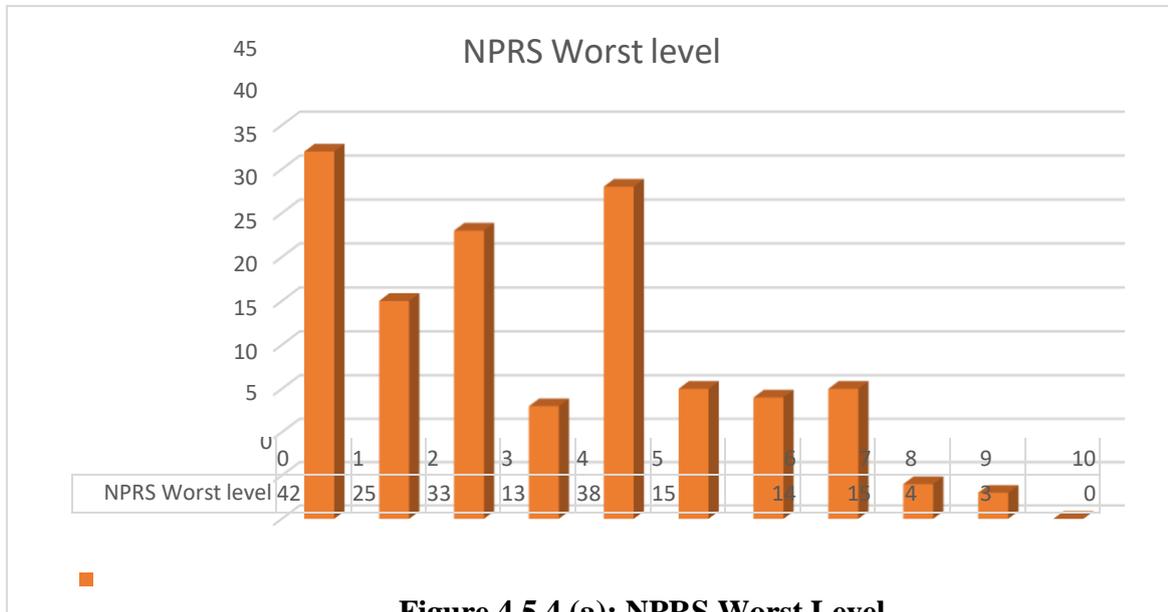
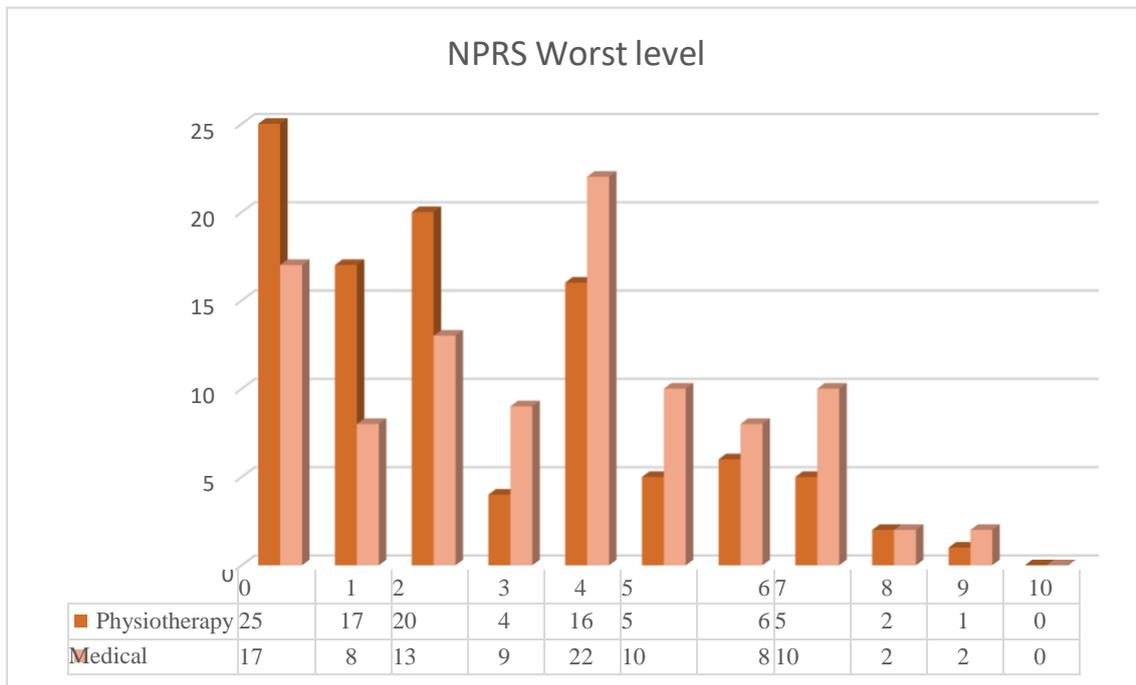


Figure 4.5.3 (b): Comparison of NPRS Best level between physiotherapy and medical students

**4.5.4 How would you rate your WORST LEVEL of pain during LASTWEEK**



**Figure 4.5.4 (a): NPRS Worst Level**



**Figure 4.5.4 (b): Comparison of NPRS Worst level between physiotherapy and medical students**

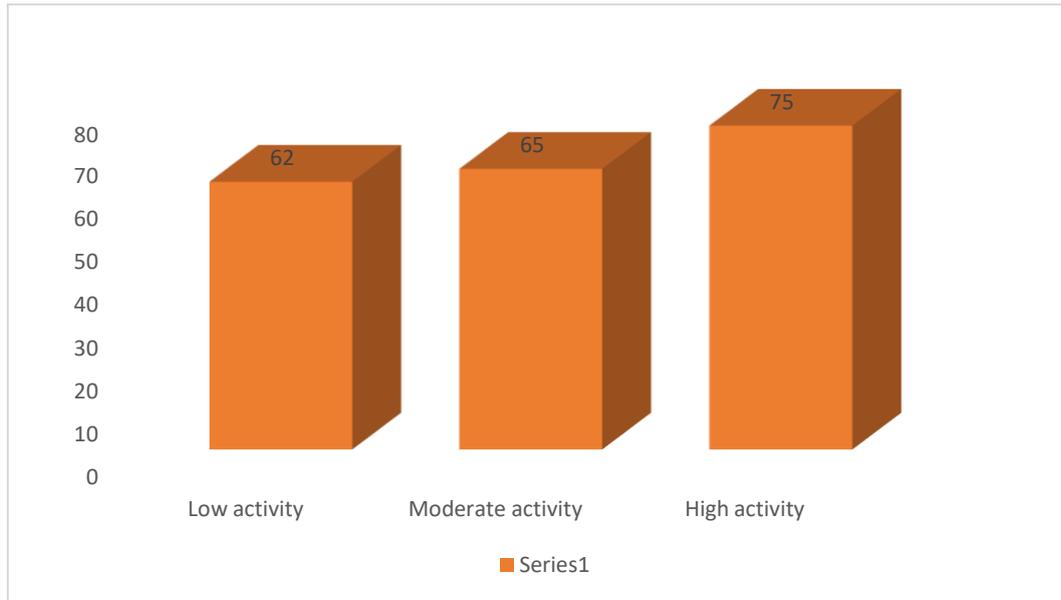
## 4.6 Physical activity level

Physical activity level of all participants was 37.12% (n=75) high, 32.17% (n=65) moderate and 30.69% (n=62) low. Among them in physiotherapy students 27.72% (n=28) did high physical activity, 39.60% (n=40) moderate and 32.67% (n=33) low physical activity. In medical students 46.53% (n=47) did high, 24.75% (n=25) moderate and 28.71% (n=29) low level of physical activity.

**Table 4.6: Physical activity level frequency distribution**

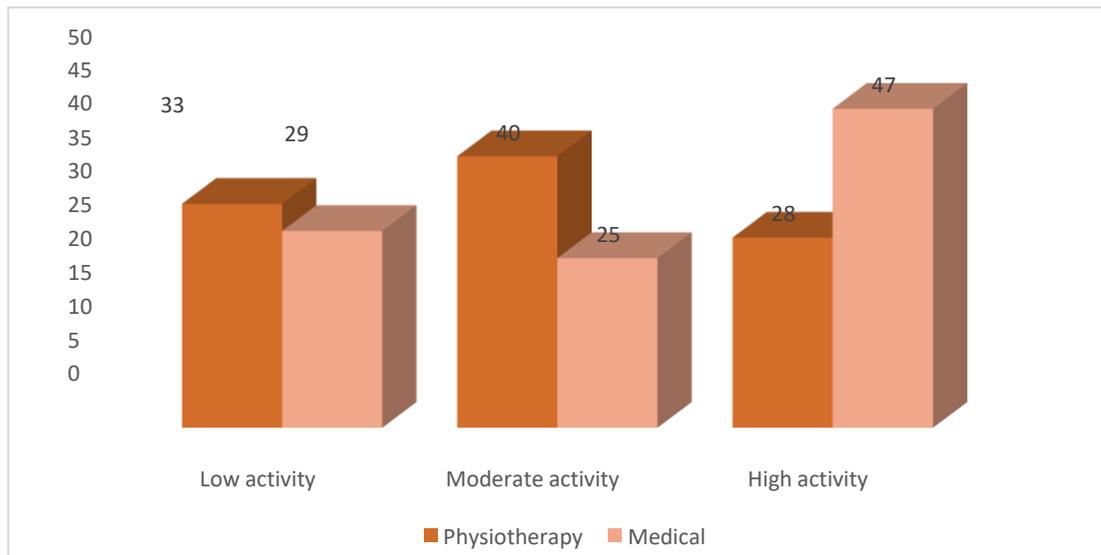
|                   | Physiotherapy | Medical | Total |
|-------------------|---------------|---------|-------|
| Low activity      | 33            | 29      | 62    |
| Moderate activity | 40            | 25      | 65    |
| High activity     | 28            | 47      | 75    |
|                   |               |         | 202   |

Figure 4.6 (a) represents level of physical activity of all participants of medical and physiotherapy students. And also observed that high physical activity was done by most of the students 37.12% (n=75).



