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COMMON WORK-RELATED MUSCULOSKELETAL DISORDERS AMONG THE NURSES IN DIFFERENT HOSPITALS.

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Bachelor of Science in Physiotherapy (B.Sc. PT)

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"COMMON WORK-RELATED MUSCULOSKELETAL DISORDERS AMONG THE NURSES IN DIFFERENT HOSPITALS"

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DECLARATION

I declare that the work presented here is my own. All source used have been cited appropriately. Any mistakes or inaccuracies are my own. I also declare that for any publication, presentation or dissemination of the study. I would be bound to take written consent from my supervisor & the Department of Physiotherapy of BHPI.

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Contents

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Acronyms

BHPI	Bangladesh Health Professions Institute
CRP	Center for the Rehabilitation of the Paralyzed
IRB	Institutional Review Board
ILO	International Labor Organization
LBP	Low back pain
WHO	World Health Organization
SPSS	Statistical Package for the Social Sciences.
WMSDs	Work Related Musculoskeletal Disorders
NPRS	Numeric pain rating scale

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Abstract

Purpose: The study was done to identify the common work-related musculoskeletal disorders among the nurses in different hospitals. ***Objective:*** To determine the common work-related musculoskeletal disorders among the nurses ***Method:*** The study design was cross-sectional. Total 101 samples were selected conveniently for this study from various hospitals in Dhaka. Data was collected by using mixed type of questionnaire. Descriptive statistic was used for data analysis. ***Result:*** The result shows that among 101 participants, 26% in low back, 14% in neck, 15% in thoracic, 17% in knee and 14% has ankle joint complications. Moreover, 8% in hip, 3% in shoulder, 2% in elbow and 1% participant face complications in wrist joint. Maximum participants were from 20-29 and 40-49 years of age group. Age is significant with two body parts and also significant in association with Numeric pain rating scale. Male (19%) and female (81%) and most affected body parts are not significant with gender. It shows that 61% nurses work in the medical wards. Most of the education level was Diploma (91%). The duration of working experience is more than 10 years (54%) and also significant with 3 body parts such as knee, hip and ankle joint and also significant with numeric pain rating scale. The researcher found that 52% participants work 8-10 hours per day and 39% participants work more than 10 hours per day. This study is significant for 4 most affected body parts such as lumbar, knee, hip and ankle as well as also significant in association with numeric pain rating scale. The researcher found that 55% in normal BMI and 42% in BMI of overweight. It is significant in association with most affected body parts in 2 body parts such as thoracic and knee joint. The researcher found that 22% of participants suffered from mild pain, 57% from moderate level of pain and 2% suffered from severe pain. And it was significant in association with age, working hours and working experience. The researcher also found that 57% has symptoms of pain, 19% has symptoms of cramp, 12% has tingling sensation and 3%, 4%, 5% has numbness, burning sensation and aching type of symptoms respectably. ***Conclusion:*** The study was representing the strong evidence that WMSDs was common and significant burden among nurses. In order to reduce musculoskeletal problems, correct postural practices, reduction of prolonged working hours significantly can prevent WMSDs.

Key words: **WMSDs, Nurses.**

CHAPTER – I INTRODUCTION

1.1 Background

In society, employment has a vital role in the community and economic progress. Mode of working habits or processes can lead to several complications such as work-related musculoskeletal disorders (WMSDs). These WMSDs can reduce working efficiency (Heidari et al., 2019). Moreover, providing multiple services is reflected as one of the requirements for the community may lead to some problems with the employees due to its nature. In this regard, musculoskeletal disorders are one of these disorders. According to the World Health Organization (WHO), work-related musculoskeletal disorders lead to worsening of conditions when the working activities are extensively prolonged (Reed et al., 2014).

These disorders cover almost all professions bearing critical physical and economic significances for the victims such as workers, families, businesses and governments. These complaints are considered the major health complications among employees in the European Union. The repeated exposure of staff to different labor risks leads to these disorders despite their diverse forms of appearance (Mirmohammadi & Yazdani-Charati, 2014). Disorders of the musculoskeletal system are suggested one of the most common and significant work-related health problems in employed populations like school teachers, doctors, nurses, drivers, shopkeepers etc. These disorders reduced efficacy at the profession which was the reasons of sick leave, absence and giving up work and were also costly in terms of treatment and separate pain (Erick & Smith, 2011).

Nurses are seen to play a huge part in the wellbeing area and it is normal to improper stance during word related exercises, rehashed body developments and consistent strain on muscles. They are more probable liable for fostering these issues among the medical caretakers (Long et al.,2012). In light of the conditions, medical attendants are answerable for critical obligations, for example, mental and actual consideration which require delayed forward bowing. It is corresponded to the exercises, for example, moving the patients, including the patient's development, for example, conveying, squeezing, pulling, lifting and lumbar developments (Nasiry et al., 2016).

According to a report for the 2015 World Health Organization world report on ageing and health, it is stated that work-related musculoskeletal disorders explain a wide range of degenerative diseases and disorders that includes pain and functional disability. The work-related musculoskeletal disorders occur when employees are exposed to the working environment and surroundings (Briggs et al., 2016).

The work-related musculoskeletal disorders are categorized as the second utmost public disorder, after respirational syndromes. These are accounted for almost 48% of all diseases. Such disorders may arise gradually during a long-term exposure to the agents causing these instabilities or suddenly resulting from a high impact on the musculoskeletal system (Bernal et al., 2015). These physical limitations are correlated to the gradual impairment of the structures and the organs. Besides, WMSDs distress the employee. Upper organs such as spinal vertebrae and hands are the most sensitive organs against the risk of WMSDs (Heiden et al., 2013).

Nursing work is one of the most presented to messes in the medical services area. The nursing population contains about 33% of the medical clinic labor force at especially high danger and representing 60% of the revealed word related stress. Work related musculoskeletal disorders are accounted for to essentially effect on the personal satisfaction that cause loss of work time, increment work limitation, move to another work, or inability than some other gathering of sicknesses (Tinubu et al., 2010). It is assessed that 52% of nursing representative complaints of distress (Hunter et al., 2010). Results acquired in investigations led in a few nations show that WMSDs comprise a genuine word related medical issue among attendants all through the world (Anap et al., 2013). Incidentally, forward bending is associated to those events implemented for transferring the patients, including in the patient's movement or sustenance such as carrying, pressing, pulling, lifting and lumbar movements. Further, it may be scrambled during transport, leading to a lot of damages to the nurse (Nasiry et al., 2016).

Work related issues were the most damaging, incendiary, and degenerative conditions that influence the joints, delicate tissues, fringe nerves, and supporting veins. Musculoskeletal problems coming about because of an episode was called business related musculoskeletal problem (Akrouf et al.,2010). It can cause torment and incapacity of the neck, shoulders, elbow, arms, wrists, hands, hip, knee and lower leg capacities. It bothers all people of various age and sex (Mirmohammadi & Yazdani-

Charati, 2014). Delicacy, a throbbing painfulness, shivering, enlarging, solidness, muscle spasms were a few indications of musculoskeletal problems (Janwantanakul et al., 2008).

A few analysts showed work related disorders as a typical reason for working environment nonattendance. Besides, the rate of agony and different manifestations might be defenseless to poor postural propensities and working styles. Other segmental factors that are regularly introduced as firmness, spasms and muscle touchiness with the neck, shoulders and lower back (Freburger et al., 2009). Among different callings, wellbeing experts, explicitly the individuals who work in the medical clinic climate might encounter those problems all the more usually. As such, nursing is a high-hazard occupation for creating work related musculoskeletal disorders. Additionally, it is a calling wherein WMSDs are exceptionally prevailing because of their inclination (Heidari et al.,2015).

The work-related musculoskeletal disorders are common among medical services laborers. The commonness of actual problems among physiotherapists was high with lifetime pervasiveness revealed as 55–91% (Milhem et al., 2016). The pervasiveness of work-related musculoskeletal disorders among medical attendants fluctuates between examines. In Nigeria, the commonness is 78% among the attendants who have WMSDs related with working in similar situations for significant stretches, lifting or moving of patients, and expanded patient burden (Tinubu et al., 2010). It is seen that the pace of pervasiveness is 77.4% among Chinese medical attendants (Yan et al., 2017).

The adverse consequence of work-related musculoskeletal disorders on attendants' wellbeing and personal satisfaction will straightforwardly impact their presentation. Epidemiological overviews feature the high WMSDs dismalness rate among medical attendants. This has been connected to the high actual requests of their functioning need and the creating conditions. The deficient and outrageous stances embraced in obligation including the preparation of patients are viewed as the primary danger factors in the etiology of work-related musculoskeletal disorders in medical attendants. They incorporate redundant developments, for example, lifting, moving and repositioning of patients, regularly performed physically and subsequently requiring an expanded actual applied power now and again surpassing medical caretakers' actual abilities (Serranheira et al., 2012).

Soft tissue injury happens when there is an unseemliness between the actual necessities of the work and the actual capacity of the body. Musculoskeletal issues include fiery and degenerative conditions that effect the muscles, ligaments, tendons, joints, fringe nerves, and supporting veins with resulting hurt, agony or distress. Musculoskeletal issues are educated to happen in specific ventures and occupations with rates up to three or multiple times higher than the normal rate across all enterprises (Boakye et al., 2018).

Nurses are at high danger for work related musculoskeletal disorders because of misguided body mechanics or wrong stance. The more extended long periods of clinical obligation open them to more frequencies of inappropriate body specialist work on during the conveyance of nursing care or execution of strategies. Musculoskeletal problems related to work are a critical word related wellbeing worry for the nursing calling and have been concentrated increasingly more in the most recent years. Perhaps the most predominant circumstance impacting the individual paying little heed to sex, age or financial foundation is musculoskeletal symptomatology. The nursing is one of the positions where the musculoskeletal indications are unmistakable. This review reports Work-Related Musculoskeletal Disorders during clinical training of nursing staffs (Luan et al., 2018).

1.2 Rationale

Work-Related Musculoskeletal Disorders represent one of the most common and important occupational health problems in working populations in both developed and developing countries. Work related musculoskeletal disorders may cause a great deal of pain and suffering among afflicted workers. These were the most common injuries and costliest occupational problems. Job activities that may cause work related musculoskeletal disorders span diverse workplaces. Workers experiencing aches and pains on the job may not be able to do quality work. WMSD decrease productivity of work due to sick leave, absenteeism, and early retirement and are also costly in terms of treatment and individual suffering. Moreover, WMSD represent a common health-related reasons for discontinuing work and for seeking health care. In some researches, it has found that as health professional nurses are at risk for developing musculoskeletal disorders.

The study aims to find out the work-related musculoskeletal disorders among the nurses. Literature showed that prolong static posture like stooping, bending, sitting, standing as well as prolong squatting proposed to be associated with work related musculoskeletal disorders. This regular heavy weight lifting and heavy physical activity seem to be associated with work related musculoskeletal disorders. In our country, these works are done by the nurses regularly as their clinical practices. Especially the nurses of the central hospitals in urban areas need to carry their patients, sometimes need to lifting and transferring of medical equipment, and any kind of heavy objects. So, the nurses are the more venerable group in health sectors to develop WMSDs. But most of the time these conditions do not get proper attention because of ignorance with consideration of the problem to ensure their proper duty. The problem becomes disclosed when it becomes unbearable to them and they cannot continue the work anymore. Even they do not get proper treatment in case of low socio-economical condition, and lack of knowledge. But most of these work-related musculoskeletal disorders can be prevented or even curable in the early stages. From this study investigator will able to identify the work-related musculoskeletal disorders and the most common factors which are responsible for developing WMSDs which can help to develop appropriate measures to prevent the disorders among the nurses. Nurses may provide proper guidelines for every single risk which will be helpful for them. When

the researcher collects the data, he must introduce herself to the participants as the physiotherapist and her role in the musculoskeletal sector.

This study is very helpful for Physiotherapists and other professionals to know the musculoskeletal disorders and identifying the factors associated with the occurrence of these musculoskeletal symptoms can help to develop ergonomic recommendations for the nursing profession in Bangladesh.

1.3 Research Question

What are the common work-related musculoskeletal disorders and their associated factors among the nurses?

1.4 General objective

To determine the common work-related musculoskeletal disorders among the nurses.

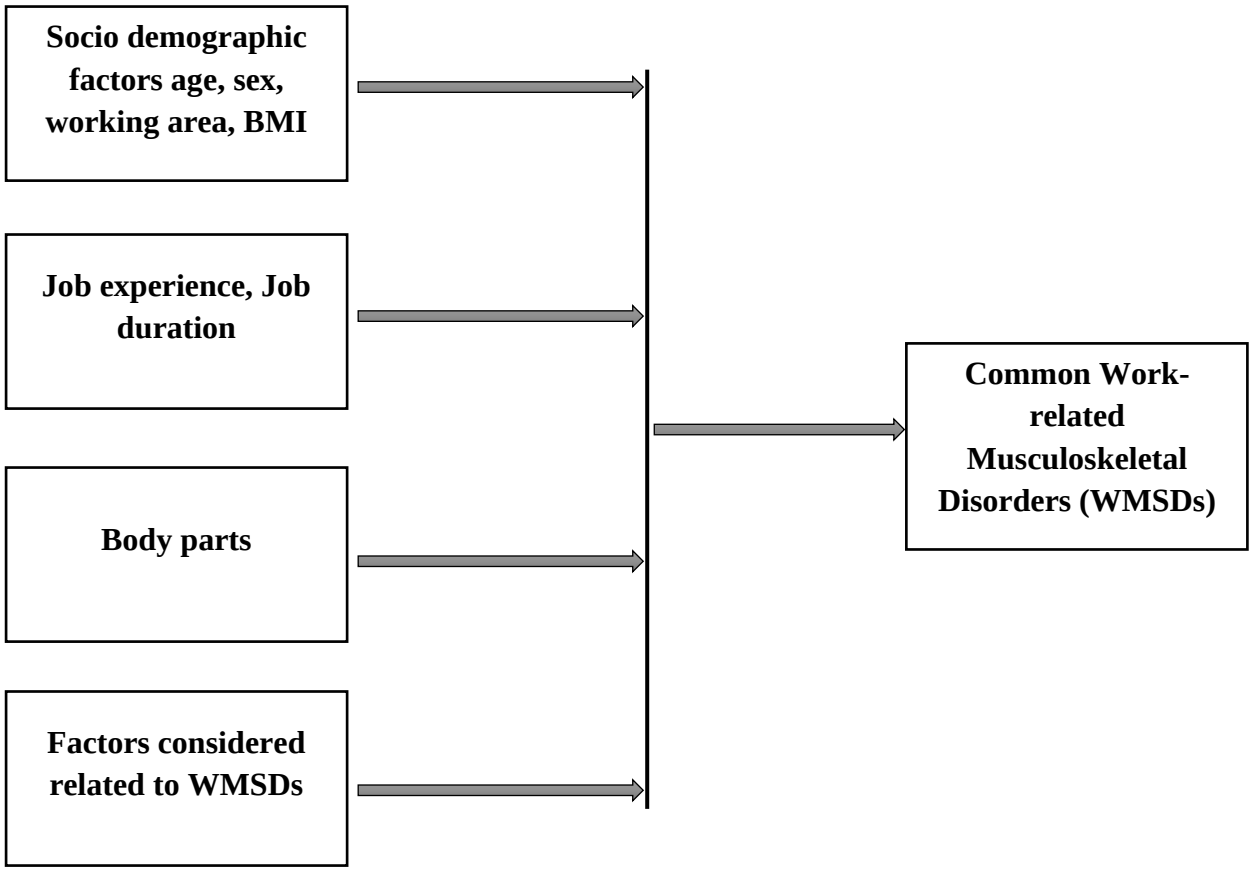
1.5 Specific objectives

- To find out the socio-demographic factors.
- To determine the most affected body parts.
- To find out the risk factors.
- To find out the association between affected body parts with age, gender, BMI, working experience, and working hours.
- To find out the association between Numeric Pain Rating Scale (NPRS) and age, working experience and working hours.

