

# Frequency of Work Related Musculoskeletal Knee Pain among Health Care Practitioners of Lahore, Pakistan

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## Highlights:

- Current study is a cross sectional survey to find the Frequency of Work Related Musculoskeletal Knee Pain among Health Care Practitioners of Lahore, Pakistan.
- Nordic musculoskeletal questionnaire was used and data was collected from different hospitals of Lahore, Pakistan.
- It was concluded that the frequency of work related musculoskeletal knee pain among health care professional was low. Working in bad posture, lifting weight, excessive bending of knee, pressure on the knee during prolong short sitting, prolong standing cause knee pain among health care professionals.

## Abstract:

Work related musculoskeletal complaints are significant throughout many professions and become major concern for many professions like governments and society overall. Health care professional are vulnerable to musculoskeletal disorder during their work routine.

## Objective:

To determine the frequency of work related musculoskeletal knee pain among health care practitioners of Lahore, Pakistan.

## Methodology:

An observational (cross sectional) survey was conducted and Nordic musculoskeletal questionnaire was used to collect the data. By using non-probability sampling technique data was collected from health care professionals of various private clinics, government and private hospitals of Lahore, Pakistan, Pakistan.

Descriptive (Mean, Standard deviation, percentages) were used during data analysis.

## Results:

Total 971 questionnaires returned at the response rate of 80.91%. In this study number of males was more than females. The average SD± age of participants was 36.39±8.82. Frequency of knee pain estimated during this study among health care professionals was (21.3 %). Frequency of knee pain among Physician were 21.8%, Dentists 15.8%, Surgeons 85%, Physiotherapists 24%, Nurses 16.7%, Radiologists 16.7% and Medical lab technologists 29.5%.

## Conclusion:

This study concluded that the frequency of work related musculoskeletal knee pain among health care professional was low. Working in bad posture, lifting weight, excessive bending of knee, pressure on the knee during prolong short sitting, prolong standing cause knee pain among health care professionals. Many professionals revealed that they changed their duties after experiencing work related knee pain.

## Keywords:

Frequency, Knee Pain, Health care professionals, musculoskeletal disorders.

## Introduction:

Work related musculoskeletal injury is defined as any injury that is caused by the events happened during working hours or due to work that directly effects the work and its efficiency that may lead to the discontinuity of the job, decrease in work performance or change of profession.<sup>(1,14)</sup> Work related musculoskeletal

disorders risk factors include lifting of heavy load, activities at work place, repetitive task and poor working posture while psychosocial factors are to be included as important predictive variable.<sup>(2,15)</sup> According to studies calculated prevalence of work related musculoskeletal disorders in different countries varies country to country. Prevalence of work related musculoskeletal disorders in UK, USA, Turkey and Nigeria is much higher than other European countries. Females with greater lesser body mass index (BMI) were more prone to get these disorders<sup>(6,16,17)</sup>. Knee pain is defined as feeling of discomfort throughout the joint caused by the conditions effecting knee joint itself and extra articular structures ligaments tendon bursa due to repetitive activities of strain and sprain. Individual having abnormal joint anatomy or alignment, or injury of joint, stability of joint, increased body weight, disturbance of forces of muscles have increased risk of osteoarthritis.<sup>(4,18)</sup>

Causes of knee pain are usually partial dislocation of patella, inflammation of tibial epiphysis, abnormal moment at epiphysis of tibia, disturbance at patellofemoral junction, blow or any injury to the ligaments of knee and knee menisci, inflammatory diseases of synovial sheet and joint and degeneration of the knee cartilage<sup>(6,19)</sup>. The knee joint compromises of two articulations: Tibiofemoral joint consist of femur and tibia, and one between the femur and patella called patellofemoral joint<sup>(6)</sup>. Diagnosis of knee pain involves a detailed evaluation and examination which involves taking previous and present history, complete physical examination, use of manual therapy techniques and tests, and imaging technologies<sup>(5,20)</sup>. A study to investigate the work related musculoskeletal disorders among professional nursing staff of Uganda concluded the prevalence of knee pain concluded that work related disorders are frequently present among nurses working at hospitals<sup>(7)</sup>. A study was conducted to investigate prevalence of musculoskeletal disorders in hospital staff of Tunisian hospital concluded that prevalence of work related disorders was

present in higher proportion and knee pain was not much higher.<sup>(6)</sup> In 2014 a study conducted to estimate the frequency of musculoskeletal disorders among doctors in Mangalore. A large number of doctors complained about the presence of work related disorders and frequency of knee pain was much lesser than the other musculoskeletal disorders.<sup>(9)</sup> The rationale of the survey was to determine the prevalence of work related knee pain among health care practitioners. The study highlights the factors that produced and increase the work related knee pain among health care professionals.

### Methodology:

Cross sectional study was conducted after approval from ethical committee. A Nordic musculoskeletal Questionnaire was used to collect data. Part one of the questionnaire was about the demographic data which includes the age, gender and nature of work or profession. Part two of the questionnaire was a modified Nordic musculoskeletal questionnaire in which questions were asked about the knee and in which positions health care professionals have knee pain, what factors increases their pain, what measures they used to overcome this pain and how much their knee affects their work rate and cause them to alter habits and work. Data was collected from 971 participants and sample size calculated by using the online epitool software for calculation of sample size proportions (epitools.ausvet.com). At estimated proportion of 0.37, desired precision of estimate 0.04 and confidence level of 0.99 the calculated sample size was 967.<sup>(7)</sup> Convenient sampling technique was used. Data was collected from health care professionals by approaching them at the various private clinics, government and private hospitals of Lahore, Pakistan. 6 months after approval of synopsis. Both male and female health care professionals including physicians, dentists, physiotherapists, surgeons, radiologists, medical Lab technologists and nurses with minimum one year experience and age ranging from 25-60 years were included in the study. Professionals with any systematic