**Figure 4.6 (a): Physical activity level of all participants**

Figure 4.6 (b) demonstrated physical activity comparison between physiotherapy and medical students. And also observed that high physical activity in medical students was higher than physiotherapy students; whereas moderate activity in physiotherapy students was higher than medical students.



**Figure 4.6 (b): Comparison of physical activity between physiotherapy and medical students**

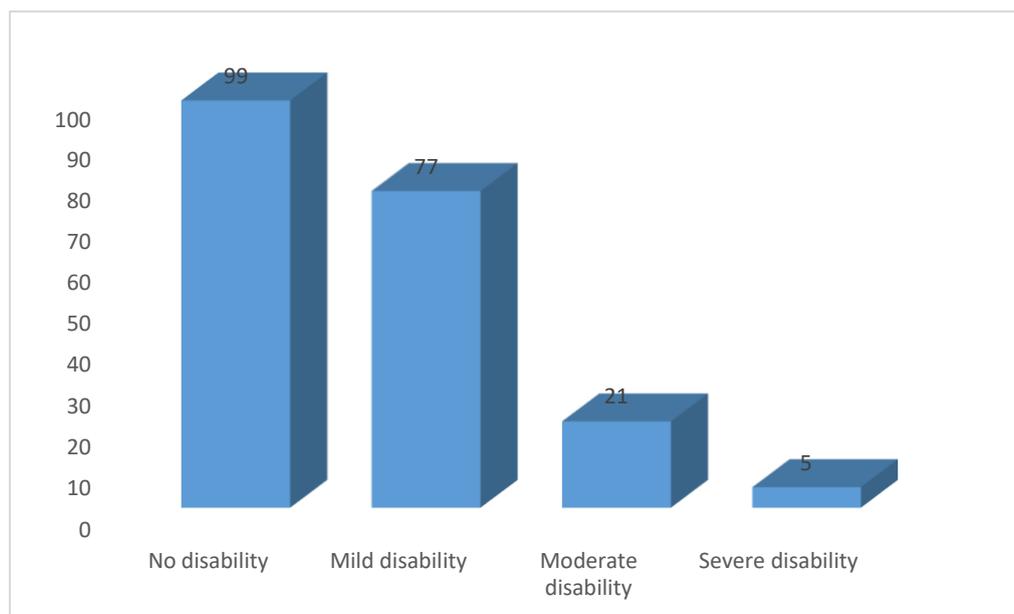
### 4.7 Disability level

Disability level of all participant was measured with OSWESTRY scale. Disability level of all participants 49.00% (n=99) has no disability, 38.12% (n=77) moderate disability, 10.39% (n=21) moderate disability and 2.47% (n=5) severe disability. Among them in physiotherapy students 54.45% (n=55) has no disability, 36.63% (n=37) mild disability, 6.93% (n=7) moderate disability and 1.98 (n=2) severe disability. In medical students 43.56% (n=44) no disability, 39.60% (n=40) mild disability, 13.86% (n=14) moderate disability and 2.97% (n=3)severe disability.

**Table 4.7: Disability level frequency distribution**

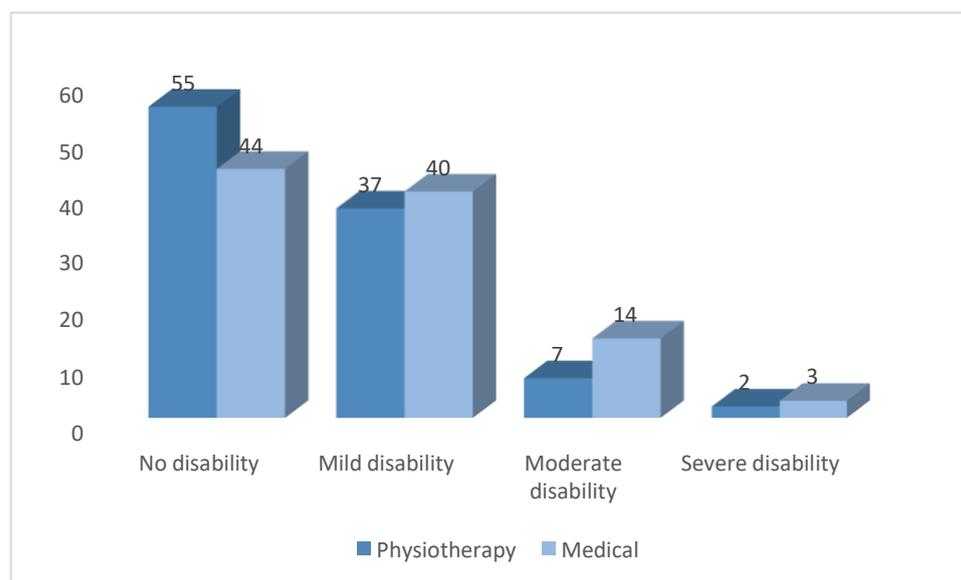
|                     | Physiotherapy | Medical | Total |
|---------------------|---------------|---------|-------|
| No disability       | 55            | 44      | 99    |
| Mild disability     | 37            | 40      | 77    |
| Moderate disability | 7             | 14      | 21    |
| Severe disability   | 2             | 3       | 5     |
|                     |               |         | 202   |

Figure 4.7 (a) demonstrated level of physical activity of all the participants of medical and physiotherapy students.



**Figure 4.7 (a): Disability level of all participants**

Figure 4.7 (b) shows the disability level comparison between physiotherapy and medical students. And also observed that the no disability in physiotherapy students was slightly higher than medical students and mild disability in medical students was slightly higher than physiotherapy students.



**Figure 4.7 (b): Comparison of Disability level between physiotherapy and medical students**

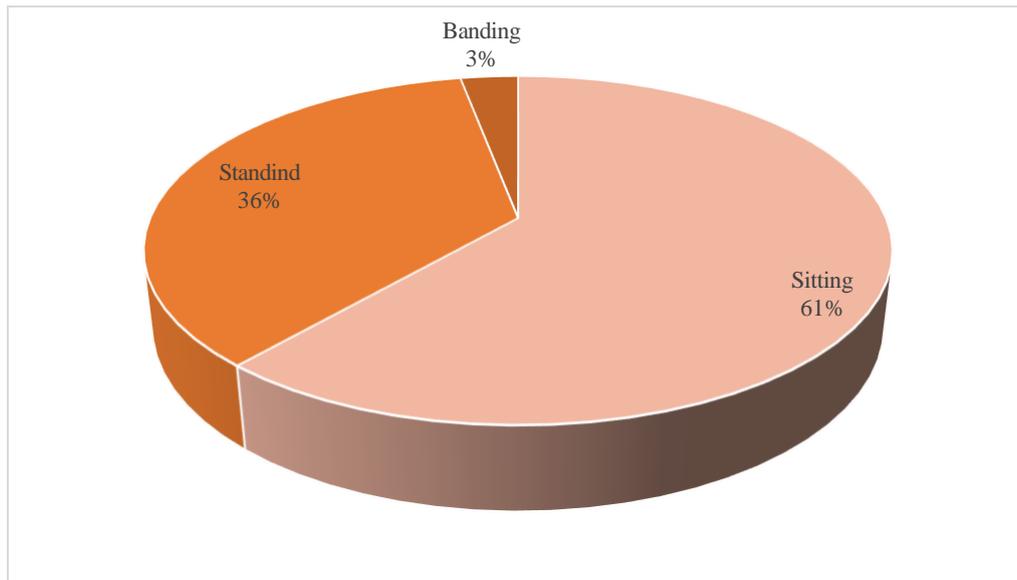
#### 4.8 Which position do you maintain most of the time during work

Among all the participants in relation to which position they maintain most of the time during work 61.38% (n=124) students use sitting position, 35.64% (n=72) students use standing position and only 2.97% (n=6) students use bending position for most of the time during work.

**Table 4.8: Position frequency distribution**

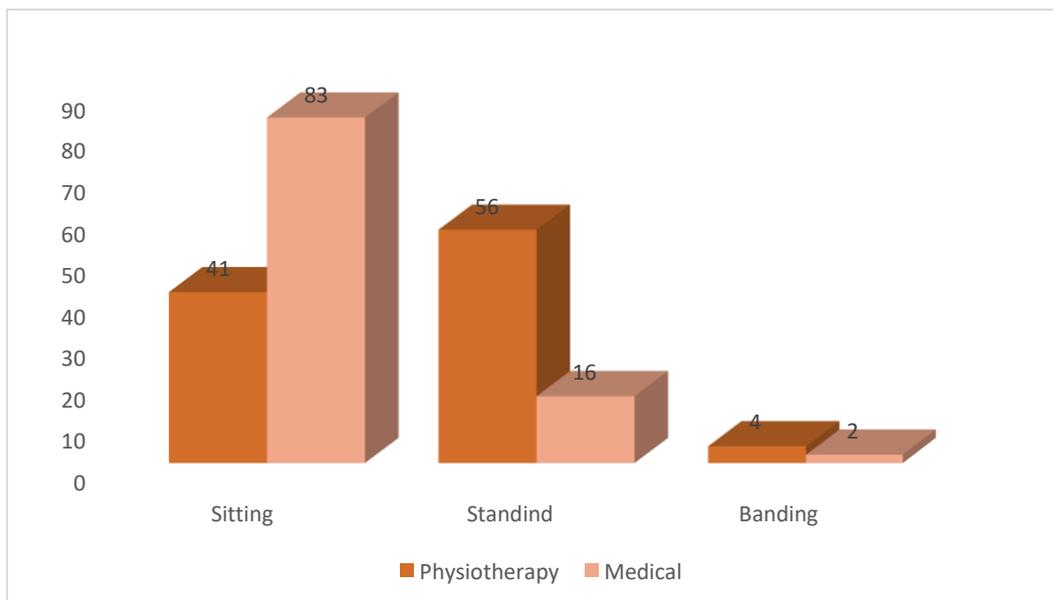
| Position | Physiotherapy | Medical | Total |
|----------|---------------|---------|-------|
| Sitting  | 41            | 83      | 124   |
| Standing | 56            | 16      | 72    |
| Banding  | 4             | 2       | 6     |
|          |               |         | 202   |

Figure 4.8 (a) presents which position they maintain for most of the time during work of all the participants. It is also observed that Sitting position was more likely used by most of the participants. And bending position used by only 2.97% (n=6) participants.