1.6 Conceptual Framework

List of variables:

Independent variables	Dependent variables



1.7 Operational definition

Work-related musculoskeletal disorder

Work-related musculoskeletal disorders (WMSD) are the disorders of muscles, tendons, ligaments, and nerves that develop due to work-related factors such as repetitive work or activities with awkward postures with symptoms of pain, aches, paresthesia, tingling sensation, numbness, and stiffness, etc. Some examples of musculoskeletal disorders include back pain, neck pain, carpal tunnel syndrome, tendonitis and tenosynovitis etc.

Nurses

Nurses means an unmarried or married women or men, whose main occupation is patients caring for their workplace (Hospital, clinic, or any rehabilitation center) and managing health conditions of the patients, and providing health services.

CHAPTER – II LITERATURE REVIEW

Musculoskeletal disorders are broadly known as the cause of enduring pain and disability that affect hundreds of millions of people universally. Work-related musculoskeletal disorders are communal amongst health workers including professional nurses, and may occur permanent disability, deprived from work, and the necessity for long-term medical care (Adegoke et al.,2008). These disorders cover almost all professions bearing critical physical and economic significances for the victims such as workers, families, businesses and governments. These complaints are considered the major health complications among employees in the European Union. The repeated exposure of staff to different labor risks leads to these disorders despite their diverse forms of appearance (Mirmohammadi & Yazdani-Charati, 2014).

Work related musculoskeletal disorders are the substantial occupational problems being considered as the most significant explanations for dropping work-time and aggrega ting labor costs and injuries. Further, in industrialized countries, these disorders linked to physical fitness are measured as the biggest challenges in occupational safety and health. one of the most vital issues that ergonomists are facing around the world. It is considered as the main concern for public health, leading to temporary or permanent disability among the individuals (Lin et al., 2012).

National Institute for Occupational Safety and Health stated that work related musculoskeletal disorders are a cluster like disorders restrained to muscles, joints, tendons, ligaments, nerves and bones. Sometimes it includes the blood circulation system. The origin or aggravation is mainly due to professional activity and effects of working conditions (Bernal et al., 2015). These musculoskeletal disorders are linked with various industrial risk factors and working posture, physical power, movement, psychosocial stressors and individual issues. Some other problems for example strength, endurance, and time can be evaluated for the determination of the capability of individuals. Pain at lower back is considered as most prominent musculoskeletal disorder among health professionals and nurses (Mehrdad et al., 2010).

Several epidemiological studies have established evidence of a contributing association between physical effort at work and disorders related to works. Numerous aspects are associated with WMSD such as pedestrian gesture, unnecessary force, awkward and sustained positions, prolonged sitting and standing (DaCosta & Vieira, 2010). Nursing work is one of the most presented to messes in the medical services area. The nursing population contains about 33% of the medical clinic labor force at especially high danger and representing 60% of the revealed word related stress. Work related musculoskeletal disorders are accounted for to essentially effect on the personal satisfaction that cause loss of work time, increment work limitation, move to another work, or inability than some other gathering of sicknesses (Tinubu et al.,2010). International Labor Organization (ILO) recorded WMSDs as work-related complaints by since 1960. The survey shows, the abo ut 50% yearly occurrence rate of WMSDs is reflected as the key reason for the reduction of working proficiency of the nurses (Berkman et al., 2015).

Nursing work is the most exposed professions in the healthcare sector than other professions. Results attained in the studies conducted in several countries demonstrated that work related musculoskeletal disorders are being a severe work-related health difficulty among nurses all over the world. The negative impact of WMSDs on nurses' fitness will directly affect their performance. It incidentally impacts the excellence of services providing to patients (Anap et al., 2013). Concerning healthiness, security, and wellbeing the mostly prominent healthcare professionals are the nurses (Luan et al., 2018). It happens by reason of the specificity and prolonged responsibilities in health services. They are quite vulnerable to various professional hazards. Prolonged disclosure to risking issues including physical, biological, chemical, ergonomic and psychosocial issues. It may contribute to the incidence of occupational health disorders and the development of occupational diseases including the work-related musculoskeletal disorders (Tinubu et al., 2010).

Nurses are observed as the essential people of the health sector. Facing some features like unsuitable posture during activities, frequent movements and prolonged and continuous stress to muscles lead them to physical disturbances. Gradually they develop work-related complaints. Because of the job situation, nurses are accountable for some duties such as psychological and physical care, which requires prolonged flexion (Long

et al., 2013). Incidentally, forward bending is associated to those events implemented for transferring the patients, including in the patient's movement or sustenance such as carrying, pressing, pulling, lifting and lumbar movements. Further, it may be scrambled during transport, leading to a lot of damages to the nurse (Nasiry et al., 2016).
The physiologically inadequate and risky postures implemented in work tasks involving the organization of patients are measured as the primary risk factors of WMSDs in nurses. Their responsibilities include frequent movements such as lifting, transporting, and positioning of patients. Sometimes it is achieved manually without the help of automated devices requiring excessive physical applied forces. Sometimes it exceeds nurses' physical capabilities (Serranheira et al., 2015). The desk posture can also be prominent to the expansion of musculoskeletal indications. When worked for long periods of hours' spinal disc compression is increased, ultimately leading to higher loads on the spine. When spine movement is involved in sitting posture and occurs flexion and rotation of the trunk without the pauses in duty hours. The physical load on the spine will be increasing particularly in the lower back. Later it will become the cause of fatigue, pain, and reduction of the ability to work (Nunes & Bush, 2012).

Work-related musculoskeletal disorders are usually associated with increased compensation and health costs, reduced productivity, and lower quality of life. The major issues of WMSDs included pain, discomfort, and limited movement mainly presenting in the lower back, shoulder, neck, forearm, and hands. The most frequently stated symptoms were nonspecific low back pain, neck-shoulder and wrist-hand syndrome, and carpal tunnel syndrome (Yang et al., 2019). In nursing professionals, WMSDs have been measured as the main cause for absence among nursing professionals. WMSDs are also responsible to distress the quality of life in nurses.

The Bureau of Labor Statistics stated that 54% nurses showed symptoms in the back, 41% at neck, 34% shoulder and 26% hand-wrist. In the meantime, sleeping disturbance and working incapacity are also recorded induced by work related issues (Miranda et al., 2014). Some experiments were also performed among the Indian and Portuguese nurses. The study showed similar results with a higher rate of work-related complications in the nurses (Yasobant & Rajkumar, 2014). Over-all, these indications obstruct the working proficiency of the nursing professionals, also distressing the

security of the patients during practice. It is essential to review the indications in a comprehensive framework (Serranheira et al., 2012).

The professionals involved in the nursing career are more susceptible to the work-related musculoskeletal disorders. According to a previous study, excessive workload and atypical working posture were the hazardous aspects for the WMSDs. In a national assessment, the yearly occurrence rate and the weekly occurrence rate of WMSDs were 93% and 64.1% (Mohan et al., 2015). In China, the reported frequency was in the range of 56.62% to 78.6%. The study presented that the 77.43% was the yearly and 44.79% was the weekly prevalence of WMSDs. Besides, the frequency was higher in the low back (62.71%), neck (59.77%), shoulder (49.66%) and back (39.50%) (Liu et al., 2016).

The frequency of low back bending during long pushing or pulling and activity limitation was high in the nursing professionals. Particularly, the carrying and lifting reasons may induce the incidence of WMSDs (Homaid et al., 2016). In this study, age is presented as a responsible factor for facing musculoskeletal problems for the nurses. Aged nurses presented a lengthier working duration. Even though age is not entered into the worsening comparison, it was considered that the incidence of WMSDs may increase with the increase of the age and working duration. Besides, the workload may increase with the prolonged work duration, and the workload increased for habitual position, which may finally encourage the increase of prevalence of work-related musculoskeletal disorders. Moreover, the interruption of the workload and working balance may lead to chronic overload. This overtime or extra time service may also become a potential feature for the progression of work-related musculoskeletal disorders (Yasobant & Rajkumar, 2014).

Working in the Emergency Department of a hospital indicated the maximum prevalence of work-related musculoskeletal disorders. The emergency department includes the supply room, department of surgery, department of anesthesia as well as the emergency outdoor of the hospital. The nurses were involved in frequent lifting and pushing in these areas during their duty hours. Besides, these individuals were wide-open to long-term high stress, which may induce WMSDs. During clinical practices, they need to frequently involved in long-term standing, persistent head bowing and frequent transfer of the medical facilities. For the nurses in the operation theater, the stress in the muscles

increased in a static condition, which may induce interruption in the blood circulation. The frequent lifting and pushing causes tiredness of muscles and bones and considered as an important feature of low back pain. Simultaneously, enduring stress and fast working frequency may induce severe muscle injuries (Yan et al., 2017).

One study showed the student nurses experienced neck pain, back pain, and feet or ankle pain indicating the usual MSDs. A study in Karachi showed that the neck followed by the lower back and lower limbs considered as the most prevailing site of musculoskeletal pain. These findings are reliable with a systematic review on the work-related musculoskeletal problems among nurses (Hasan et al., 2018). This study reports that the nursing students experienced neck pain, back pain, and feet/ankle pain mostly as musculoskeletal disorders. And this result is also consistent with the report of a systematic review on work-related disorders among nurses (Ellapen & Narsigan, 2014).

Another similar study mentioned that the shoulder (46.0%), lower back (39.1%), neck (35.6%), feet (25.2%) and leg (23.8%) as the most prevalent pattern. In the same review, it is assumed that the WMSD can be recognized to some factors including the physical stresses of the nurses' during their job-related responsibilities such as bending and twisting, transferring patients from bed to wheelchair, wheelchair to bed, to the toilet or a stretcher. These activities need the nurses altering of the body positions in different directions. It was also prominent that most of the nurses may not maintain proper positioning methods during work. But it is needed obviously (Abledu & Offei, 2015).

This outcome was tantamount to other nursing reviews in which a couple of number of the articles like 74.7% in Vietnam (Luan et al., 2018), 76% in India (Mohanalakshmi & Bai, 2019), 70% in Poland (Panczyk et al., 2018). These examinations are assessed that vertebral segment (lower back, neck and thoracic) were the most powerless destinations of work-related musculoskeletal disorders followed by other fringe joints. Another discovering uncovered that the event pace of WMSDs was not dependent on the heaviness of the understudy medical caretakers. This is steady with the review done in Karachi. It is inferred that BMI isn't connected with the event of agony. A similar report noticed a positive co-connection between the quantity of clinical days out of each week, and the quantity of clinical hours (Panczyk et al., 2018).

Another cross-sectional appraisal directed in India business related problems among wellbeing experts concurred with the discoveries. For this situation, the lower back is the most conspicuous influenced region. A few variables were perceived like working similarly situated for significant stretches, working in abnormal or squeezed positions, and dealing with an unreasonable number of patients or tests in a single day. In Saudi Arabia, almost fractional number of the female respondents in Taif City's working rooms griped about back torment. It is established in a cross-sectional review joined by a settled case-control study was executed including medical caretakers (Yasobant & Rajkumar, 2014).

Another investigation discovered that eight out of ten attendants with work related musculoskeletal disorders revealed back torment. In particular, low back torment (LBP) was generally common. It could be a result of bowing/contorting the back in off-kilter ways, standing extensive stretches while treating an enormous number of patients, insufficient breaks, and lifting/moving ward patients. These were the most seen business-related elements recognized by the medical attendants in the current review. These discoveries support set up results that low back pain (LBP) is the most common musculoskeletal disorders in grown-ups (Chiwaridzo et al., 2018). Additionally, cross-sectional examinations exploring WMSDs among medical caretakers detailed dependable outcomes. In another study it is found that LBP pervasiveness of 84% among US perioperative medical caretakers (Sheikhzadeh et al., 2009). Another review detailed comparative outcomes among Nigerian medical attendants (Fabunmni et al., 2008).

A few investigations showed that the WMSDs are estimated as the principal justification behind the greater part of working environment nonattendance. It is assessed that the medical attendants need to work with much strain during their obligation hour and it is their every day schedule. Consequently, becoming ill or having musculoskeletal issues is a typical status of the attendants. Besides, a few outcomes set up that the pervasiveness and area of torment and different manifestations might be inclined by body stance and working propensities. Other segment factors that are regularly introduced as solidness, issues, and muscle touchiness with the most elevated recurrence in the neck, shoulders, and lower back (Freburger et al., 2009).

These discoveries demonstrated that the aggravation toward the back, knees, and thighs was more than that of different regions. Plus, it is recommended that back aggravation is the most well-known (88.33%) musculoskeletal turmoil among medical caretakers. Some epidemiologic investigations demonstrated a relationship between word related components and WMSDs. Besides, some detailed that the pervasiveness and area of torment, alongside different indications, can be identified with standing stance, working propensities, and other segment highlights (Harcombe et al.,2010). The connection among sex and musculoskeletal agony can be associated to certain distinctions in responsibility, natural status, and diverse body structure among ladies and men. Additionally, a critical relationship was found among sexual orientation and low back torment. This result might be identified with the way that ladies regularly face more mental pressure, contrasted with men, while doing likewise occupation can impact different parts of their wellbeing including the danger of creating work related musculoskeletal disorders (Aminian et al.,2012). In one review, a critical connection was seen among age and major irritation, shoulders, and knees (Akrouf et al.,2010).