disease, recent traumatic event or recent total knee replacement surgery were excluded from the study. Thousand copies of questionnaire were divided to the health care professionals at different hospitals and clinics of Lahore city. Each copy of the questionnaire consists of a consent form. Professionals who were willing to contribute to the study asked to fill the survey. To elaborate the significance of the study the topic and the purpose of the survey was clearly mentioned and defined on a document attached to the questionnaire. To initiate the data collection and survey, endorsement of the higher authorities of individualized setups for research was needed. Data was analyzed and tabulated by version 21.0 of SPSS. The quantitative data was demonstrated in form of mean  $\pm$  S.D and percentage was calculated for qualitative data, tables and graphs were drawn to show different results of the survey. Less than 0.05 p value was appraised as significance.

### Results:

In this study 1000 participants were asked to fill the survey questionnaire. But 971 questionnaires returned at the response rate of 80.91%. In this study number of males was more than females. The average SD $\pm$  age of participants was 36.39 $\pm$ 8.82. Out of 971(100%) respondents (HCPs) number of physicians were 616 (63.4%), dentist 76 (7.8%), surgeon 40 (4.1%), physiotherapists 100 (10.3%), nurses 30 (3.1%), radiologists 48 (4.9%) and 61 (6.3%) medical lab technologists. Question was asked about whether pain appears or increases during working hours and 79.7% reports about the pain during their work and 20.3% said no they had not experienced pain during working hours. There was a possibility that individuals may had different nature of pain at different time. There was no significant association of pain with gender as the P value is greater than 0.05. Knee pain was not dependent on a particular gender. According to this study, as the p value was greater than 0.05 so there is no significant association between occupation and discomfort in health care professionals as determined in this

study. Knee pain was not specifically associated to a particular profession.

	Frequency	Percent
Yes	207	21.3%
No	764	78.7%
Total	971	100%

**Table 1:** Frequency of knee Pain

Occupation	Frequency	Percent
Physician	207	21.3%
Dentist	764	78.7%
Surgeon	971	100%
Physiotherapist	971	100%
Nurse	971	100%
Radiologist	971	100%
Medical Lab Technologist	971	100%

**Table 2:** Frequency Distribution of knee pain among occupations.

	Frequency	Percent
Constant Pain	36	17.4%
Intermittent Pain	143	69.1%
Episodic Pain	105	50.7%

**Table 3:** Frequency Distribution of Constant, Intermittent and Episodic pain.

### Discussion:

Marc Campo and Amy R. Darragh in 2012 conducted a study to evaluate effect of work related musculoskeletal disorders among health care professionals. According to the study prevalence of work related knee pain was 45%.10 Prevalence of work related knee pain among health care professionals calculated during this study was 21.3%. Total 971 health care professionals participated in the study and prevalence was 21.3%. In 2015 Edgar R. Viera conducted a study to determine the prevalence of musculo skeletal disorders among physiotherapists. Total 121 physiotherapists participated in the study. The prevalence of knee pain according to this study among



physiotherapists was 36%.<sup>(11)</sup> According to this study estimated Frequency of knee pain among physiotherapists was 24%. Total 100 physiotherapists participated in this study. Among 100 physiotherapists 24 were complained about knee pain. In a study conducted to determine the prevalence of lower extremity disorders among health care professionals concluded that musculoskeletal disorders including feet problems, knee joint problems and hip pain are one of the leading causes to be absent from work, worldwide. Musculoskeletal disorders produce a huge amount of deficiency body health, decrease in work rate and absence from work. Due to most of their time at work and patient interaction and tackling in different positions, musculoskeletal symptoms provoke.<sup>(12)</sup> This study concluded that most of the health care professionals reported knee pain and absence from work, change of habits and change their profession or duties. Professionals spend their most of the time at work standing at the floor of concrete and being in the difficult situations. Due to high demand of physical activity, professionals need to have optimal power and strength of their body so that they can work efficiently, spend their most of the time at work in full strength and maintain themselves at their jobs or duties. In another study conducted by Shoko Ando *et al.*, to conclude the association work related disorders with work related responsibilities and risk factors in different body regions among nurses in a National University teaching hospital Japan. Their study results concluded that is a correlation between musculoskeletal disorders and work responsibilities and objects related to body postures, rates of work control and work setups. Excessive bends, static posture for long time, repetitive lifting of objects, to handle different conditions, huge amount of responsibility and pressure of patients and time are some major work related factors that produces the pain.<sup>(13)</sup> According to this study many work related activities among health care professionals produces pain in body regions and

affects musculoskeletal systems. Work related positions and postures which involve excessive bending of knee throughout the day at work, half sitting, repetitive movements and excessive rotations at knee, prolong standing, huge amount of work under poor body condition, transfer of patients and lifting weights, change to difficult body positions and bad postures to compensate pain produces musculoskeletal disorders in the body.

### **Conclusion:**

This survey concluded that the frequency of work related MSK knee pain among health care professional was low. Health care professionals complained about knee pain during working hours due to bad posture, lifting weight, excessive bending of knee, pressure on the knee during prolong short sitting, prolong standing. It was also concluded that many professionals changed their duties after experiencing work related knee pain

### **Recommendations:**

So it is recommended that a prospective cohort study using a large amount of sample size should be conducted. A comparative study between work related knee pain, its effect on profession and outcome measure is recommended for the future. A study with a large amount of sample size and other health related professionals should be conducted. The knee pain is also associated with other factors including previous history, weak muscles surrounding knee, osteoarthritis, ligament injuries, inappropriate positions of knee joint and blows to the knee joint, so a study relating to other factors and its association with the pain should be conducted.

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