**Figure 4.8 (a): Mostly maintained position of all participants**

Figure 4.8 (b) presents comparison of which position they used during most of the time during work between the physiotherapy and medical students. And also observed that sitting position was more likely used by medical students compared to physiotherapy students. And standing position was more likely used by physiotherapy students compared to medical students.



**Figure 4.8 (b): Comparison of mostly maintained Position between physiotherapy and medical**

**students**

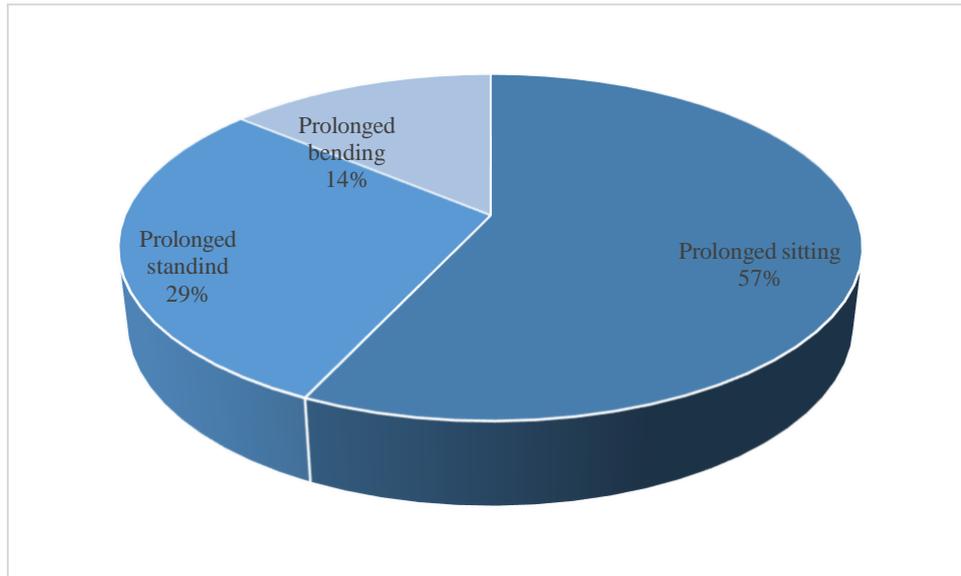
#### 4.9 What factor makes symptoms worse at work place

Among all the participants of physiotherapy and medical students 56.93%(n=115) students have worse symptoms in Prolonged Sitting; 29.20% (n=59) students have worse symptoms in Prolonged Standing and 13.86% (n=28) students have worse symptoms in Prolonged Bending.

**Table 4.9: Worse work place factor frequency distribution**

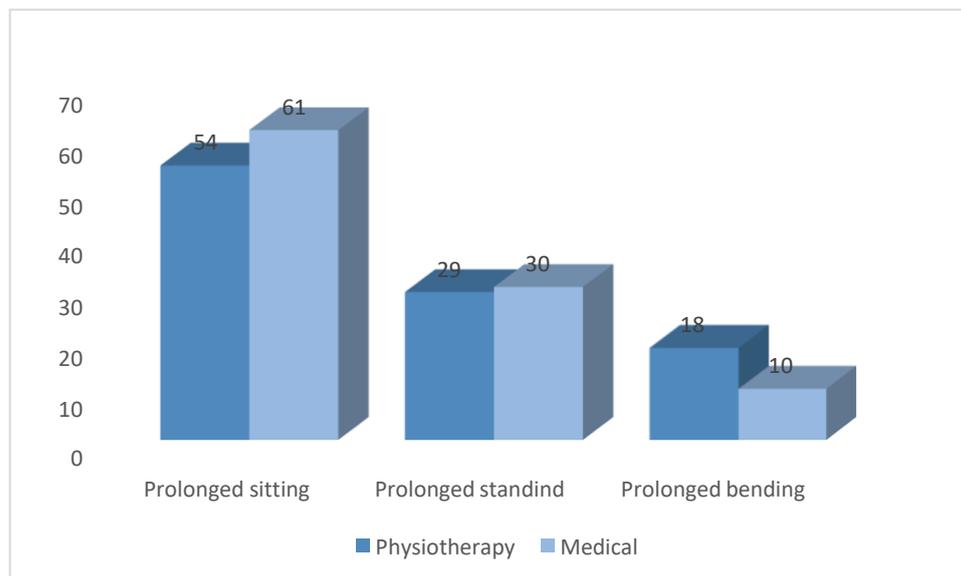
| Position           | Physiotherapy | Medical | Total |
|--------------------|---------------|---------|-------|
| Prolonged Sitting  | 54            | 61      | 115   |
| Prolonged Standing | 29            | 30      | 59    |
| Prolonged Bending  | 18            | 10      | 28    |
|                    |               |         | 202   |

Figure 4.9 (a) shows that the what factor makes symptoms worse at work place in all 202 participants in which 56.93%(n=115) students have worse symptoms in Prolonged Sitting; 29.20% (n=59) students have worse symptoms in Prolonged Standing and 13.86% (n=28) students have worse symptoms in Prolonged Bending. And also observed that most of the students 56.93% (n=115) has worse symptoms in prolonged Sitting.



**Figure 4.9 (a): Worse work place factor of all participants**

Figure 4.9 (b) represents comparison of which factor become worse at work place between the physiotherapy and medical students. Also observed that Prolonged Sitting position was slightly higher makes worse symptoms at work place in medical students compared to physiotherapy students.



**Figure 4.9 (b): Comparison of worse Work place factor between physiotherapy and medical students**

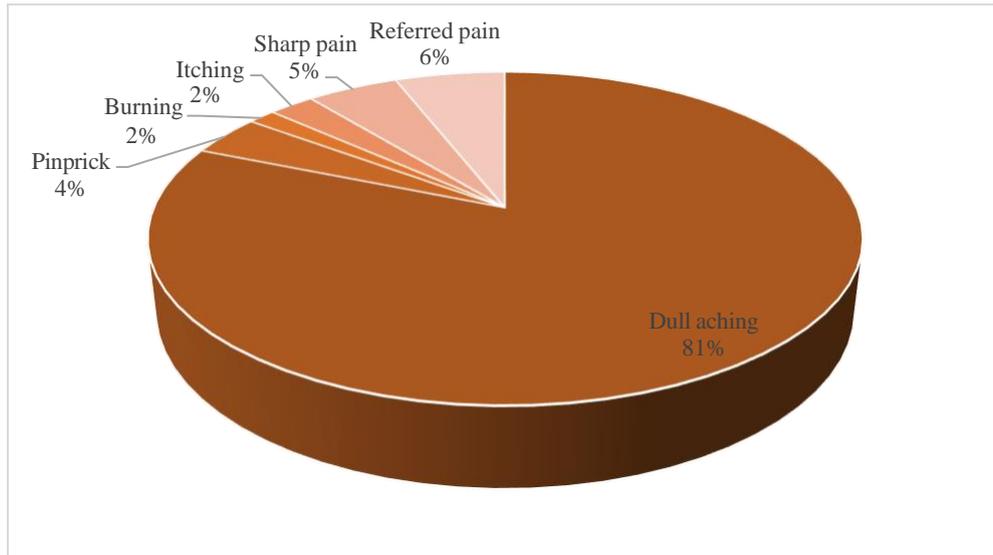
#### 4.10 Which type of pain do you feel

Among all the participants of physiotherapy and medical students 81.11% (n=164) students feel Dull aching type of pain; 3.96% (n=8) students feel Pinprick type of pain; 1.48% (n=3) students feel Burning type of pain; 2.47% (n=5) feel Itching type of pain; 4.95% (n=10) feel Sharp pain and 5.94% (n=12) feel Referred pain.

**Table 4.10: Type of pain frequency distribution**

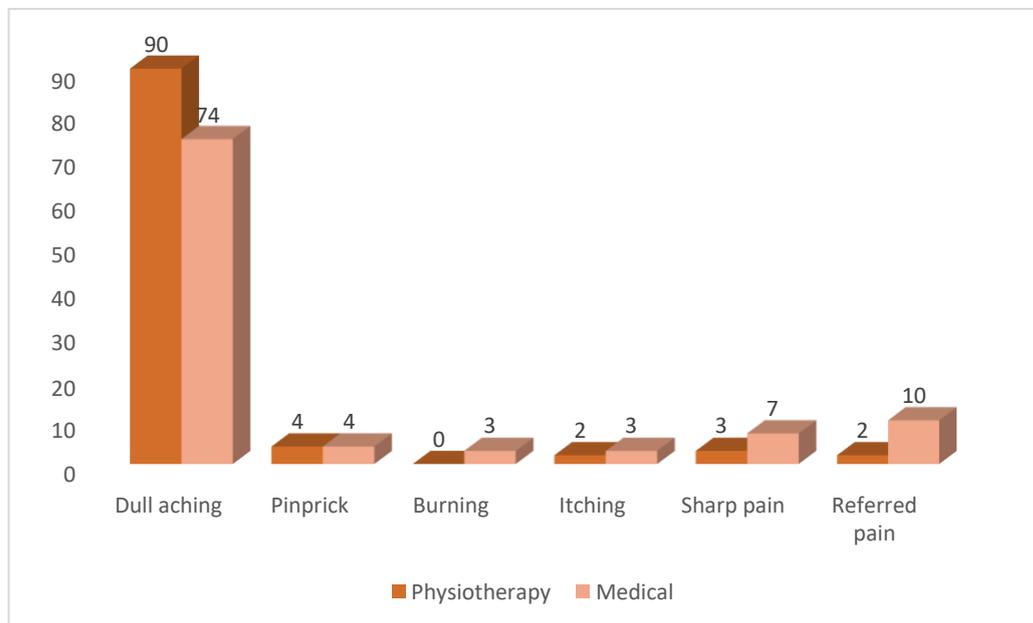
| Type of pain  | Physiotherapy | Medical | Total |
|---------------|---------------|---------|-------|
| Dull aching   | 90            | 74      | 164   |
| Pinprick      | 4             | 4       | 8     |
| Burning       | 0             | 3       | 3     |
| Itching       | 2             | 3       | 5     |
| Sharp pain    | 3             | 7       | 10    |
| Referred pain | 2             | 10      | 12    |
|               |               |         | 202   |

Figure 4.10 (a) demonstrate that which type of pain participants felt. Also observed that most of all the participants 81.11% (n=164) had Dull aching type of pain. And only 1.48% (n=3) participants had Burning type of pain.