Calculated weakening examination uncovered that there is a huge connection between working experience and agony in the hip, neck, knees, and shoulders. As such, the pace of WMSDs essentially increments by expanding work insight (Gorgi et al., 2014). Plus, it is recommended that the pervasiveness of these problems increments by conglomerating work insight. As far as working hours out of each day, it is uncovered that the quantity of working hours out of every week is emphatically associated with the aggravation in the knees and wrists. It is additionally featured that the 8 hours of obligation in bank workers can prompt WMSDs (Dagne et al., 2020).

Among various word related gatherings, wellbeing area experts, particularly those working in the clinic climate, may encounter work related musculoskeletal disorders problems all the more often. In such manner, nursing is considered as a high-hazard occupation for growing such illnesses. Likewise, it is a calling where WMSDs are exceptionally predominant as indicated by their work nature (Heidari et al., 2019).

CHAPTER – III METHODOLOGY

3.1 Study design

This study aimed to find out the work-related musculoskeletal disorders among the nurses. For this reason, a cross-sectional type survey is used because it is a snapshot of the frequency and characteristics of a disease in a population at a particular point of time. The cross-sectional research method is often used to utilize in many areas including social science and education. Cross-sectional studies are observational and are known as descriptive research. This type of study helps to find out the prevalence of acute or chronic conditions of a population. Researchers record information that is present in a population, but they do not manipulate variables (Levin, 2006).

However, the investigator wanted to find out the status of common work-related musculoskeletal disorders among the nurses at a point in time. Investigator also wanted to find out the risk factors among nurses in a short period. For this reason, the cross-sectional study was a more appropriate design to fulfill the aim and objectives of this study.

3.2 Study sites

The sites of my study are some selected hospitals which are-

- Centre for the Rehabilitation of the Paralysed (CRP)
- Prime General Hospital
- Shin Shin Japan Hospital
- RMC Hospital

3.3 Study population and sampling

Study settings were the different hospitals in Dhaka. Investigator selected the nurses from different hospitals. The criteria of the study population are determined from a literature review and the goals for the study. All nurses working in respective hospitals were considered as the study population.

3.4 Sampling procedure

The study was conducted by using the convenience sampling methods because it was the easiest, cheapest and quicker method of sample selection. It will be easy to get those subjects according to the criteria concerned with the study purpose through the convenience sampling procedure.

3.5 Inclusion criteria of the study

- Both male and female nurses are included (Heidari et al., 2019).
- Age between 20-60 years is included (Boakye et al., 2018).
- Subject who are willing to participate in the study (Ribeiro et al., 2017).
- Nurses with a working experience of more than one year (Yan et al., 2017).
- Nurses who work more than 6 hours a day (Heidari et al., 2019).

3.6 Exclusion criteria of the study

- Subjects who had major accidents, congenital spine disorders, cancer, trauma, tumor, vessel lesion, disc protrusion, ankylosing spondylitis, long-term administration of analgesics and with a history of psychiatric disorder (Yan et al., 2017).
- Pregnant nurses and those who had given birth in the last 3 months (Chiwaridzo et al., 2018).
- Nurses below one year of working experience was excluded (Heidari et al., 2019).
- Subjects who were not willing to participate in the study (Akodu & Ashalejo, 2019).
- Nurses who work less than 6 hours a day (Heidari et al., 2019).

3.7 Sample size

$$n = \{\frac{z\left(1-\frac{\alpha}{2}\right)}{d}\}^2 \times pq$$

Here, $z(1-\frac{\alpha}{2}) = 1.96$

p = 0.891 (Anap et al., 2013)

q = (1-p) =1-0.891 = 0.109

d = Sampling errors which is 5% = 0.05

so, n= 149.24 or 149.

Due to COVID-19 situation along with lockdown periods, I collected 101 data from different hospitals.

3.8 Data collection method and tools

Data was collected through the face-to-face interview between participants and the researcher. Data was analyzed from Microsoft office Excel 2016 using an SPSS 20 version software program. The tools that were needed for the study were- Consent paper, questionnaire, paper, pen, file, calculator and computer.

In this study, data were collected by socio-demographic and common work-related musculoskeletal disorders questionnaire. Firstly, the investigator introduced her and the research project as well as its purpose. The study aims, objectives, and study procedures were explained to participants. They were allowed to ask questions and once they were satisfied, they were requested to sign the consent form. For data collection, the investigator used both English and Bangla questionnaire in the easiest wording. Questionnaire language was selected by the preference of the participants. After that, a date was fixed by the investigator to collect the questionnaire from the participants.

When participants understood the study, they were prepared to respond according to the questionnaire. There was no volunteer to collect data. This questionnaire addressed the work-related common musculoskeletal disorders. It also focused on the risk factors of the disorders. The questions were simply answered by giving a tick. Participant could

not consult with their colleagues. They only marked one answer and were selected the answer as the best option.

3.9 Data analysis

The result of this survey consisted of quantitative data. By this survey, a lot of information was collected. All these results gave a basic idea about the work-related common musculoskeletal disorders among the nurses in Bangladesh. The investigator used the raw data in SPSS to find out the percentage of sociodemographic factors, prevalence of musculoskeletal symptoms in different body regions & associated risk factors. Moreover, the investigator used frequencies in SPSS for finding the percentage of sociodemographic factors & musculoskeletal symptoms in body regions. If there is a relationship between two categorical variables, the chi-square test for association will use to discover categorical variables. Therefore, the Chi-square test was used to find out the statistically significant association between socio-demographic factors and musculoskeletal symptoms among nurses. Chi-square test was conducted with $p < .05$ to find out the correlation between the demographic factors and common work-related musculoskeletal disorders.

3.10 Informed Consent

The aims and objectives of this study should be informed to the subjects verbally. The researcher gave the consent form to the subject and explained them. The subjects had the right to withdraw themselves from the research at any time. It should be assured the participant that her name or address would not be used. The information of the subjects might be published in any normal presentation or seminar or journal but they would not be identified. The participant will also be informed or given notice that the research result would not be harmful to them. It would be kept confidential. The researcher is ensuring the confidentiality of participants' information. All the information is to share only with the research supervisor. At any time, the researcher will be available to answer any additional questions regarding the study.

CHAPTER- IV RESULT

4.1 Age of the participants

Among 101 participants, 32% (n=32) participants are ranged between 20-29 years; 16% (n=16) participants are ranged between 30-39 year; 31% (n=31) participants are in between 40-49 years and 21% (n=22) participants are in between 50-59 years.

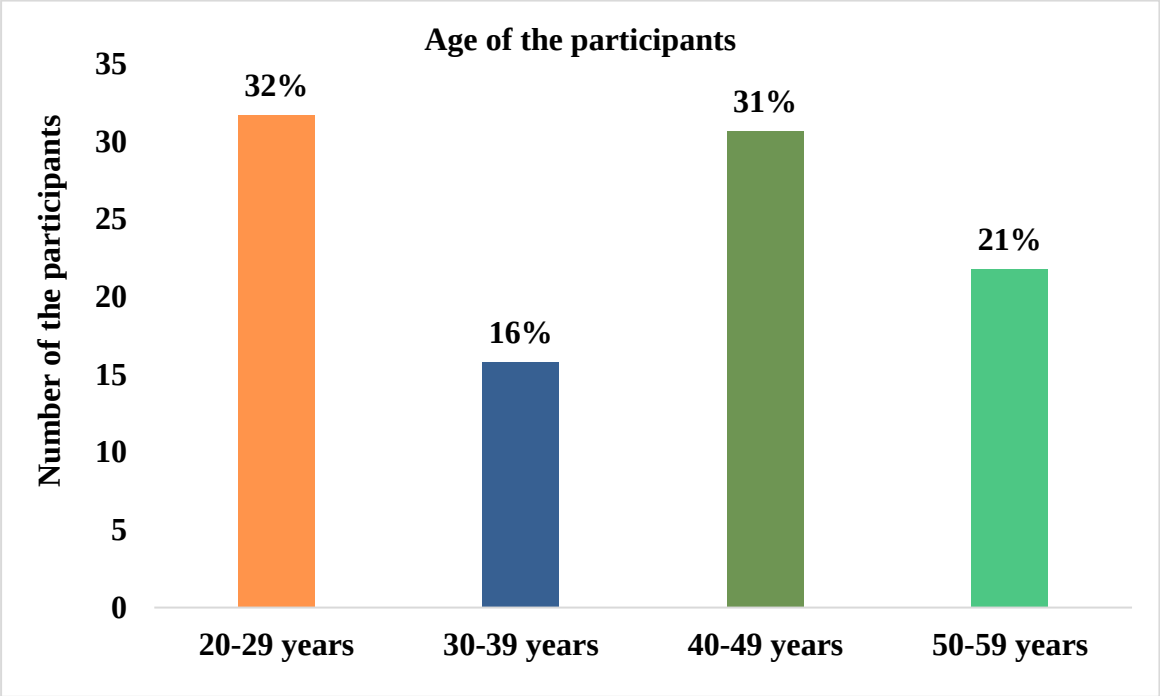


Figure 01: Age of the participants

4.2 Gender of the participants:

In this study, only19% (n=19) participants are male and 81% (n=82) participants are female among 101 participants.

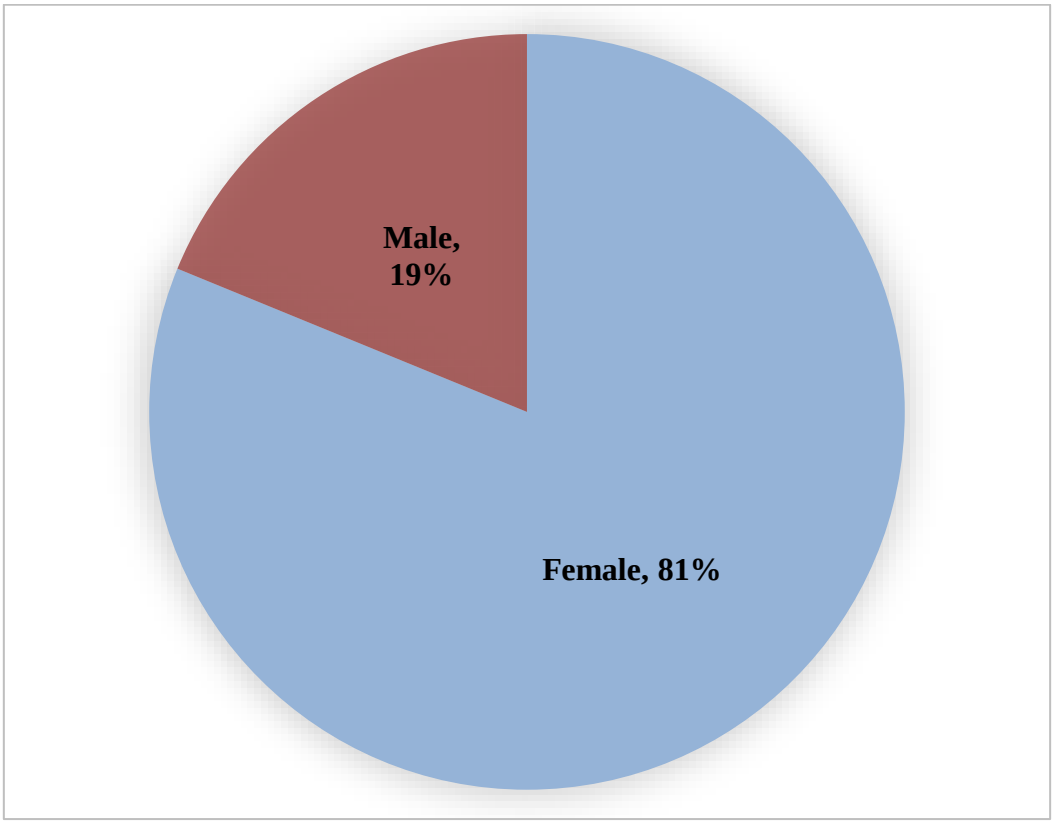


Figure 02: Gender of the participants

4.3 Residence of the participants:

Out of 101 participants 9% (n=9) participants live in rural area. On the other hand, 56% (n=57) participants are from urban area and 35% (n=35) participants are from semi-urban area.

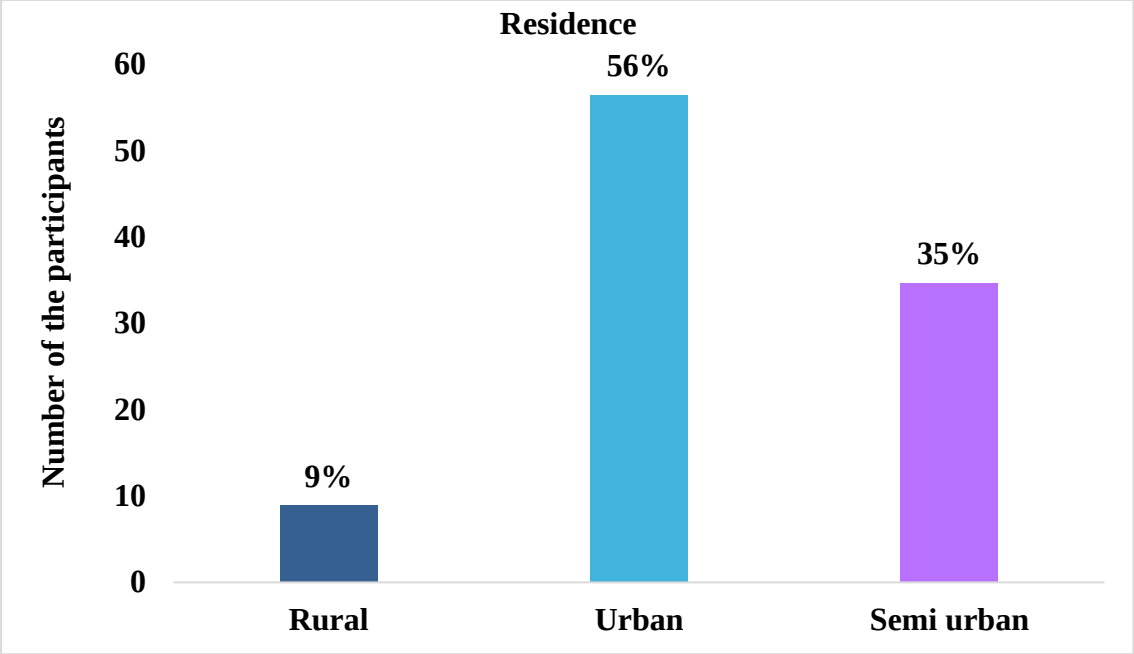


Figure 03: Residence of the participants

4.4 Religion:

This study shows that among 101 participants,71% (n=72) participants are from Islam; 24% (n=24) participants follow Hinduism and 5% (n=5) participants follow Christianity.

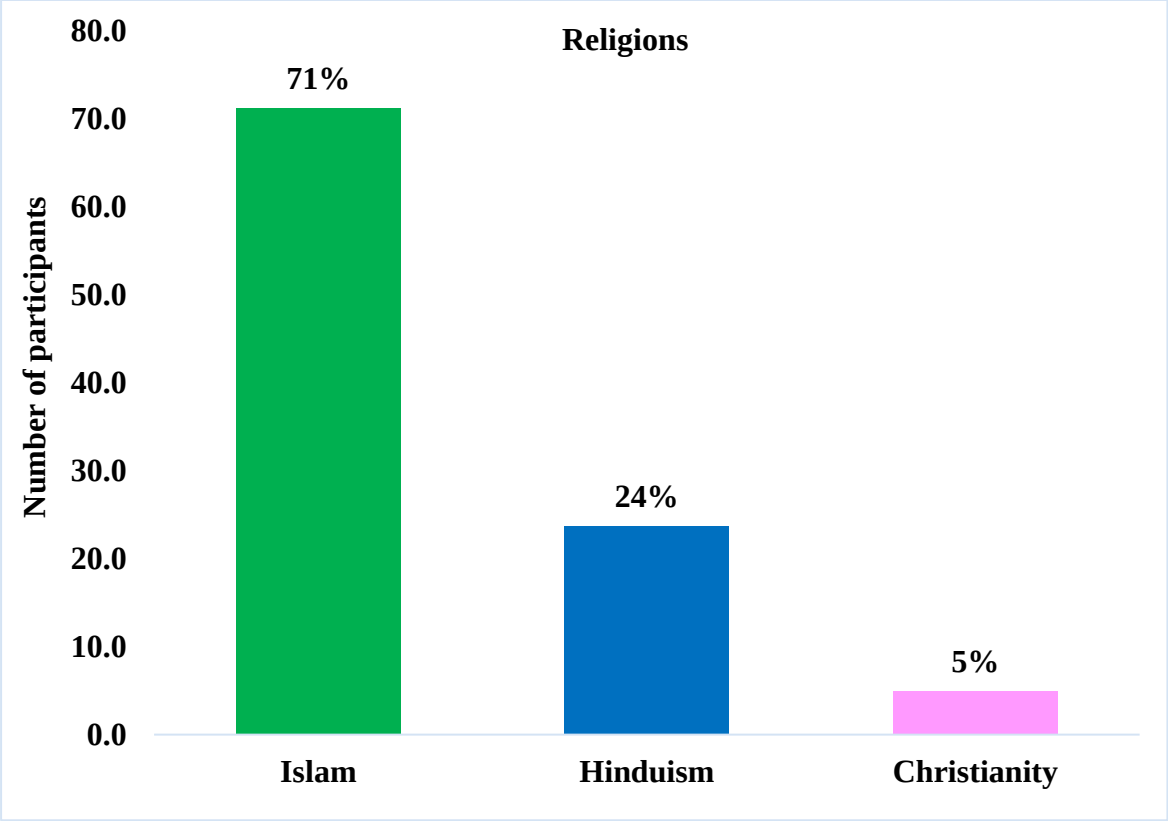


Figure 04: Religion of the participants

4.5 Marital status:

In 101 participants 26% (n=26) are single and 74% (n=75) participants are married.

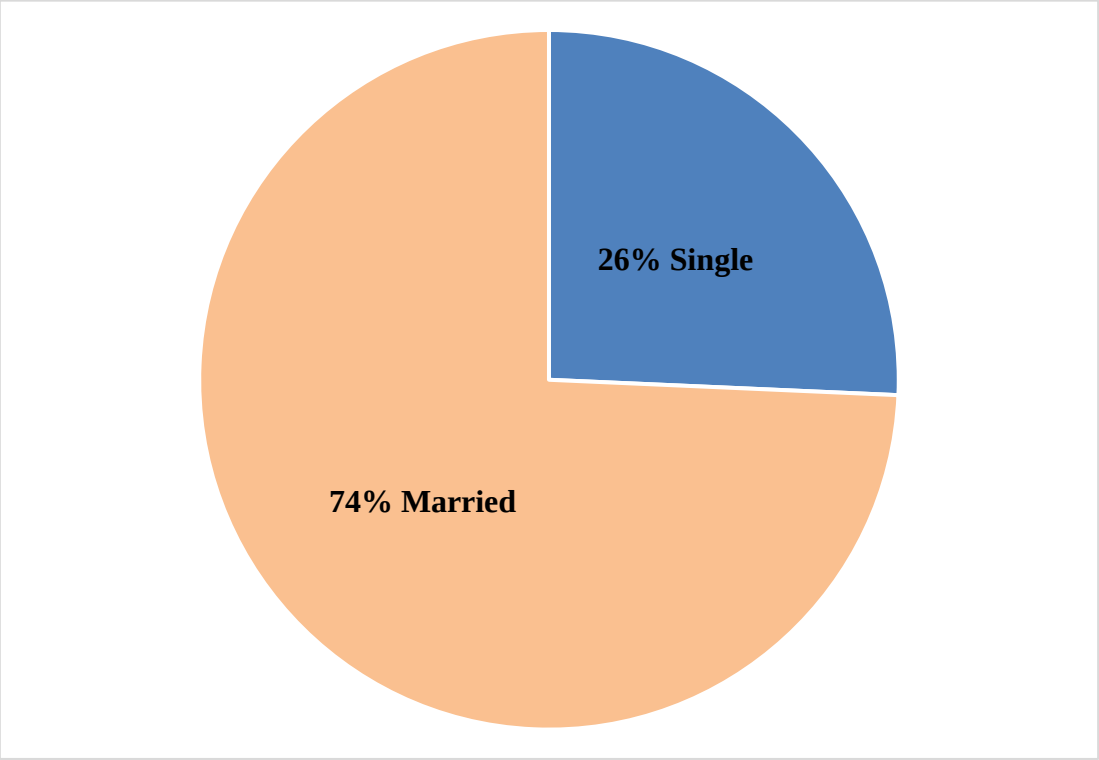


Figure 05: Marital status of the participants

4.6 Education:

From this study it is calculated that among 101 participants there are 91% (n=92) participants completed diploma and only 9% (n=9) participants are graduated nurse.

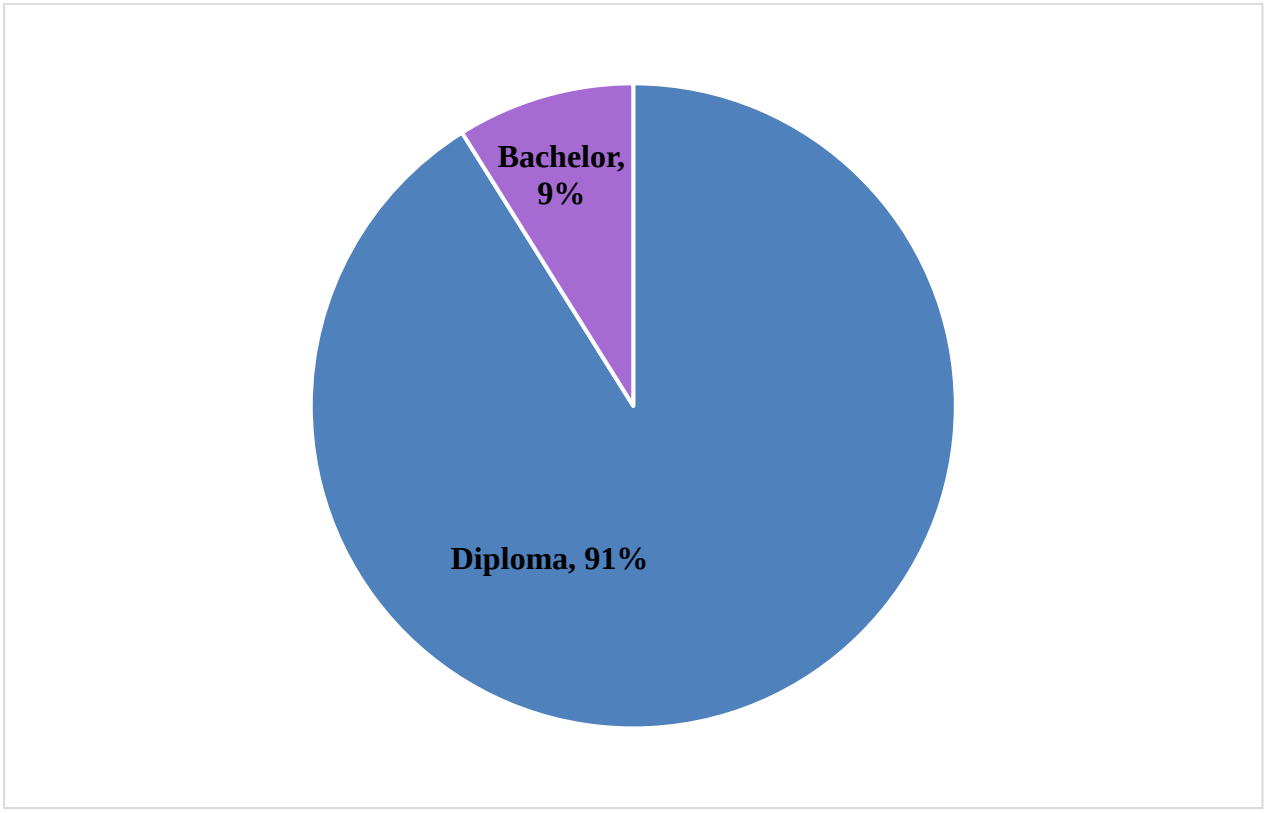


Figure 06: Education level of the participants

4.7 Working area:

This study shows that among 101 participants, only 1% (n=1) participant work in neurology unit; 22% (n=22) participants work in orthopedics; 61% (n=62) participants work in medical words and 16% (n=16) participants work in critical units such as ICU, CCU, NICU, burn unit etc.

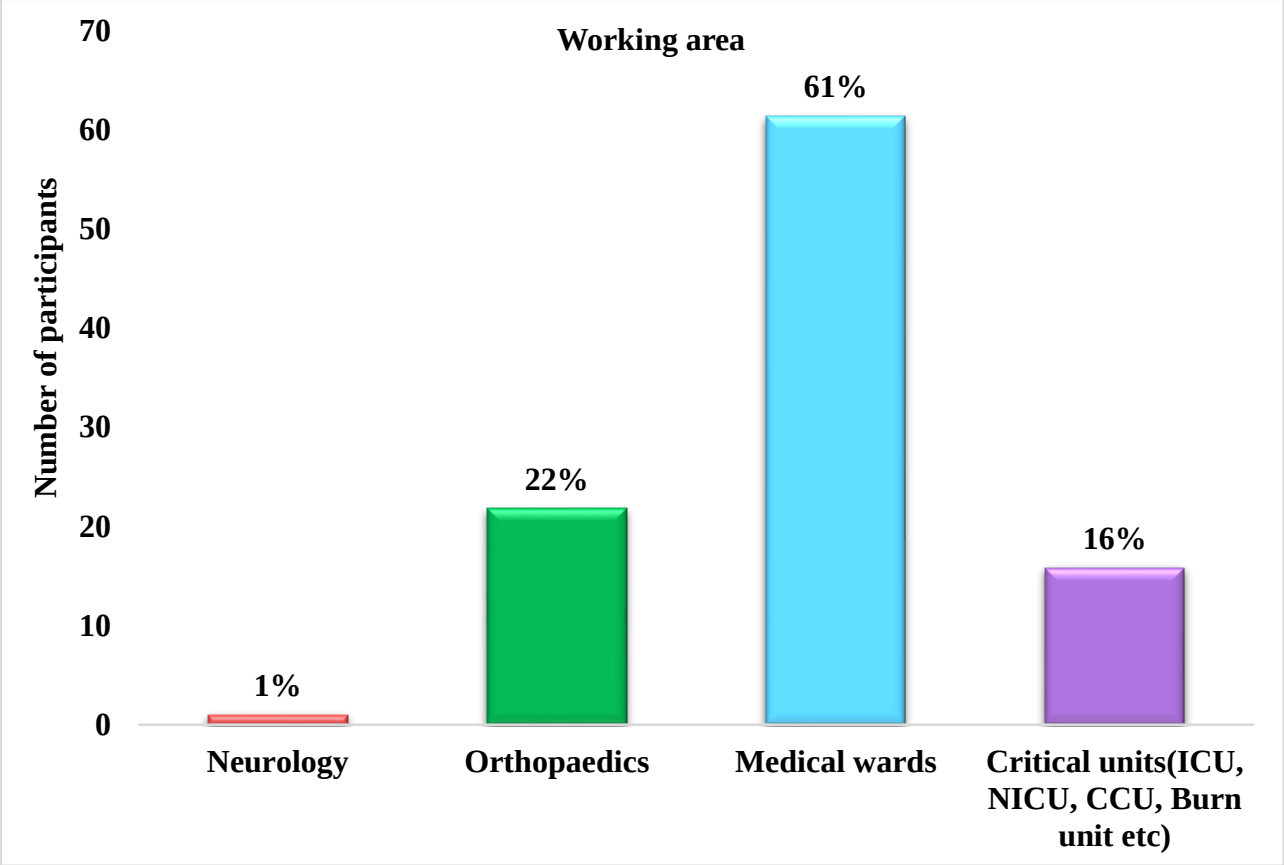


Figure 07: Working area of the participants

4.8 Number of family members:

There are 2% (n=2) participants have 2 family members; 15% (n=15) participants have 3 family members; 33% (n=34) participants have 4 family members, 35% (n=35) participants have 5 members, 13% (n=13) participants have 6 members and 2% (n=2) participants have 7 members among 101 participants.