**Figure 4.10 (a): Type of pain of all participants**

Figure 4.10 (b) represents the comparison of type of pain between medical and physiotherapy students. And also observed that Dull aching type of pain was slightly higher in physiotherapy students compared to medical students. And in physiotherapy students nobody students feel Burning type of pain



**Figure 4.10 (b): Comparison of Type of pain between medical and physiotherapy students**

### 4.11 Duration of pain

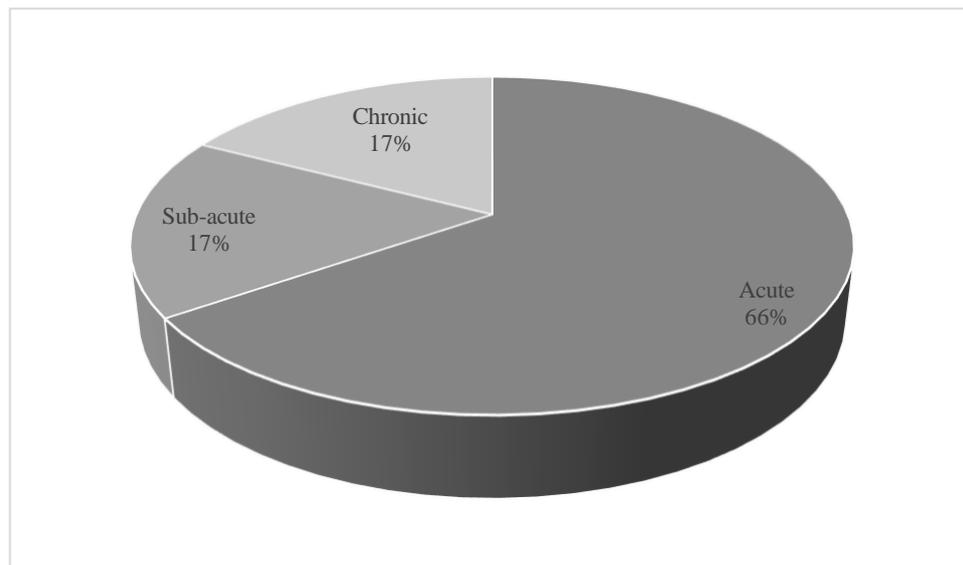
Among all the participants in relation to duration of pain 65.34% (n=132) students experienced Acute LBP; 17.32% (n=35) students experienced Sub-acute LBP and 17.32% (n=35) students experienced Chronic LBP.

**Table 4.11: Duration of pain frequency distribution**

| Duration of pain | Physiotherapy | Medical | Total |
|------------------|---------------|---------|-------|
| Acute            | 80            | 52      | 132   |
| Sub-acute        | 13            | 22      | 35    |
| Chronic          | 8             | 27      | 35    |
|                  |               |         | 202   |

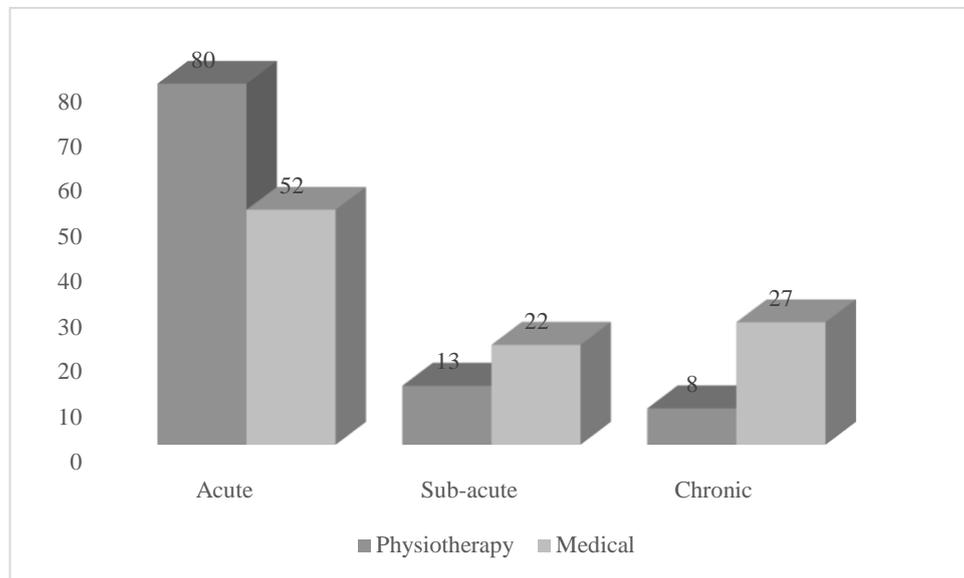
Figure 4.11(a) presents duration of pain of all participants of physiotherapy and medical students.

Also observed that most of all the students 65.34% (n=132) experienced Acute LBP.



**Figure 4.11 (a): Duration of pain of all participants**

Figure 4.11 (b) shows comparison of duration of pain between physiotherapy and medical students. It was observed that physiotherapy students are more likely to experienced Acute LBP than medical students. And medical students are more likely to experienced Chronic LBP than physiotherapy students.



son of Duration of pain between physiotherapy and medical students

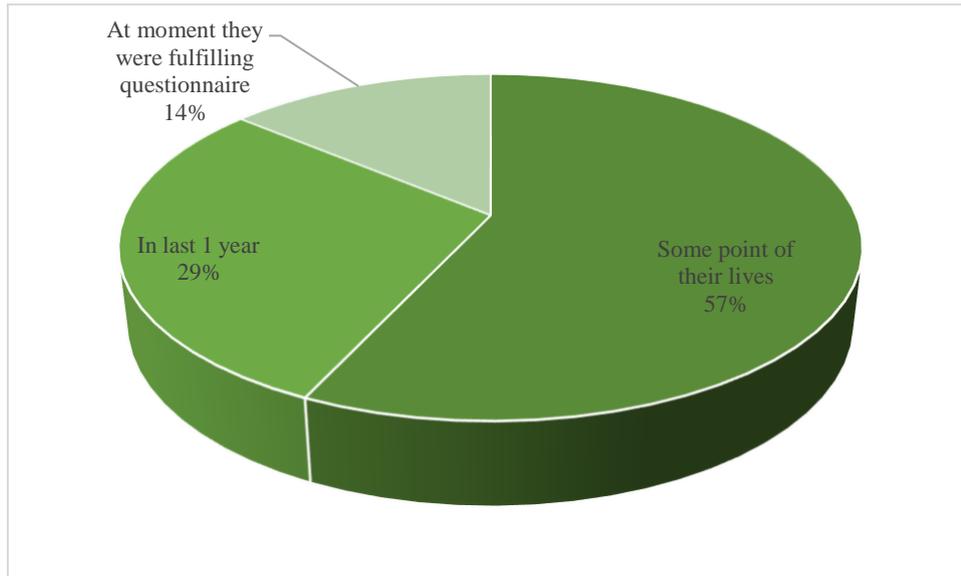
#### 4.12 When you have ever suffered LBP

Among all the participants in relation to when suffered from LBP, 56.93% (n=115) students had LBP at some point of their lives; 29.20% (n=59) in last 1 year and 13.86% (n=28) of them reported that they were suffering from LBP At the time they were fulfilling questionnaire.

**Table 4.12: When suffered from LBP frequency distribution**

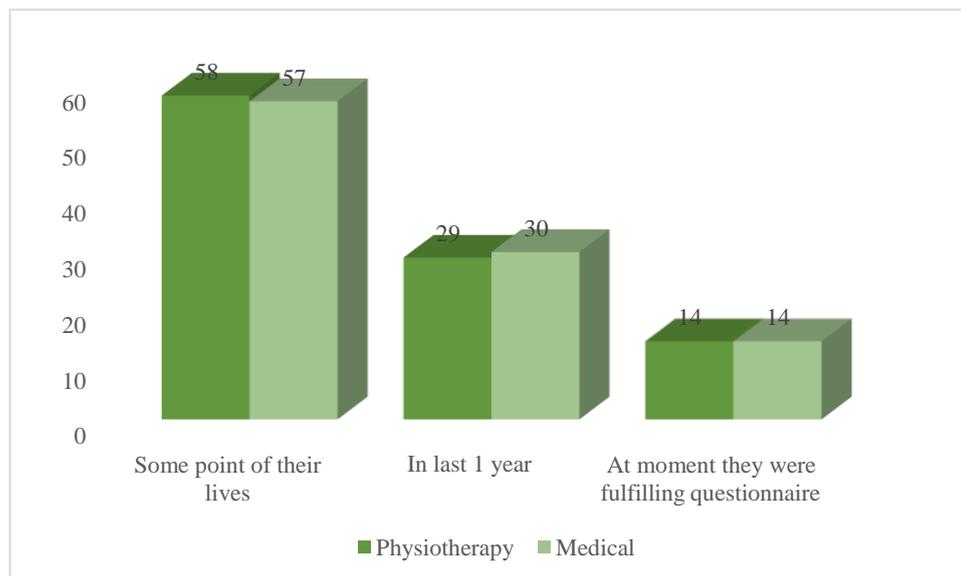
|                                              | Physiotherapy | Medical | Total |
|----------------------------------------------|---------------|---------|-------|
| Some point of their lives                    | 58            | 57      | 115   |
| In last 1 year                               | 29            | 30      | 59    |
| At moment they were fulfilling questionnaire | 14            | 14      | 28    |
|                                              |               |         | 202   |

Figure 4.12 (a) presents when they were suffered from LBP of all the participants of physiotherapy and medical students. And also observed that students are more likely to had LBP at some point of their lives 56.93% (n=115).



**Figure 4.12 (a): When suffered from LBP of all participants**

Figure 4.12 (b) shows comparison of when they were suffered from LBP between physiotherapy and medical students. It was observed that physiotherapy students and medical students reported almost equally prevalence of LBP.



**Figure 4.12 (b): Comparison of When suffered from LBP between physiotherapy and medical students**

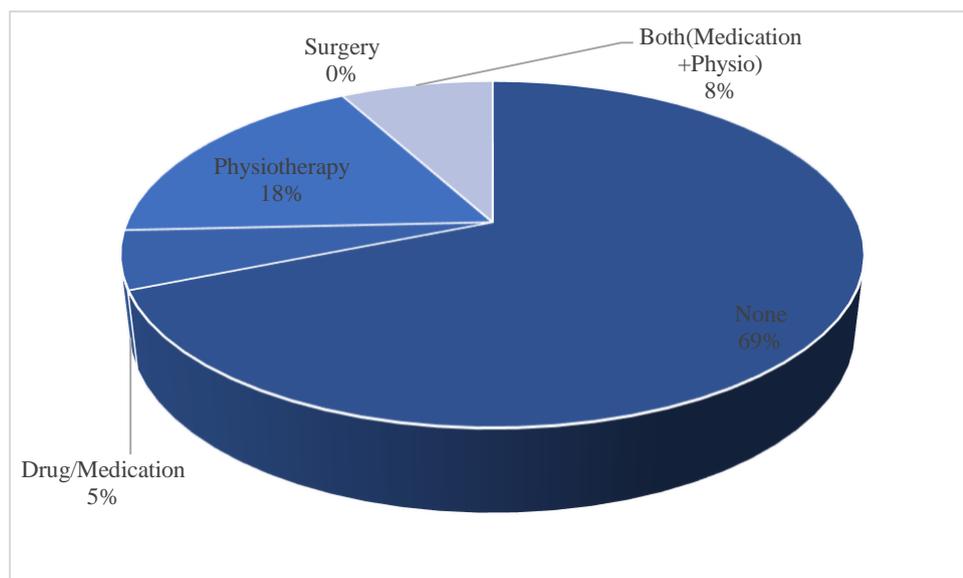
### 4.13 Treatment taken by those with LBP

Among all the participants in relation to treatment taken fore LBP; 68.81% (n=139) students takes none treatment for LBP, 5.44% (n=11) students takes medication/drugs, 17.82% (n=36) students takes physiotherapy treatment, 7.92% (n=16) students takes both medicine andphysiotherapy.

**Table 4.13 (a): Treatment taken by those with LBP frequency distribution**

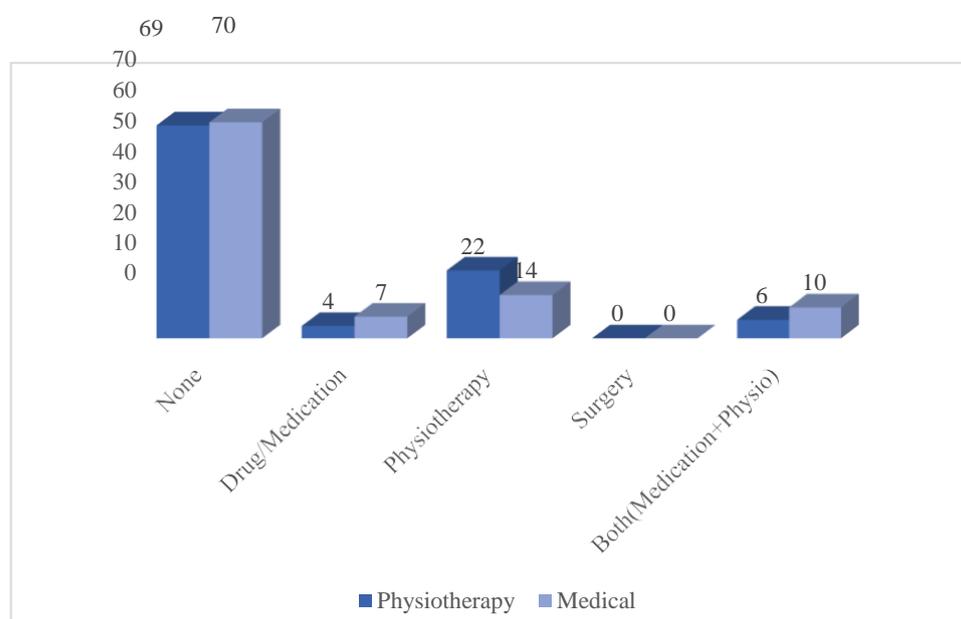
|                            | Physiotherapy | Medical | Total |
|----------------------------|---------------|---------|-------|
| None                       | 69            | 70      | 139   |
| Drug/Medication            | 4             | 7       | 11    |
| Physiotherapy              | 22            | 14      | 36    |
| Surgery                    | 0             | 0       | 0     |
| Both<br>(Medicine+Physiyo) | 6             | 10      | 16    |
|                            |               |         | 202   |

Figure 4.13 (a) shows treatment taken by those participants with LBP. It observed that 68.81% (n=139) students take none treatment. And also observed that none of the participated did surgery for LBP.



**Figure 4.13 (a): Treatment taken by those with LBP of all participants**

Figure 4.13 (b) presents comparison of treatment taken by those with LBP between physiotherapy and medical students. It is observed that physiotherapy students were more likely to take physiotherapy treatment and less likely takes drugs/medication for LBP compared to medical students.



**Figure 4.13 (b): Comparison of Treatment taken by those with LBP between physiotherapy and medical students**

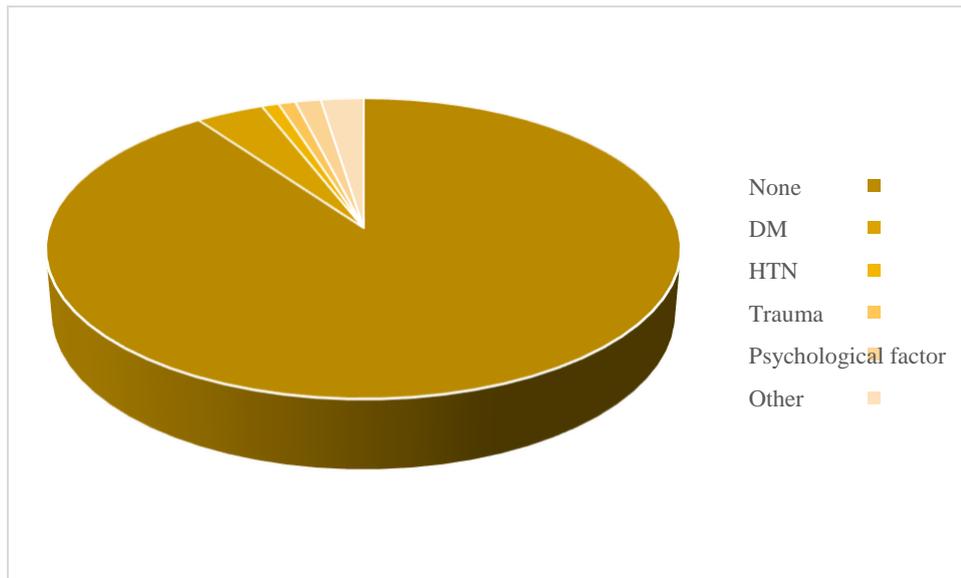
#### 4.14 Any related disease

Among all the participants in relation to any related disease 90.10% (n=182) students had none related disease, 3.96% (n=8) had DM, 0.99% (n=2) had HTN, 0.99% (n=2) had trauma, 1.48% (n=3) had Psychological factor and 2.47% (n=5) had other related disease.

**Table 4.14: Related disease frequency distribution**

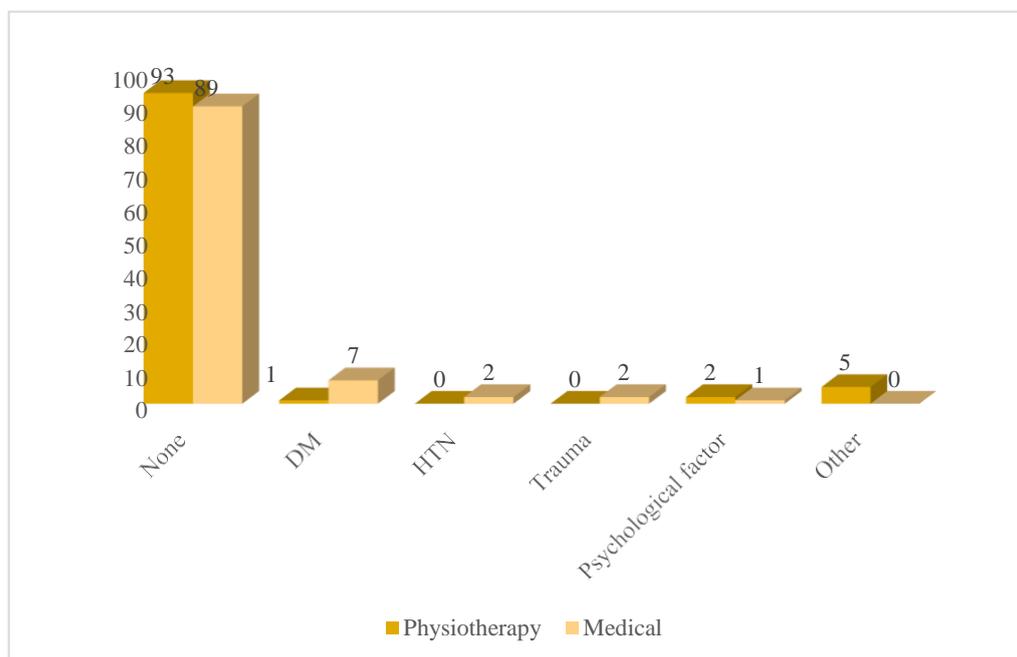
|                      | Physiotherapy | Medical | Total |
|----------------------|---------------|---------|-------|
| None                 | 93            | 89      | 182   |
| DM                   | 1             | 7       | 8     |
| HTN                  | 0             | 2       | 2     |
| Trauma               | 0             | 2       | 2     |
| Psychological factor | 2             | 1       | 3     |
| Other                | 5             | 0       | 5     |
|                      |               |         | 202   |

Figure 4.14 (a) shows any related disease of all participants of physiotherapy and medical students. It is observed that mostly all 90.10% (n=182) students had none related disease.



**Figure 4.14 (a): Related disease frequency of all participants**

Figure 5.14 (b) presents comparison of related disease between all the participants of physiotherapy and medical students.