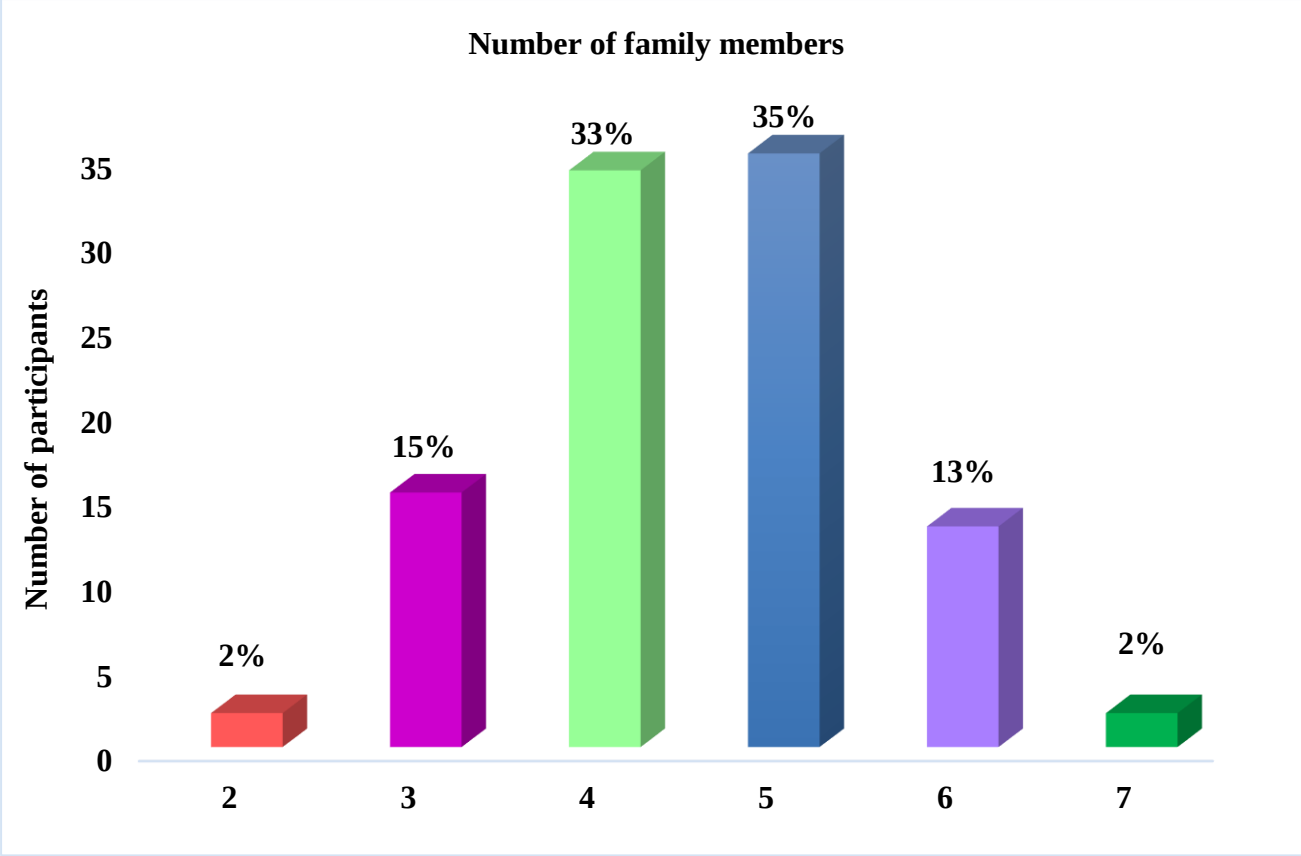


Figure 08: Family member of the participants

4.9 Number of earning members:

This study reveals that among 101 participants there are 22% (n=22) participants' family have only one earning member; 56% (n=57) participants' family have 2 earning members; 18% (n=18) participants' family have 3 earning members and 4% (n=4) participants' family have 4 earning members.

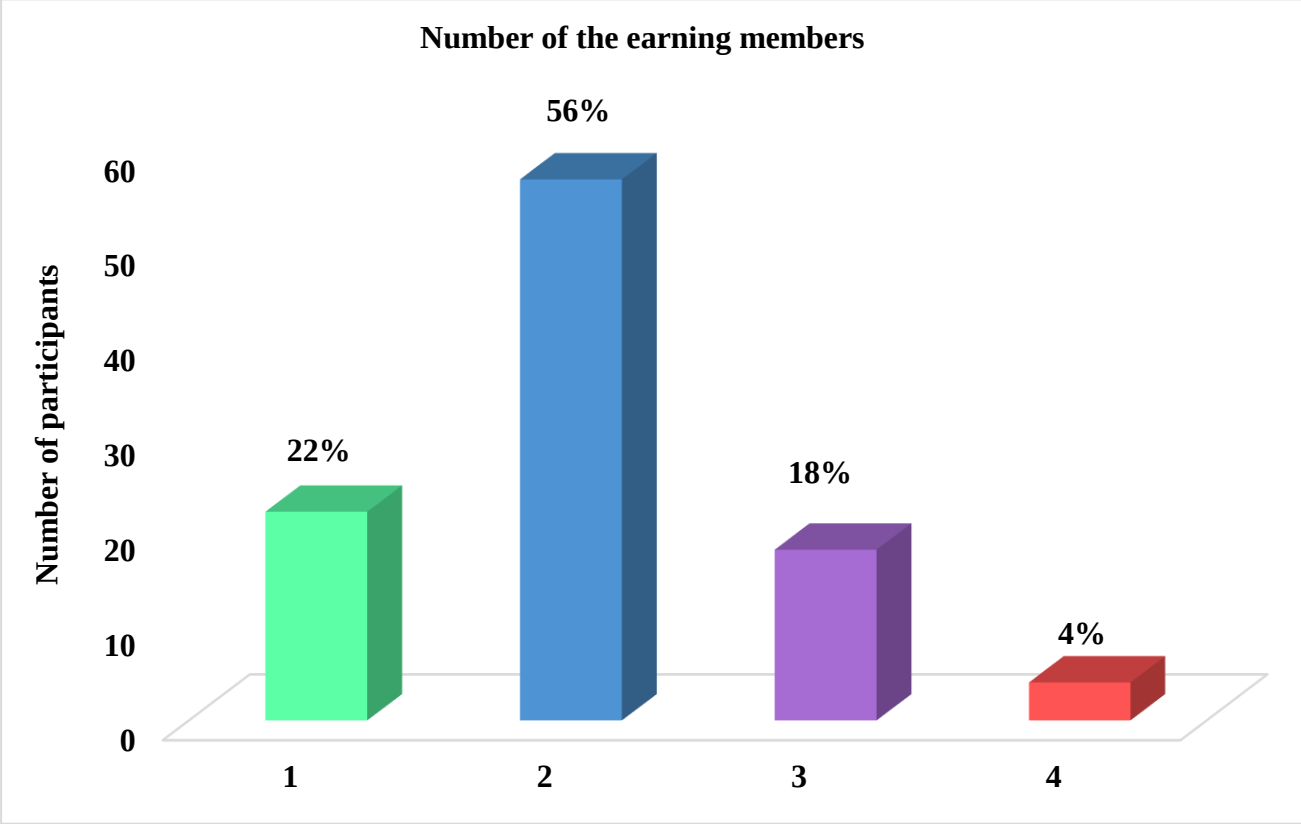


Figure 09: Earning member of the participants

4.10 General health:

Among 101 participants 35% (n=36) participants reported of having good health; 58% (n=58) participants have fair health status and only 7% (n=7) participants reported of poor health status.

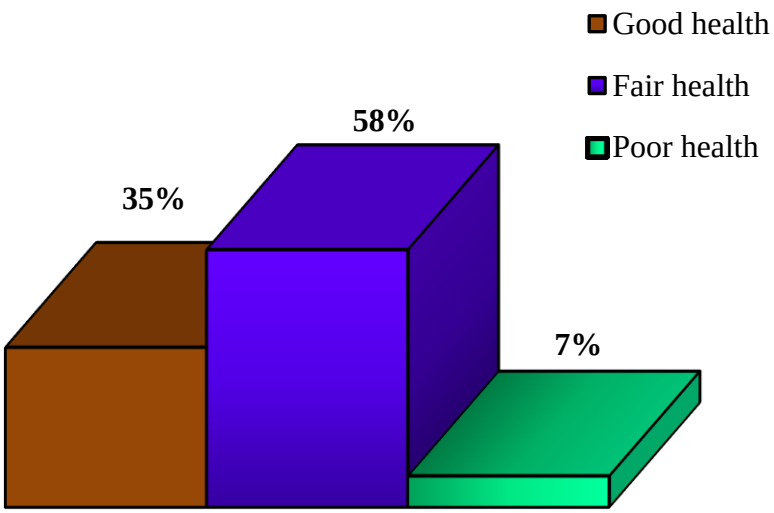


Figure 10: General health of the participants

4.11 BMI:

It is indicated that among 101 participants there are 55% (n=56) participants who are ranged in 19-24.9 which is normal in BMI; 42% (n=42) participants are ranged in 25-29.9 which is over-weight. 2% (n=2) participants are in 30->30 which is obesity and only 1% (n=1) participant ranges in <18 which is underweight.

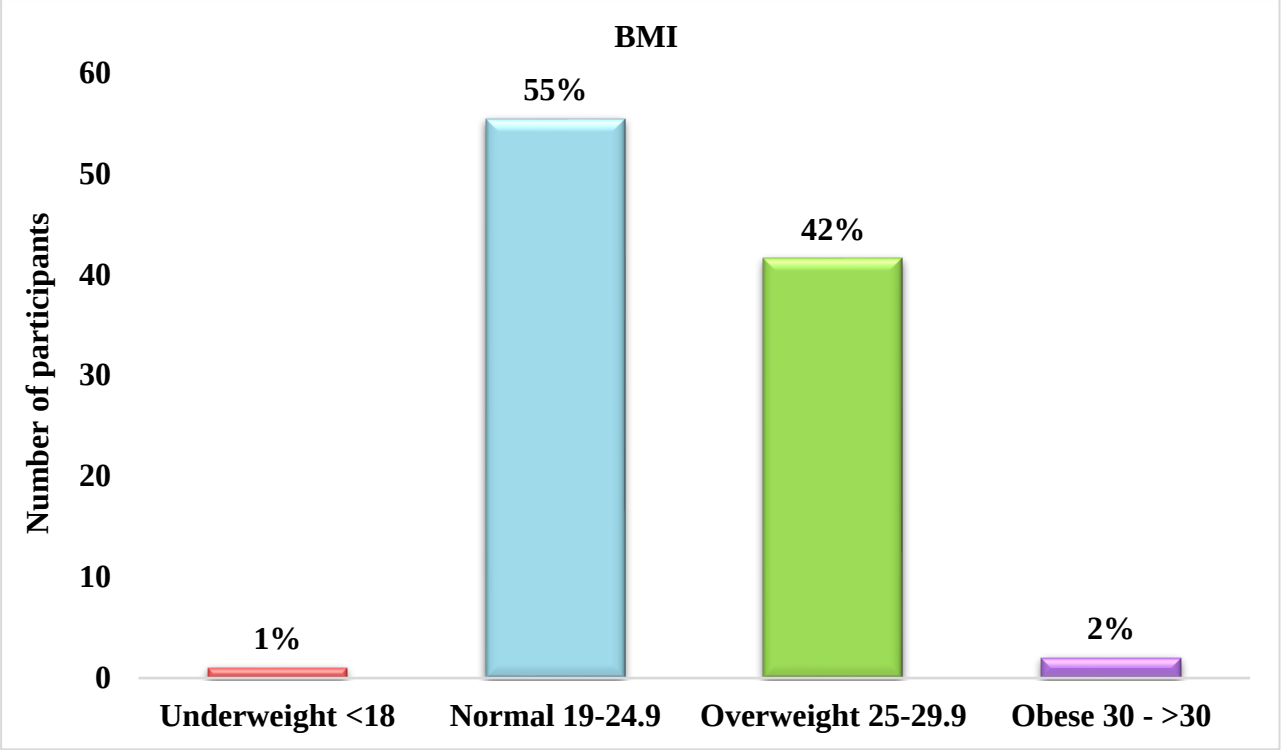


Figure 11: BMI of the participants

4.12 Working experience:

This study shows some data related to the working experience of the participants. Among 101 participants, 35% (n=35) participants have less than 5 years of working experience; 11% (n=11) participants have 5-10 years of working experience; 54% (n=55) participants have more than 10 years of working experience. Maximum participants have more than 10 years of working experience.