**Figure 4.14 (b): Comparison of Related disease frequency between physiotherapy and medical students**

### 4.15 Study Place

Among all the participants of physiotherapy and medical students in relation to use of study place; 27.72% (n=56) students use Study table, 15.84% (n=32) students use Bed and 56.43% (n=114) students use both study table and bed.

**Table 4.15: Study place frequency distribution**

|             | Physiotherapy | Medical | Total |
|-------------|---------------|---------|-------|
| Study table | 20            | 36      | 56    |
| Bed         | 21            | 11      | 32    |
| Both        | 60            | 54      | 114   |
|             |               |         | 202   |

Figure 4.15 (a) shows that which study place they use of all the participants of physiotherapy and medical students. It is observed that only 15.84% (n=32) students use bed for study place.

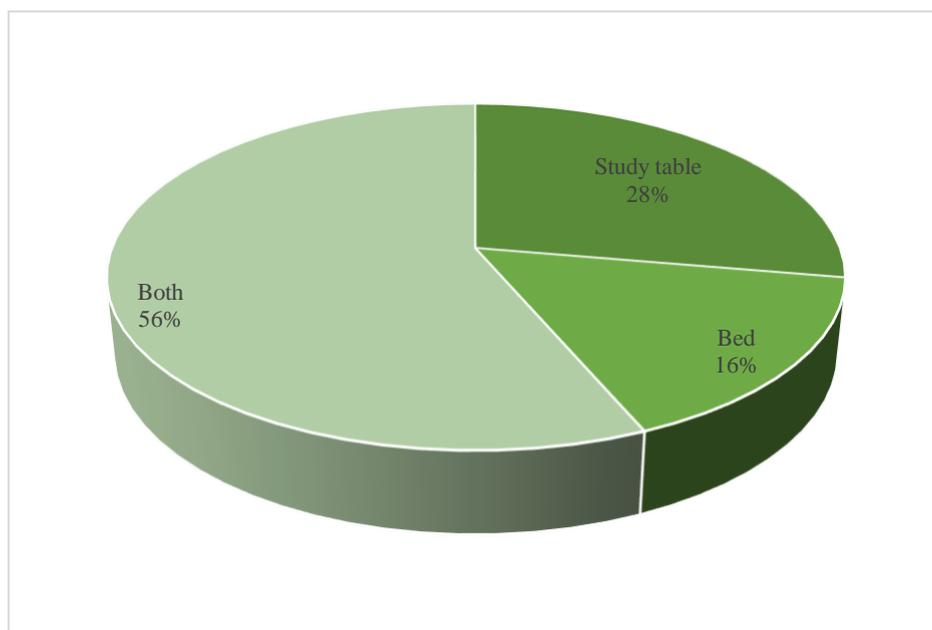
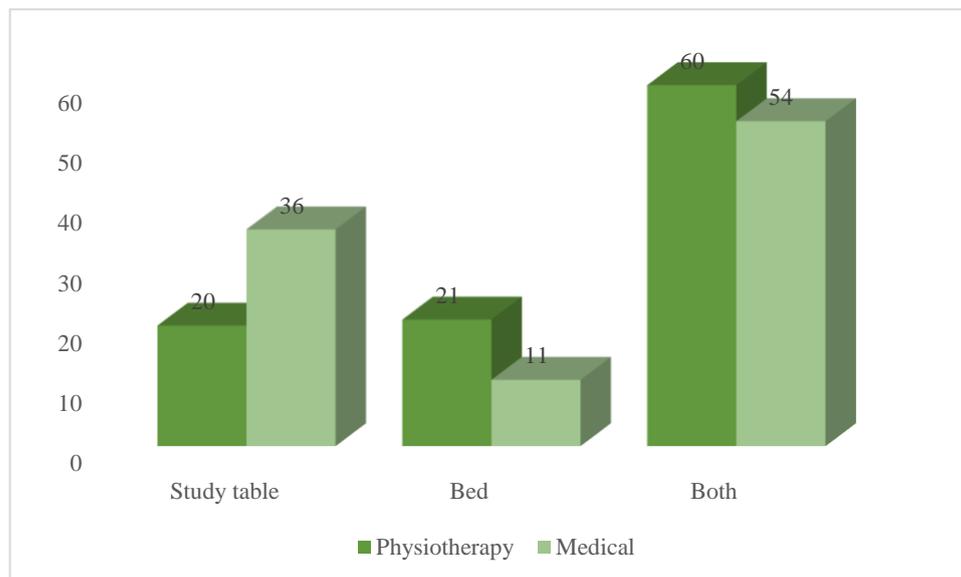


Figure 4.15 (a): Study place frequency of all participants

Figure 4.15 (b) presents comparison of study place used by students of physiotherapy and medical. It is observed that more number of medical students use study table as study place compared to physiotherapy students.



**Figure 4.15 (b): Comparison of Study place frequency between physiotherapy and medical students**

## DISCUSSION

This cross-sectional study aimed to verify the existence of a higher prevalence of LBP in physiotherapy students. For this, medical students were chosen as a comparative group. First, we noted that the prevalence of LBP was higher in physiotherapy students compared with medical students. When the variables course, length of study and female gender were put into a logistic regression model, we observed that undergraduate physiotherapy study was independently associated with having LBP. To the best of our knowledge, this was the first study that clearly demonstrated the association between undergraduate physiotherapy study and LBP.

There are many reports in the literature concerning the burden of work-related musculoskeletal injuries in physiotherapists [3–7]. Md Sabuj sheikh reported that 93.75% physiotherapist suffered from LBP and 7.25% physiotherapist had never suffered from LBP.

Nyland and Grimmer [15] carried out a cross-sectional study to evaluate the prevalence of LBP among physiotherapy students. They found a 1-week LBP prevalence of 27%, 1 month of 44%, 1 year of 63% and lifetime of 69% [15]. Also, they concluded that, compared to the first-year students, students at all other levels of study incurred a significantly elevated risk for LBP [15]. Finally, the authors compared their results with other prevalence studies and discussed the possibility of the undergraduate physiotherapy study being a risk factor for LBP [15]. Our study clearly demonstrated this association, observing that the undergraduate physiotherapy program involves 2.51 times greater chance of experiencing LBP.

In our study, shown that comparison between the gender of the participants of physiotherapy and medical students. In Physiotherapy stream female are more than male students whereas, in medical stream male students are more than female students. It is also observed that the proportion of the female were higher in the Physiotherapy students than medical students and proportion of the male were higher in the medical students than in Physiotherapy Students. In

study of year of participants represent study year of all the participants of physiotherapy and medical students. In that observed that greatest no. of final year students were participated in this study and demonstrated study year comparison of physiotherapy and medical students. And also observed that from physiotherapy stream internship students more participated than final year students. whereas, from medical stream final year students were more participated than internship students.

From the study, we have found that among all participants 27.5% (n=55) experience pain 0 in the NPRS scale (0 to 10). In the Physiotherapy students 33.66% (n=34) and in medical students 20.79% (n= 21) experience pain 0 in NPRS scale.

Physical activity level of all participants was 37.12% high, 32.17% moderate and 30.69% low. Among them in Physiotherapy students 27.72% did high physical activity, 39.60% moderate and 32.67% low physical activity. In medical students 46.53% did high, 24.75% moderate and 28.71% low level of physical activity.

We also measured Disability level of all participants with OSWESTRY scale. Disability level of all participants 49.00% has no disability, 38.12% has mild disability, 10.39% moderate disability and 2.47% severe disability. Among them in Physiotherapy Students 54.45% has no disability, 36.63% mild disability, 6.93% moderate disability and 1.98% severe disability. In medical students 43.56% has no disability, 39.60% mild disability, 13.86% moderate disability and 2.97% severe disability.

Studies with physiotherapists who have already reported a 1-year prevalence of LBP. These professionals routinely perform some activities that could be risk factors for development of back pain like manual therapy such as soft tissue mobilization, transferring dependent patients, assisting patients in gait, providing manual resistance, assisting with mat activities, and lifting heavy and cumbersome equipment; Who conducted a 1-year prospective study

with physiotherapists in order to verify the incidence of work-related musculoskeletal injuries in these professionals. Also, they observed that patient transfers and repositioning were the main risk factors for LBP. Our study showed the increased likelihood of LBP among the advanced students, who are more exposed to practical activities.

One important limitation of our study is that, as it was a cross-sectional study, we were not able to observe accurately if there is an increasing incidence of LBP during the program. It was observed that students with five or more semesters had higher prevalence of LBP. This suggests that there is an increased risk for advanced students, who most often are exposed to practical activities. Also, we did not intend to identify which activities in the course were associated with the development of LBP. Finally, further studies could demonstrate if preventive activities and educational interventions can decrease the risk for developing LBP among these students.

## **CLINICAL IMPLICATION**

### **CLINICAL IMPLICATION:**

To reduce the prevalence, progression and burden of LBP among physiotherapy and medical students, a greater emphasis should be placed on ergonomics education, regular physical exercise and to minimize the occurrence of work-related musculoskeletal problems and reduce the chance of low back pain and other occupational stress.

## **LIMITATION AND FUTURE PROSPECTS**

### **7.1 LIMITATIONS:**

1. Small sample size.
2. Study population was also small, we included only 101 physiotherapy 101 medical students.
3. We found prevalence for only one musculoskeletal problem i.e. low back pain.
4. We found prevalence for only Bachelor students.

### **7.2 FUTURE PROSPECTS:**

1. This study can be conducted with a larger sample group for survey.
2. Study can be done on larger population E.g. For India.
3. Prevalence of other musculoskeletal problems also can be found.
4. Prevalence of Low Back Pain can be found in other students also. E.g. Dental students, Homeopathic students, Pharmacy students, Nursing students and other paramedical or Non-medical students

## **CONCLUSION**

### **CONCLUSION:**

LBP is a very frequently occurring phenomenon. It has high prevalence among physiotherapy students. Individual risk factor was noted in this research. Physiotherapy students are vulnerable to back pain problem during the course of their work routine. The physiotherapy students are more likely to have LBP in a sample composed of medical and physiotherapy students. The length of course exposure also is associated with the presence of LBP. All students having different type of LBP and in that Dull

aching type and Acute LBP was slightly higher in Physiotherapy Students compared to medical students. According to NPRS scale, physiotherapy students having more LBP than the medical students and according to maintain position most of time during work, the Physiotherapy students having more pain than medical students due to maintain standing position for long time. Findings suggest that preventive activities should be performed during the undergraduate physiotherapy program in order to alleviate or minimize the impact of LBP in these students.

## **REFERENCE**

1. Manek NJ, MacGregor AJ et al., Epidemiology of back disorders: prevalence, risk factors, and prognosis. *Current opinion in rheumatology*. 2005 mar 1; 17(2): 134-40.
2. Gupta G, Sharma A (2018) Prevalence of Low Back Pain among Higher Secondary School Teacher of Kanpur, India. *Journal of Orthopedic Physiotherapy*. 2018 September 20 1 (1): 103.
3. Magalhães MO et al., The short-term effects of graded activities versus physiotherapy in patient with chronic low back pain: a randomized controlled trial. *Manual therapy*. 2015 Aug 1; 20(4):603-9.
4. Burton AK. European guidelines for prevention in low back pain. COST B<sub>13</sub> Working Group. 2004: 1-53.
5. Frymoyer JW, Akeson W et al: Clinical perspectives. In Frymoyer JW, Gordon SL, editors: new perspectives in low back pain, Park Ridge, IL, 1989, American Academy of Orthopedic Surgeons.
6. Waddell G: The back pain revolution, New York, 1998, Churchill Livingstone.
7. Beattie P: Current understanding of lumbar intervertebral disc degeneration: a review with emphasis upon etiology, pathophysiology, and lumbar magnetic resonance imaging findings. *J Orthop Sports Phys Ther* 38:329-340, 2008.
8. Hu SS, Tribus CB, Diab M, et al: Spondylolisthesis and spondylolysis. *J Bone Joint Surg Am* 90:656-671, 2008.
9. Saal JA: Natural history and nonoperative treatment of lumbar disc herniation. *Spine* 21(24S):2S-9S,

- 1996.
10. Macnac I: Backache, Baltimore, 1977, Williams & Wilkins.
  11. Odole AC et al., Low back pain at work: knowledge and attitude of sectional heads at the university collage hospital, Ibadan. African Journal of Physiotherapy and Rehabilitation Sciences. 2011; 3(1):28-35.
  12. Beyen TK et al., Low back pain and associated factors among teachers in Gondar Town, North Gondar, Amhara region, Ethiopia. Occup Med Health Aff. 2013; 1(5).
  13. Tsega Ab, Mitslal k et al., “Prevalence and associated factors of Low back pain among teachers working at governmental primary schools in Addis Ababa, Ethiopia: A cross sectional study.
  14. Nurul I et al., Prevalence of Low back pain and its risk factors among school teachers. American journal of applied science. 2010; 7(5):634-9.
  15. Cieza A et al., ICF core sets for low back pain. Journal of rehabilitation Medicine. 2004 Aug. 1;36(0):69-74.
  16. Lima MG et al., Impact of chronic disease on quality of life among the elderly in the state of São Paulo, Brazil: a population-based study. Revista panamericana de Salud Pública. 2009; 25:314-21.
  17. D. Hoy, C. Bain et al., “A systemic review of the global prevalence of low back pain”, Arthritis and Rheumatism, vol. 64, no. 6, pp. 2028-2037, 2012. View at: [Publisher Site](#)  
| [Google Scholar](#)
  18. B. Duthey, priority Medicines for Europe and the World “A Public Health Approach to Innovation, Background paper 6.24, Low back pain, 2013, WHO, Geneva, Switzerland, 2017.
  19. D. Hoy, L. March et al., “The global burden of low back pain: estimates from the Global Burden of Disease 2010 Study”, Annals of the Rheumatic Diseases, vol. 73, no. 6, pp. 968-974, 2014. View at: [Publisher Site](#) | [Google Scholar](#)
  20. A. L. Karunanayake, “Risk factors for chronic low back pain”, Community Medicine and Health Education, vol. 4, no. 2, p. 271, 2014. View at: [Google Scholar](#)

21. Bratton RL. Assessment and management of acute low back pain. *Am Fam Physician* 1999; 60:2299-308.
22. Ehrlich GE. Low back pain. *Bull World Health Organ* 2003; 81:671-6.
23. Punnett L et al. Estimating the global burden of low back pain attributable to combined occupational exposure. *Am J Ind Med.* 2005;48(6):459-469. doi: 10.1002/ajim.20232. View at: PubMed | Google Scholar | CrossRef
24. J. A. A. Fernandes, C. V. Genebra et al., Low back pain in schoolchildren: a cross-sectional study in a western city of São paulo state, Brazil, *Acta Orthopedica Brasileira*, vol. 23, no. 5, pp. 235-238, 2015. View at: Publisher Site | Google Scholar
25. D. Hoy, P. Brooks et al., The epidemiology of low back pain, *Best Practice and Research. Clinical Rheumatology*, vol. 24, no. 6, pp. 769-781, 2010. View at: PublisherSite | Google Scholar
26. Ship EM et al., Severe back pain among farmworker high school students from starr country, Texas:baseline results. *Annals of epidemiology.* 2007 feb. 1; 17(2):132-41.
27. Shah s et al., Prevalence of low back pain and its associated risk factors among doctors in surat. *Int J Heal Sci Res.* 2012 Mar. 28; 2:91-102
28. Tuomi K et al., Prevalence and incidence rates of diseases and work ability in different work categories of municipal occupations. *Scandinavian journal of work, environment & health* 1991 Jan. 1:67-74.
29. Nagasu M et al., Prevalence and risk factors for low back pain among professional cooks working in school lunch services. *BMC public health.* 2007 Dec. 7(1):171.
30. Ogunbode AM et al., Prevalence of low back pain and associated risk factors amongst adult patients presenting to a Nigerian family practice clinic, a hospital-based study. *African journal of primary health care & family medicine.* 2013;5.
31. Feldman DE. Risk Factors for Development of LBP in adolescents. *Am J Epidemiol* 2001; 154:30-6
32. I. Calvo-Muñoz et al., Prevalence of low back pain in children and adolescents: a meta-analysis, *BMC*

- Pediatrics, vol. 13, no. 1, p. 14, 2013. View at: [Publisher Site](#) | [Google Scholar](#)
33. R. N. V. Furtado, L. H. Ribeiro et al., Nonspecific low back pain in young adults: associated risk factors,” *Revista Brasileira de Reumatologia*, vol. 54, no. 5, pp. 371- 377, 2014. View at: [Publisher Site](#) | [Google Scholar](#)
34. Wong TS Teo N et al., Prevalence and risk factors associated with low back pain among health care providers in a district hospital. *Malaysian Orthopaedic Journal*. 2010; 4(2):23-8.
35. Campo M, Weiser S et al., Work- related musculoskeletal disorders in physicaltherapists: a prospective cohort study with 1-year follow-up. *Phys Ther*. 2008;88(5):608-619. doi: 10.2522/ptj.20070127. View at: [PMC free article](#) | [PubMed](#) | [CrossRef](#) | [Google Scholar](#)
36. Cromie JE, Robertson VJ et al., Work-related musculoskeletal disorder in physical therapists: prevalence, severity, risks, and responses. *Phys Ther*. 2000;80(4):336-351. View at: [PubMed](#) | [Google Scholar](#)
37. Mierzejewski M, Kumar S et al., Prevalence of low back pain among physical therapists in Edmonton, Canada. *Disabil Rehabil*. 1997;19(8):309-317. Doi: 10.3109/09638289709166544 View at: [PubMed](#) | [CrossRef](#) | [Google Scholar](#)
38. Molumphy M, Unger B et al., Incidence of work-related low back pain in physical therapists. *Phys Ther*. 1985;65(4):482-486. View at: [PubMed](#) | [Google Scholar](#)
39. West DJ, Gardner D et al., Occupational injuries of physiotherapists in North and Central Queensland. *Aust J Physiother*. 2001;47(3):179-186. View at: [PubMed](#) | [GoogleScholar](#)
40. Moroder P, Runer A et al., Low back pain among medical students. *Acta Orthop Belg*2011; 77:88-92.
41. Anand T, Tanwar S et al., Knowledge, attitude and level of physical activity among medical undergraduate students in Delhi. *Indian J Med Sci* 2011;65:133-42. View at: [PUBMED](#)
42. N. Aggarwal, T. Anand et al., Low back pain and associated risk factors among undergraduate students of a medical college in Delhi, *Education for Health*, vol. 26, no.2, pp. 103–108, 2013. View at: [Publisher Site](#) | [Google Scholar](#)

43. M. A. Alshagga, A. R. Nimer et al., Prevalence and factors associated with neck, shoulder and low back pains among medical students in a Malaysian Medical College, BMC Research Notes, vol. 6, no. 1, p. 244, 2013. View at: [Publisher Site](#) | [Google Scholar](#).
44. D. R. Smith, N. Wei et al., Musculoskeletal disorders among Chinese medical students, Kurume Medical Journal, vol. 52, no. 4, pp. 139-146, 2005. View at: [Publisher Site](#) | [Google Scholar](#).
45. Majra JP. Do our medical colleges inculcate health-promoting lifestyle among medical students: A pilot study from two medical colleges from southern India. Int J Prev Med. 2013;4:425-9.
46. Gopalkrishnan S, Ganeshkumar P et al., Prevalence of Overweight/Obesity among Medical students, Malaysia. Med J Malaysia 2012;67:442-4.
47. Tomita S, Aphorn S et al., Prevalence of risk factors of Low Back Pain among Thai and Myanmar migrant seafood processing factory workers in Samut Sakorn Province, Thailand. Ind Health 2010;48:283-91.
48. A. Falavigna, A. R. Teles, T et al., "Increased prevalence of low back pain among physiotherapy students compared to medical students," European Spine Journal, vol. 20, no. 3, pp. 500-505, 2011. View at: [Publisher Site](#) | [Google Scholar](#).

## **APPENDIXES**

### **APPENDIX 1**

#### **CONSENT FORM**

**Topic: increased prevalence of Low Back Pain among Physiotherapy students compared to medical students – A Cross Sectional study**

Email address:

Name of Participants:

---

Contact number:

---

Date of form submission:

---

I have been explained about the research done in which I agreed to participate. I know that I am giving this consent without any force. I can discontinue the study any time without any reason that I have been informed. My identity would not get disclosed in any other research. I do not expect any financial remuneration or benefit for my participation. I therefore, voluntarily agree to take part in this study.