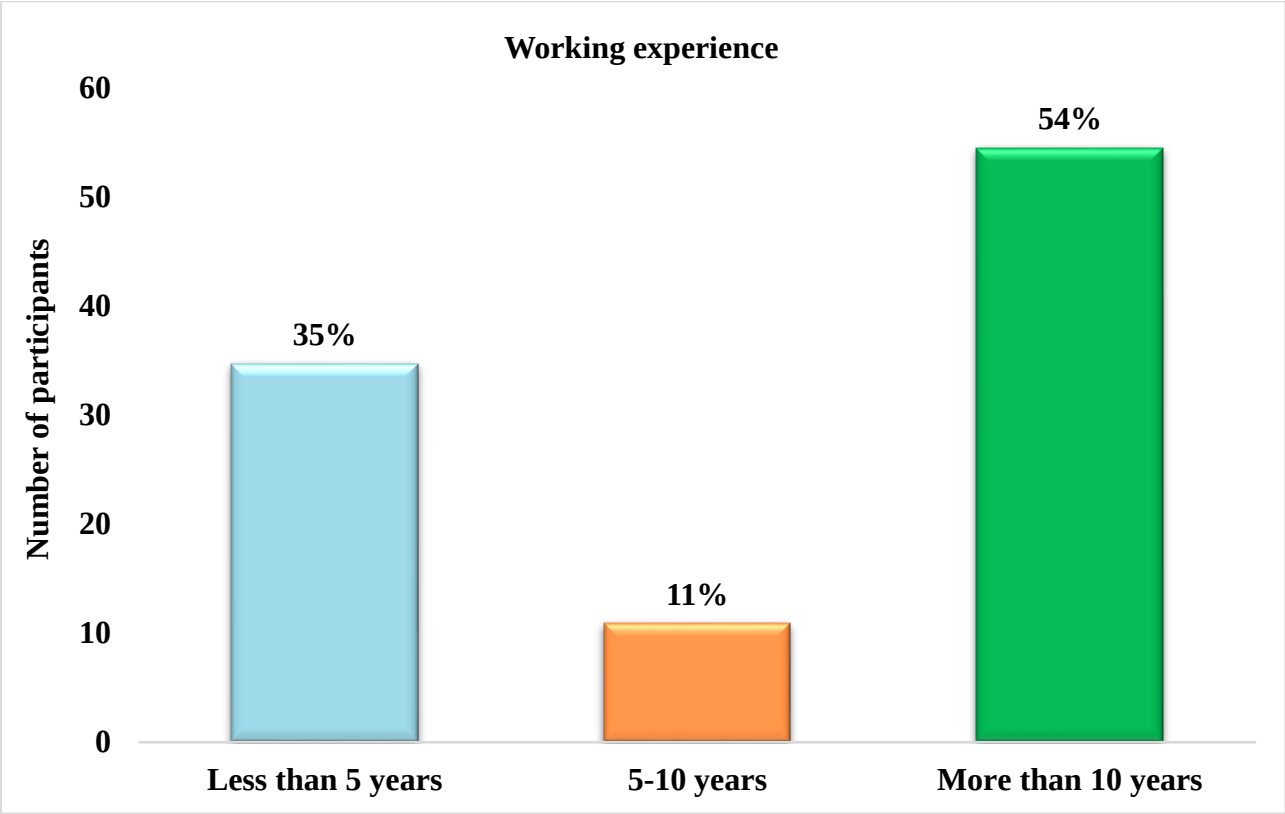


Figure 12: Working experience of the participants

4.13 Working hours:

Among 101 participants, 9% (n=9) participants work less than 8 hours; 52% (n=53) participants work 8-10 hours; 39% (n=39) participants have more than 10 hours of working schedule.

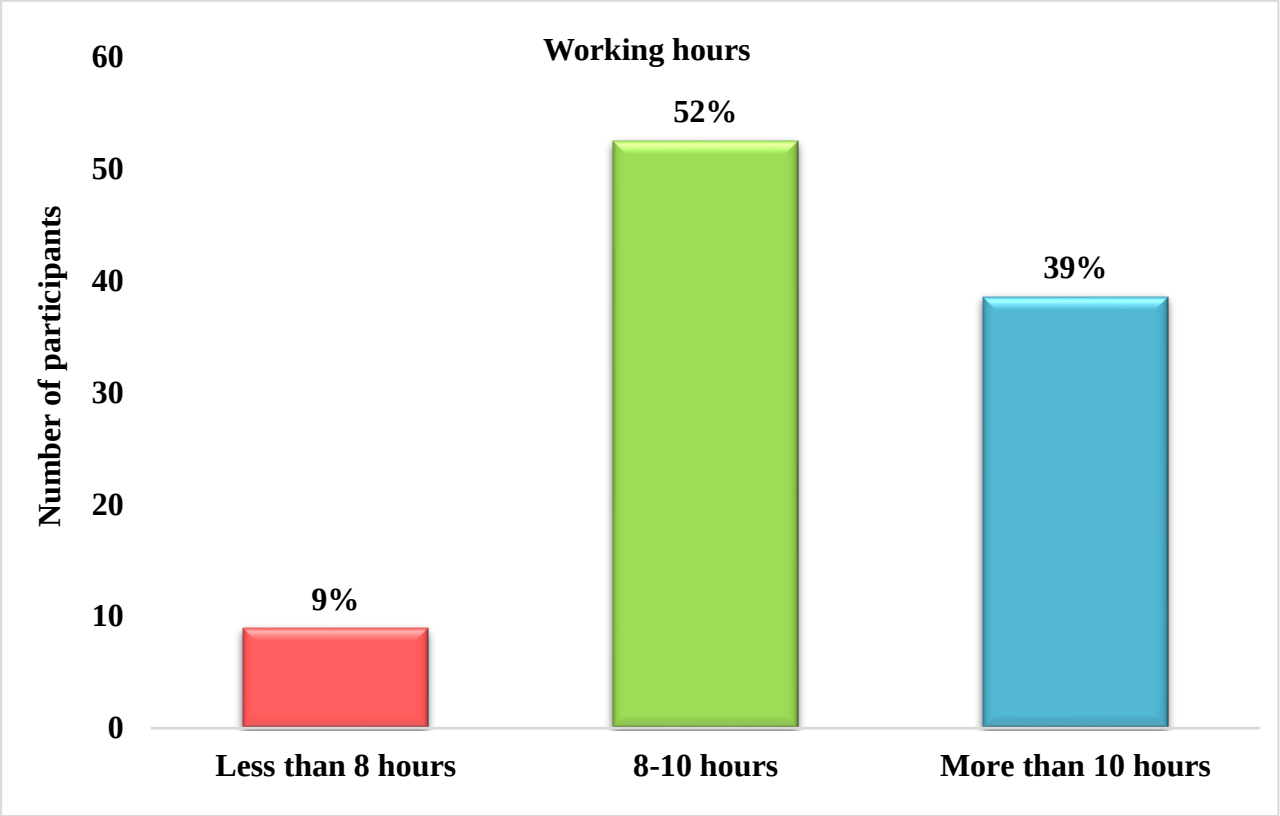


Figure 13: Working hours of the participants

4.14 Experience of WMSDs:

This study shows that among 101 participants 99% (n=100) nurses reported that they have experienced WMSDs and only 1% (n=1) participant reported no to experience of WMSDs.

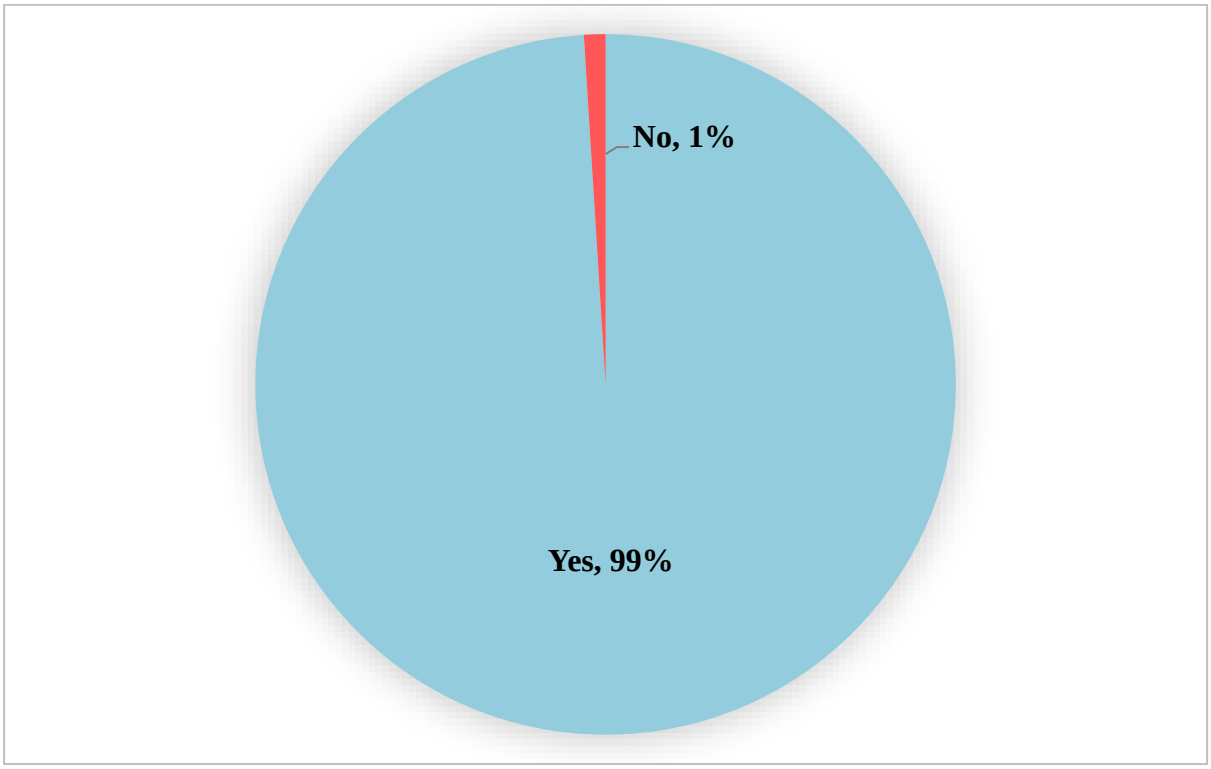


Figure 14: Experience of WMSDs of the participants

4.15 Types of symptoms:

Table-01: Types of symptoms of the participants

Variables	Number (n)	Percentage (%)
Aching	5	5%
Cramp	19	19%
Pain	58	57%
Tingling	12	12%
Numbness	3	3%
Burning sensation	4	4%

Among 101 participants 57% (n=57) nurses complains of pain as their symptoms. 19% (n=19) nurses reported of having cramp; 12% (n=12) participants have tingling sensation; 5% (n=5) participants have aching; 4% (n=4) participants have burning sensation and only 3% (n=3) participants have numbness.

4.16 Numeric Pain Rating Scale:

This study shows that among 101 nurses, 57% (n=58) participants have moderate pain; 22% (n=22) participants have mild pain; 20% (n=20) participants have severe pain. Only 1% (n=1) person indicates no pain.

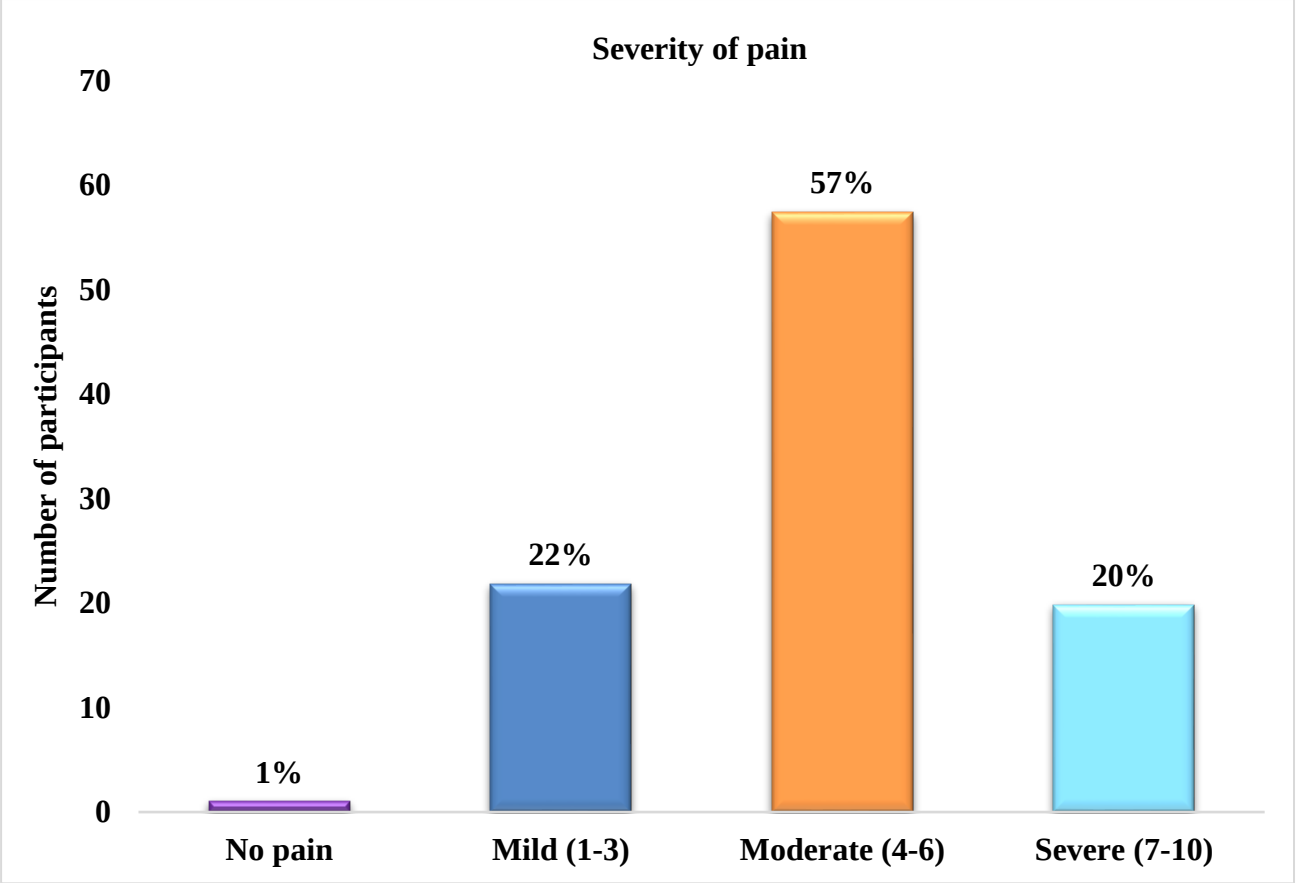


Figure 15: Severity of pain in NPRS of the participants

4.17 Work related musculoskeletal disorders at different joints:

Table-02: Affected body parts of the participants

Affected body parts	Number (n)	Percentage
Neck	46	14%
Thoracic	49	15%
Lumber	86	26%
Shoulder	10	3%
Elbow	6	2%
Wrist /hand	5	1%
Knee	57	17%
Hip /thigh/groin	25	8%
Ankle /feet	44	14%

This study shows that among 101 participants, 14% (N= 46) participants have symptoms in the neck, 15% (N= 49) participants have symptoms in thoracic region, 26% (N=86) participants have lower back symptoms, 3% (N=10) participants have shoulder complications, 2% (N=6) participants have symptoms at elbow, 1% (N=5) participants complain of wrist or hand complications. On the other hand, 17% (N=57) participants have complications of knee joint, 8% (N=25) have hip/ thigh or groin symptoms, 14% (N=44) participants have symptoms at ankle/feet. According to this study, neck, thoracic, lumbar, knee, hip and ankle are the most affected body parts of the participants.

4.18 Maintain correct posture:

There are 81% (n=82) participants reported that they cannot maintain correct posture during practice. Only 19% (n=19) participants are able to maintain correct posture during duty hours among 101 participants.