I Agree

## APPENDIX 2

### DATA COLLECTION SHEET

Name (full name)

---

Age

---

Gender

Female  Male

Height (cm)

---

Weight (kg)

---

Address

---

---

Stream

Physiotherapy  Medical

Study year

Final year  Internship Collage name

---

Physically Handicap

Yes  No

Tobacco/Alcohol Use

Yes  No

## APPENDIX 3

### NPRS (Numerical Pain Rating Scale)

**0 – No pain**

**5 - Moderate pain 10 – Worst pain**

1. On a scale of 0 to 10, with 0 being no pain at all and 10 being the worst pain imaginable, how would you rate your pain RIGHT NOW?

0 1 2 3 4 5 6 7 8 9 10

2. On the same scale, how would you rate your USUAL LEVEL of pain during the LAST WEEK?

0 1 2 3 4 5 6 7 8 9 10

3. On the same scale, how would you rate your BEST LEVEL of pain during the LAST WEEK?

0 1 2 3 4 5 6 7 8 9 10

4. On the same scale, how would you rate your WORST LEVEL of pain during LAST WEEK?

0 1 2 3 4 5 6 7 8 9 10

## APPENDIX 4

### PHYSICAL ACTIVITY QUESTIONNAIRE(IPAq)

We are interested in finding out about the kinds of physical activities that people do as part of their everyday lives. The questions will ask you about the time you spend being physically active in the last 7 days. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport.

Think about all the **vigorous** activities that you did in **last 7 days**. **Vigorous** physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

1. During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling?

\_\_\_\_\_ **days per week**

No vigorous physical activities



**Skip to question 3**

2. How much time did you usually spend doing **Vigorous** physical activities on one of those days?

\_\_\_\_\_ **hours per day**

\_\_\_\_\_ **minutes per day**

Don't know  Not sure

Think about all the **moderate** activities that you did in **last 7 days**. **Moderate** activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

3. During the last **7 days**, on how many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.

\_\_\_\_\_ **days per week**

No moderate physical activities  **Skip to question 5**

4. How much time did you usually spend doing moderate physical activities on one of those days?

\_\_\_\_\_ **hours per day**

\_\_\_\_\_ **minutes per day**

Don't know/Not sure

Think about the time you spend **walking** in the **last 7 days**. This includes at work and at home, walking to travel from place to place, and any other walking that you have done solely for recreation, sport, exercise, or leisure.

5. During the last 7 days, on how many days did walk for at least 10 minutes at a time?

\_\_\_\_\_ **days per week**

No walking  **Skip to question 7**

6. How much time did you usually spend walking on one of those days?

\_\_\_\_\_ **hours per day**

\_\_\_\_\_ **minutes per day**

Don't know  Not sure

---

The last question is about the time you spent **sitting** on weekdays during the **last 7 days**. Including time spent at work, at home, while doing course work and during leisure time. This may include time spend sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.

7. During the last 7 days, how much time did you spend sitting on a week per day?

\_\_\_\_\_ **hours per day**

\_\_\_\_\_ **minutes per day**

Don't know/Not sure

**This is the end of the questionnaire, thank you for participating.**

## APPENDIX 5

### **MODIFIED OSWESTRY LOW BACK PAIN DISABILITY QUESTIONNAIRE**

This questionnaire has been designed to give your therapist information as to how your back pain has affected your ability to manage in everyday life. Please answer every question by placing a mark on the line that that best describes your condition today. We realize you may feel that two of the statements may describe your condition, but **PLEASE MARK ONLY THE ONE LINE WHICH MOST DESCRIBE YOUR CURRENT CONDITION.**

#### **1. Pain Intensity**

- \_\_\_\_\_ 0. The pain is mild and comes and goes.
- \_\_\_\_\_ 1. The pain is mild and does not very much.
- \_\_\_\_\_ 2. The pain is moderate and comes and goes.
- \_\_\_\_\_ 3. The pain is moderate and does not very much.
- \_\_\_\_\_ 4. The pain is severe and comes and goes.
- \_\_\_\_\_ 5. The pain is severe and does not very much.

#### **2. Personal Care (Washing, Dressing, etc.)**

- \_\_\_\_\_ 0. I do not have to change the way I wash and dress myself to avoid pain.
- \_\_\_\_\_ 1. I do not normally change the way I wash or dress myself even though it causes some pain.
- \_\_\_\_\_ 2. Washing and dressing increases my pain, but I can do it without changing my way of doing.

\_\_\_\_\_ 3. Washing and dressing increases my pain, and I find it necessary to change the way I do it.

\_\_\_\_\_ 4. Because of my pain I am partially unable to wash and dress without help.

\_\_\_\_\_ 5. Because of my pain I am completely unable to wash or dress without help.

### 3. Lifting

\_\_\_\_\_ 0. I can lift heavy weights without increased pain.

\_\_\_\_\_ 1. I can lift heavy weight but it causes increased pain.

\_\_\_\_\_ 2. Pain prevents me from lifting heavy weights off of the floor, but I can manage if they are conveniently positioned (ex. on a table, etc.)

\_\_\_\_\_ 3. Pain prevents me from lifting heavy weights off of the floor, but I can manage light to medium weights if they are conveniently positioned

\_\_\_\_\_ 4. I can lift only very light weights.

\_\_\_\_\_ 5. I cannot lift or carry anything at all.

### 4. Walking

\_\_\_\_\_ 0. I have no pain when walking.

\_\_\_\_\_ 1. I have pain when walking, but I can still walk my required normal distances.

\_\_\_\_\_ 2. Pain prevents me from walking long distances.

\_\_\_\_\_ 3. Pain prevents me from walking intermediate distances.

\_\_\_\_\_ 4. Pain prevents me from walking even short distances.

\_\_\_\_\_ 5. Pain prevents me from walking at all.

### 5. Sitting

\_\_\_\_\_ 0. Sitting does not cause me any pain.

\_\_\_\_\_ 1. I can only sit as long as I like providing that I have my choice of seating surface.

\_\_\_\_\_ 2. Pain prevents me from sitting for more than 1 hour.

\_\_\_\_\_ 3. Pain prevents me from sitting for more Than 1/2 hours.

\_\_\_\_\_ 4. Pain prevents me from sitting for more than 10 minutes.

\_\_\_\_\_ 5. Pain prevents me from sitting at all.

## 6. Standing

\_\_\_\_\_ 0. I can stand as long as I want without increased pain.

\_\_\_\_\_ 1. I can stand as Lon as I want but my pain increased with time.

\_\_\_\_\_ 2. Pain prevents me from standing more than 1 hour.

\_\_\_\_\_ 3. Pain prevents me from standing more than 1/2 hour.

\_\_\_\_\_ 4. Pain prevents me from standing more than 10 minutes.

\_\_\_\_\_ 5. I avoid standing because it increases my pain right away.

## 7. Sleeping

\_\_\_\_\_ 0. I get no pain when I am in bed.

\_\_\_\_\_ 1. I get pain in bed, but it does not prevent me from sleeping well.

\_\_\_\_\_ 2. Because of my pain, my sleep is only 3/4 of my normal amount.

\_\_\_\_\_ 3. Because of my pain, my sleep is only 1/2 of my normal amount.

\_\_\_\_\_ 4. Because of my pain, my sleep is only 1/4 of my normal amount.

\_\_\_\_\_ 5. Pain prevents me from sleeping at all.

## 8. Social Life

\_\_\_\_\_ 0. My social life is normal and does not increase my pain.

\_\_\_\_\_ 1. My social life is normal, but it increases my level of pain.

\_\_\_\_\_ 2. Pain prevents me from participating in more energetic activities (ex. sports,dancing,  
etc.)

\_\_\_\_\_ 3. Pain prevents me from going out very often.

\_\_\_\_\_ 4. Pain has restricted my social life to my home.

\_\_\_\_\_ 5. I have hardly any social life because of my pain.

## 9. Traveling

\_\_\_\_\_0. I get no increased pain when traveling.

\_\_\_\_\_1. I get some pain while traveling, but none of my usual forms of travel make it any worse.

\_\_\_\_\_2. I get increased pain while traveling, but it does not cause me to seek alternative forms of travel.

\_\_\_\_\_3. I get increased pain while traveling which causes me to seek alternative forms of travel.

\_\_\_\_\_4. My pain restricts all forms of travel except that which is done while I am lying down.

\_\_\_\_\_5. My pain restricts all forms of travel.

## 10. Employment/Homemaking

\_\_\_\_\_0. My normal job/ homemaking activities do not cause pain.

\_\_\_\_\_1. My normal job/ homemaking activities increase my pain, but I can still perform all that is required of me.

\_\_\_\_\_2. I can perform most of my job/ homemaking duties, but pain prevents me from performing more physically stressful activities (ex. lifting, vacuuming)

\_\_\_\_\_3. Pain prevents me from doing anything but light duties.

\_\_\_\_\_4. Pain prevents me from doing even light duties.

\_\_\_\_\_5. Pain prevents me from performing any job or homemaking chores.

## APPENDIX 5

### QUESTIONS REGARDING LBP AND ITS FEATURE

1. Which position do you maintain most of the time during work?

Sitting  Standing  Banding

2. What factor makes your symptoms worse at work place?

Prolonged Sitting  Prolonged Standing  Prolonged Banding

3. Which type of pain do you feel?

Dull aching  Pinprick  Burning  Itching

Sharp pain

Referred pain (radiating to leg)

4. Duration of pain

Acute (less than 3 weeks)

Subacute (3weeks to 3 months)  Chronic (>3 months)

**5. When you have ever suffered LBP (Low Back Pain) at**

- Some points of their lives (lifetime prevalence)  In last 1 year (1 year prevalence)
- At moment they were fulfilling the questionnaire (point prevalence)

**6. Treatment taken by those with LBP**

- None
- Drugs/medication  Physiotherapy  Surgery
- Both (medicine + physio)

**7. Any related disease**

- DM  HTN
- Trauma
- Psychological factor  None

**8. Study Place**

- Study table  Bed
- Both