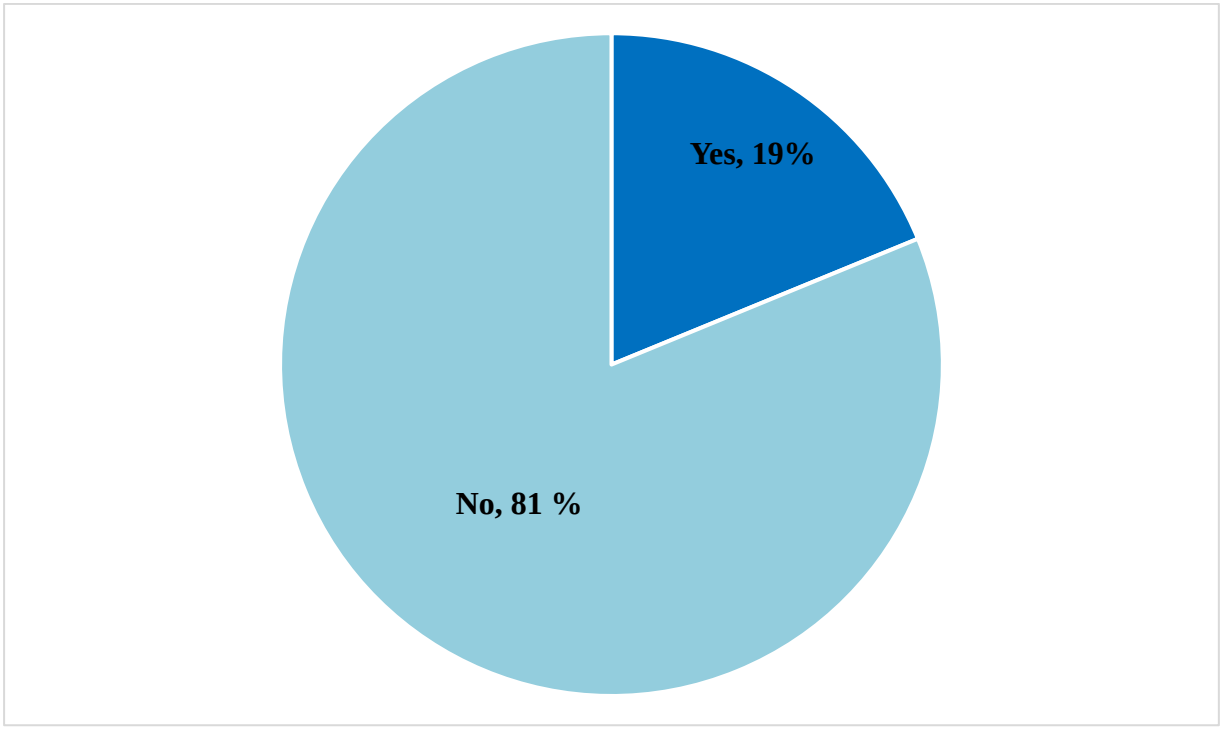


Figure 16: Correct posture of the participants

4.19 Posture during practice:

This study shows that among 101 participants, 63% (n=64) participants reported that they have to stay in standing position during duty hours. On the other hand, 35% (n=35) participants reported that they have to stay in forward bending position and only 2% (n=2) participants reported of maintain sitting position during duty hours.

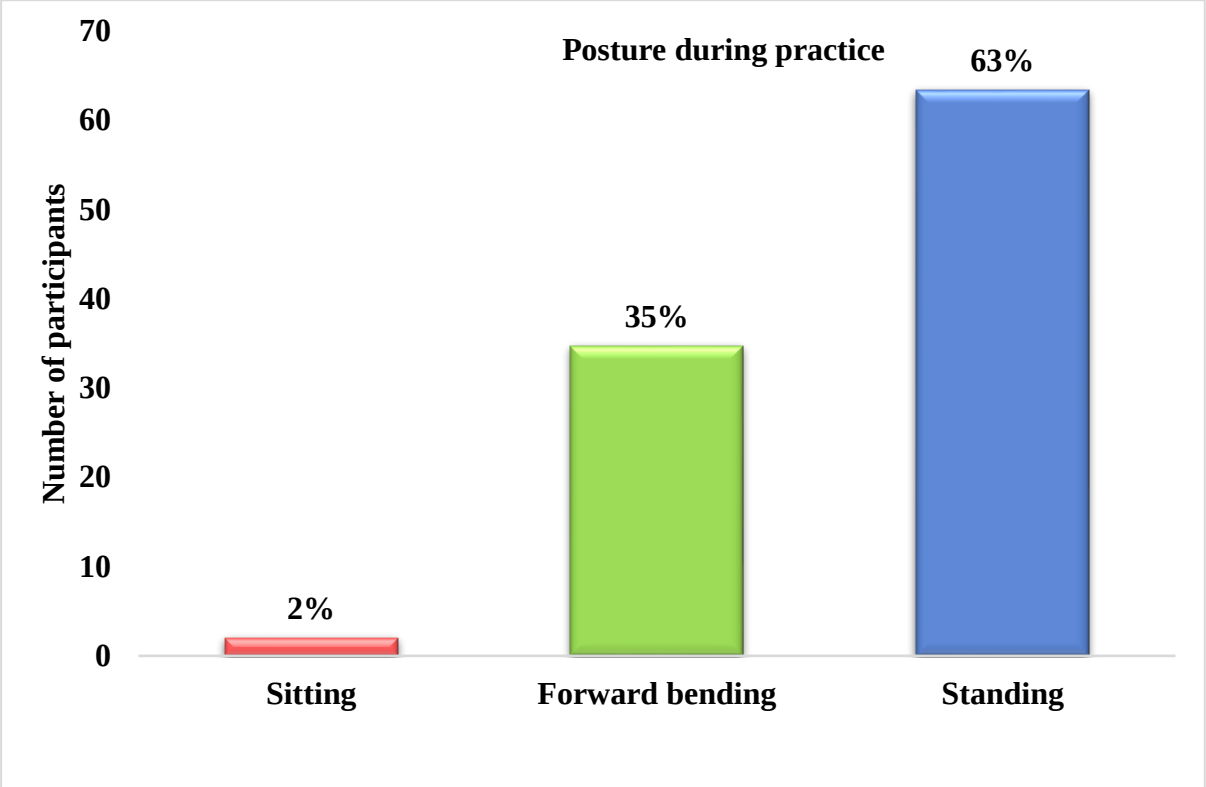


Figure 17: Posture during practice of the participants

4.20 Worse pain:

Among 101 participants, 61% (n=61) participants mentioned that bending position makes the pain worse, 33% (n=33) participants informed standing position as to make the pain worse and only 6% (n=6) participants informed as sitting position to make the pain worse.

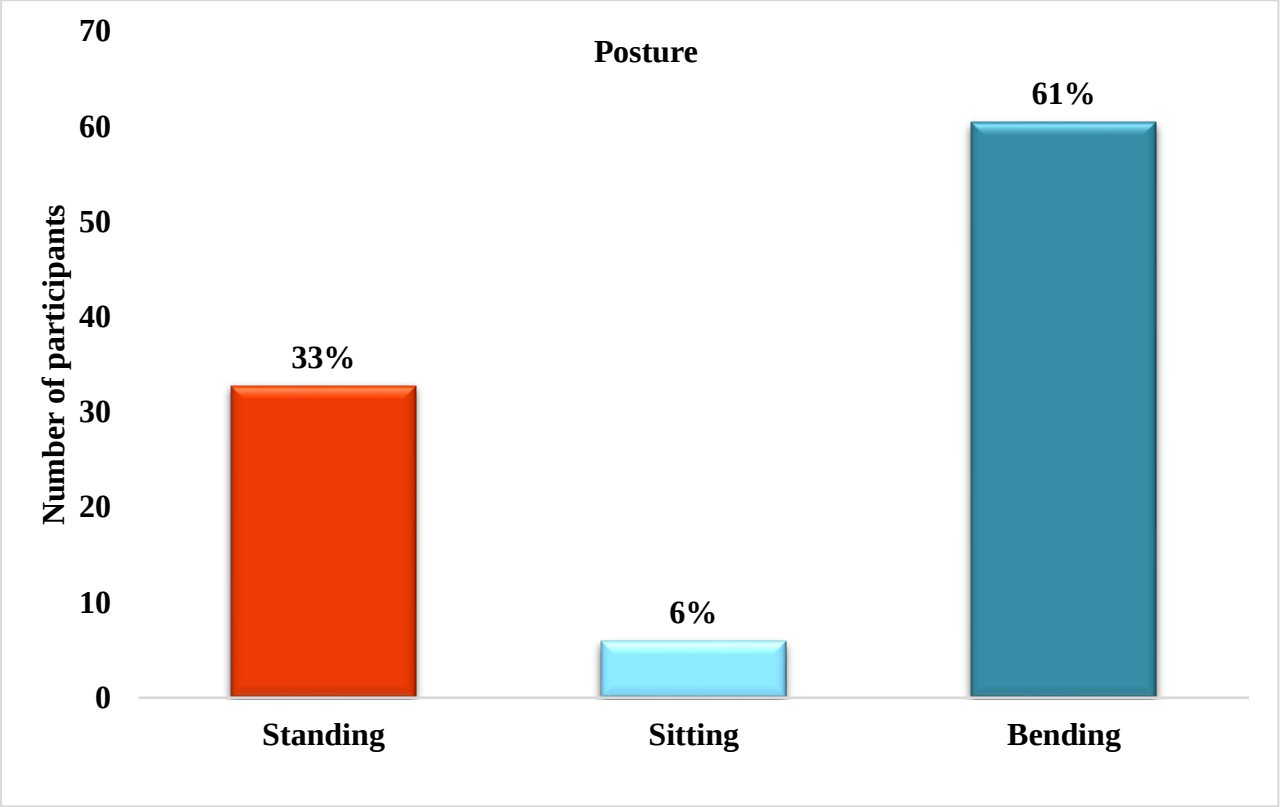


Figure 18: Worse pain of the participants

4.21 Risk factors:

Table-03: The risk factors of the WMSDs.

Risk factors	Yes	No
a) Repeatedly performing nursing tasks	96%	4%
b) Treating a large number of patients each day	96%	4%
c) Not enough rest/breaks during duty hour	97%	3%
d) Performing manual nursing techniques	89%	11%
e) Working in awkward or cramped positions	64%	36%
f) Working in the same position for long periods	99%	1%
g) Bending or twisting back in awkward way	89%	11%
h) Unanticipated sudden falls by patients	46%	54%
i) Lifting or transferring dependent patients	37%	63%
j) Carrying, lifting or moving heavy materials	33%	67%
k) Working over physical ability	92%	8%
l) Overtime, irregular shift, length of working day	94%	6%
m) Inadequate training in injury prevention	24%	76%
n) Lack of assistive devices and equipment	46%	54%
o) Malfunction of equipment	15%	85%

This analysis shows the risk factors that the nurses find responsible for WMSDs. Among 101 participants, 96% nurses face WMSDs for repeated works,96% for treating large number of patient each day, 99% for working in same position for long time, 97% for lack of resting time,94% for overtime, irregular shift and length of working day, 92% for working over physical ability, 89% for performing manual nursing techniques,89% for bending or twisting back in awkward position, 64% for working in awkward position, 46% for lack of assistive device and equipment,46% for unanticipated sudden fall by patients, 37% for lifting or transferring dependent patient, 33% for carrying, lifting or moving heavy materials,24% for inadequate training for injury prevention,15% for malfunction of equipment.

4.22 Association between most affected body parts and age, gender, BMI, working experience and working hours of the participants:

Table-04

Cross tabulation between most affected body parts and age of the participants		
Association between Variables	**Chi-square**	**P value**
Association between age and symptoms in Neck	1.091	.779
Association between age and symptoms in thoracic	6.179	.103
Association between age and symptoms in lumbar	4.432	.218
Association between age and symptoms in knee	41.973	.000*
Association between age and symptoms in hip	7.378	.061
Association between age and symptoms in ankle	13.724	.003*
Cross tabulation between most affected body parts and gender of the participants		
Association between Variables	**Chi-square**	**P value**
Association between gender and symptoms in Neck	.031	.859
Association between gender and symptoms in thoracic	.012	.912
Association between gender and symptoms in lumbar	.712	.399
Association between gender and symptoms in knee	1.367	.242
Association between gender and symptoms in hip	3.783	.052
Association between gender and symptoms in ankle	.783	.376
Cross tabulation between most affected body parts and BMI of the participants		
Association between Variables	**Chi-square**	**P value**
Association between BMI and symptoms in Neck	1.352	.717
Association between BMI and symptoms in thoracic	8.919	.030*
Association between BMI and symptoms in lumbar	6.107	.107
Association between BMI and symptoms in knee	8.201	.042*
Association between BMI and symptoms in hip	6.021	.111
Association between BMI and symptoms in ankle	2.027	.567

Cross tabulation between most affected body parts and working experience of the participants		
Association between Variables	**Chi-square**	**P value**
Association between working experience and symptoms in Neck	1.886	.390
Association between working experience and symptoms in thoracic	3.210	.201
Association between working experience and symptoms in lumbar	4.998	.082
Association between working experience and symptoms in knee	41.437	.000*
Association between working experience and symptoms in hip	9.658	.008*
Association between working experience and symptoms in ankle	8.433	.015*
Cross tabulation between most affected body parts and working hours of the participants		
Association between Variables	**Chi-square**	**P value**
Association between working hour and symptoms in neck	.865	.649
Association between working hour and symptoms in thoracic	3.095	.213
Association between working hour and symptoms in lumbar	13.486	.001*
Association between working hour and symptoms in knee	33.731	.000*
Association between working hour and symptoms in hip	9.098	.011*
Association between working hour and symptoms in ankle	22.082	.000*

This analysis showed that Age of the participant had a significant ($P<0.05$) association with Musculoskeletal disorder on different body parts- knees and ankles. This study assured that with the increasing of age musculoskeletal disorder also increased. Others were not significant ($P>0.05$) with age.

This analysis showed that gender of the participant had not significant ($P<0.05$) association with Musculoskeletal disorder on different body parts. So, the WMSDs were not dependent on gender of the participants.

This analysis showed that BMI of the participant had a significant (P<0.05) association with Musculoskeletal disorder on different body parts- thoracic and knee. This study assured that with the increasing of BMI, musculoskeletal disorder also increased. Others were not significant (P>0.05) with BMI.

This analysis showed that working experience of the participants had a significant (P<0.05) association with Musculoskeletal disorder on different body parts- knees and hip/thigh/groin and ankle/feet. This study assured that with the increasing of working experience, musculoskeletal disorder also increased. Others were not significant (P>0.05) with working experience.

This analysis showed that working hours of the participants had a significant (P<0.05) association with Musculoskeletal disorder on different body parts- lumbar, knees, hip/thigh/groin and ankle. This study assured that long working hour leaded to WMSDs. Others were not significant (P>0.05) with working hour.

4.23 Association between Numeric pain rating scale (NPRS) and age:

Table-05

Cross tabulation between Numeric pain rating scale and age of the participants:		
Association between NPRS and age	**Chi-square**	**P value**
	24.520	.004*

This analysis showed that age of the participants had a significant (P<0.05) association with the severity of pain or NPRS. This study assured that with the increasing of age, might increase the severity of pain.

4.24 Association between Numeric pain rating scale (NPRS) and working hours:

Table- 06

Cross tabulation between Numeric pain rating scale and working hours of the participants		
Association between NPRS and working hours	**Chi-square**	**P value**
	25.794	.000*

This analysis showed that the working hour of the participants had a significant (P<0.05) association with the severity of pain or NPRS. This study assured that with the long working hour, might be the reason of increasing the severity of pain.

4.25 Association between Numeric pain rating scale (NPRS) and working experience:

Table- 07

Cross tabulation between Numeric pain rating scale and working experience of the participants		
Association between NPRS and working experience	**Chi-square**	**P value**
	23.426	.001*

This analysis showed that the working experience of the participants had a significant ($P<0.05$) association with the severity of pain or NPRS. This study assured that with the long working experience, might indicate the higher score in NPRS.

CHAPTER – V DISCUSSION

This study has shown that musculoskeletal problems are particularly common in health care workers who are in direct contact with patients. In this study, it shows that working in the hospital can cause most musculoskeletal disorders among nurses.

The experience rate of work-related musculoskeletal disorders is 99%. Among the 101 participants, 100 participants felt work-related disorders and 1 participant did not. Another study shows the rate of 89.1% of experiencing WMSDs. Some other studies from Japan (91.9%), Sweden (84%) and US (72.5%). In a previous study from Nigeria, it is reported that the 12 months' prevalence period of self-reported musculoskeletal disorders at anybody site to be 90.7% (Fabunmi et al., 2008).

This study reveals that the majority of the participants were from the age range between 20-29 years of age followed by 40-49 years of age group. Another study in Nigeria reveals that the majority of the respondents were in the 31-40 years of range, followed by those in the 21-30 years of range (Akodu and Ashalejo, 2019). Another study reveals that the ages of the nurses were identified as the risk factor of WMSDs. Aged nurses showed a longer working duration of work. Although age was considered that the incidence of WMSDs may increase with the increase of age and working duration (Yan et al., 2017). From this study, it is revealed that there were more female than male nurses, there are 82 female nurses and 19 male nurses, which corresponds with previous studies in Nigeria (Tinubu et al.,2010). But the result differs from another research in Nigeria, which included more males than females. Another study from Iran showed a higher female rate (211) than male (89) (Heidari et al., 2019). A study in China showed a large difference in this ratio. There were 6460 female nurses and 214 male nurses among the 6674 participants (Yan et al., 2017).

This study shows that among 101 participants, 14% (N= 46) participants have symptoms in the neck, 15% (N= 49) participants have symptoms in the thoracic region, 26% (N=86) participants have lower back symptoms, 3% (N=10) participants have shoulder complications, 2% (N=6) participants have symptoms at the elbow, 1% (N=5) participants complain of the wrist or hand complications. On the other hand, 17% (N=57) participants have complications of knee joint, 8% (N=25) have hip/ thigh or

groin symptoms, 14% (N=44) participants have symptoms at ankle. So, the maximum number of nurses suffer from lower back disorders. It may be because of bending/twisting the back in awkward ways, standing for long periods when treating a large number of patients regularly, insufficient breaks, and lifting or transferring dependent patients. These were the most apparent work-related factors identified by the nurses in the present study. These findings support established findings that LBP is the most prevalent MSDs in adults. Another study reported an LBP prevalence of 84% among US perioperative nurses (Sheikhzadeh et al., 2009). It is also reported similar results among Nigerian nurses (Fabunmi et al., 2008). Another study in Iran indicated that the most prevalent disorders were reported in the back (88.33%), knees (83.33%), and thighs (71%). The other prevalence of WMSDs in the neck, shoulders, and knees was reported as 11%, 8.3%, and 19.56%, respectively (Heidari et al., 2019).

In this study it also demonstrates that 81% (n=82) nurses cannot maintain good posture during practice such as carrying, lifting, transferring etc. Another study on Taiwanese nurses also shows that maintaining deviated postures for prolonged periods daily, produces abnormal force among the para-spinal musculature, producing muscle damage (Chung et al.,2013). Many nurses do not maintain proper lifting techniques when transferring patient, they do not bend their knees and support lower back with brace (Long et al.,2013). A study in Maharashtra, India, showed that among hospital nurses there were high prevalence of lower back, shoulder, neck and knee pain due to working in a sustained position for prolonged duration, bending, twisting, lifting and treating excessive number of patients (Anap et al., 2013).

The significant correlation is seen between age- and work-related musculoskeletal disorders in the knee and ankle joint that congruent with the result in Iran, that indicates significant relationship in the neck, shoulders and knees (Heidari et al., 2019). Another study in Kuwait shows the same significant correlation between age and pain in the neck, shoulder and knee. The relationship between gender and WMSDs was not found significant in this study in another study it indicated a significant relationship was found between gender and low back pain (Spyropoulos et al., 2007). The relationship between most affected body parts and BMI was found significant in the thoracic and knee joint. Another finding showed that the prevalence of musculoskeletal disorders is not dependent on the weight of the nurses (Elsayed, 2019). This is consistent with the study

done in Karachi that noted of no co-relation of BMI with prevalence of pain (Chung et al., 2013). But this finding is contrary to one of the systematic reviews on MSDs among nurses where obesity reported to be the primary intrinsic predisposing risk factor of lower back injury among nurse (Yan et al., 2017). It was reported that the obese nurses correlated to the prevalence of lower back injuries. Findings in another study showed that overweight, obese professionals have a greater chance of developing WMSDs (Keiri, 2013).

In this study, the relationship between most affected body parts and working experience of the participants shows significant correlation between knee joint hip joint and ankle joint. Another study in Iran revealed a significant relationship between working experience and pain in the hip, neck, knees, and shoulders (Heidari et al., 2019). In other words, the rate of work-related musculoskeletal disorders significantly increases by increasing work experience, which is in line with the results (Gorgi et al.,2014). In addition, it is suggested that the prevalence of these disorders increases by increasing work experience (Khosroabadi et al., 2010). On the other hand, the relationship between most affected body parts and working hours of the participants shows substantial result in the lumbar spine, hip joint, knee joint and ankle joint. This study supports the other study in Iran that the number of working hours per week is positively correlated with the pain in the knees and wrists. (Heidari et al., 2019). They emphasized that short rest periods during 8 hours of work in bank employees can lead to WMSDs.

From this study it is estimated that the relationship among numeric pain rating scale and age, working hour and working experience is found significant which is related to another study in Xinxiang, China. In that study, the ages of the nurses were identified as the risk factor of work-related musculoskeletal disorders. Aged nurses are more vulnerable to WMSDs and a longer working duration leads to a high numeric pain rating score. The fact is that the incidence of WMSDs may increase with the increase of the age and working duration. Besides, the work load may increase with the extended work duration, and the work load increased in the presence of habitual position, which may finally induce the increase of prevalence of work-related musculoskeletal disorders (Darvishi et al., 2016). Moreover, the disruption of work load and working balance of the body may contribute to the chronic overload, which is also considered as a potential factor for the of WMSDs. Another study showed a positive correlation between knee

and wrist pain with working hours per week. In fact, the symptoms get worsened in the knees and wrists by increasing the work hours per week. According to the present study, about 52% participants work 8-10 hours per day, 39% participants work more than 10 hours per day. These findings correlate with another study that shows 53.2% of the participants working for more than 12 hours a day, and 36.2% working 6 hours–12 hours a day. It indicates that the difference is statistically significant (Heidari et al., 2019).

Limitation of the study:

Although the findings indicated high rates of WMSDs in some parts of bodies among the nurses, the present study had some limitations. Personality, psychological, social, and cultural backgrounds, along with individual differences and mental states were uncontrollable variables in this study while replying to the questionnaire. Moreover, the sample number is not large enough to bring completely accurate data for the work-related musculoskeletal disorders in the nurses because the sample area was short. Due to COVID-19 situation along with lockdown, very few hospitals have been selected for data collection. Hospitals outside Dhaka could not be selected as study area. Meanwhile, it is not adequate to establish a system to prevent the incidence of musculoskeletal disorders in the nurses. In future, it should be focused on the study of preventing the WMSDs in the nursing population.

CHAPTER – VI CONCLUSION & Recommendation

In this study, we aim to investigate the status of work-related musculoskeletal disorders in the nurses in different hospitals. Our data indicated that age, BMI, working experience and working duration were closely related to WMSDs. In future, further measures should be taken to arrange for appropriate schedule of duty in order to decrease the incidence of work-related musculoskeletal disorders.

Based on the results in the present study, it is necessary to adopt interventional program to prevent WMSDs regarding the rate in some parts of the body and its significant association with specific demographic characteristics related to the nursing profession. Therefore, all the institutions and organizations should come forward to improve quality of care for nurses and should design necessary plans to manage physical strains, improve working conditions, and increase more break time.

It is found that a high number of nurses' with WMSDs symptoms (99%) that require responsiveness. Lower back is the most prevalent part of the body that 86 nurses have suffered with pain or discomfort in this area. The severity of pain depends on the age for example it has been found significant ($p=0.004$) that, the increasing of age might increase the severity of pain according to Numeric Pain Rating Scale (NPRS).

Further research should be conducted to establish the epidemiology of WMSDs among the nurses and support the need to develop prevention and control programs in hospitals that include organizational, technical and even individual measures to promote the active participation of nurses in a process that definitely leads to a change of preventing work related musculoskeletal disorders.

Recommendations

The purpose of the study was to estimate the common work-related musculoskeletal disorders among nurses. Though, the research had some limitations but some further step that might help for the better accomplishment of further research. In any further study, it would be useful to identify the factors, which might influence the nurses affect with WMSDs and identify the differences from other occupation. Because of COVID - 19 pandemic, it was not possible to fulfill the actual sample size. For the ensuring of the generalization of the research it is recommended to investigate a large sample. In this study only investigate the nurses from some selected hospitals. But due to time limitation as well as COVID-19 situation along with lockdown, there was not able to gather huge number of participants and for this result cannot be generalized in all over the Bangladesh. So, for further study it is strongly recommended to increase sample size to generalize the result in all of the hospitals in Bangladesh.

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Appendix 1

Approval of thesis proposal

BANGLADESH HEALTH PROFESSIONS INSTITUTE

বাংলাদেশ হেল্‌থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)

Bangladesh Health Professions Institute (BHPI)

(The Academic Institute of CRP)

Ref. CRP-BHPI/IRB/12/2020/433 *Date:* 27/12/2020

Nazifa Anjum
B.Sc. in Physiotherapy
Session: 2015-16, Student ID:112150311
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of the thesis proposal **"Common work-related musculoskeletal disorders among the nurses in different hospitals"** by ethics committee.

Dear Nazifa Anjum,
Congratulations!
The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above-mentioned dissertation, with yourself, as the Principal investigator. Thefollowing documentshave been reviewed and approved:

Sr.No.	**Name of the Documents**
1	Dissertation Proposal
2	Questionnaire (English & Bangali version)
3	Information sheet & consent form.

The purpose of the study is to find out the nature of the practice of Physiotherapy in Bangladesh. The study involves the use of a questionnaire to explore the practice of Physiotherapy that may take 15 to 20 minutes and there is no likelihood of any harm to the participants. Data collectors will receive informed consent from all participants. Any data collected will be kept confidential. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 8:30AM on 1st March 2020 at BHPI (23rd IRB Meeting).

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

Best regards,

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

সিআরপি-চাপাইন, সাভার, ঢাকা-১৩৪৩, বাংলাদেশ, ফোন ঃ ৭৭৪৫৪৬৪-৫, ৭৭৪১৪০৪ ফ্যাক্স ঃ ৭৭৪৫০৬৯
CRP-Chapain, Savar, Dhaka-1343, Tel : 7745464-5, 7741404, Fax : 7745069, E-mail : contact@crp-bangladesh.org, www.crp-bangladesh.org

Appendix 2

Permission Letter

Date: 27th December 2020

The Chairman

Institutional Review Board (IRB)

Bangladesh Health Professions Institute (BHPI)

CRP-Savar, Dhaka-1343, Bangladesh

Subject: Application for review and ethical approval.

Sir,

With due respect and humble submission to state that I am Nazifa Anjum, student of 4th Professional B.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI). This is a 4(four) year full-time course. Conducting a thesis project is partial fulfillment of the requirement for the degree of B.Sc. in physiotherapy. I have to conduct a thesis entitled, **"Common work-related musculoskeletal disorders among the nurses in different hospitals"** under the supervision of Farjana Sharmin, Lecturer of Bangladesh Health Professions Institute (BHPI), Jr. Consultant and OPD In-charge, Department of Physiotherapy, CRP, Savar, Dhaka-1343. The purpose of this study is to find out the work-related musculoskeletal disorders among the nurses. I would like to assure you that anything of my study will not be harmful to the participants. Informed consent will be received from all participants, data will be kept confidential.

I, therefore pray and hope that your honor would be kind enough to approve my thesis proposal and give me permission to start data collection and oblige thereby.

Sincerely,

Nazifa Anjum

Nazifa Anjum
4th professional B.Sc. in Physiotherapy
Roll: 40, Session: 2015-16, ID: 112150311
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Recommendation from the thesis supervisor:

Farjana Sharmin

Farjana Sharmin
Lecturer of Bangladesh Health Professions Institute (BHPI)
Jr. Consultant and OPD In-charge
Department of Physiotherapy
CRP, Savar, Dhaka

Attachment: Thesis Proposal, Questionnaire (English & Bengali version), Informed consent.

Appendix 3

Permission letter from hospital

বাংলাদেশ হেল্‌থ প্রফেশন্স ইনষ্টিটিউট (বিএইচপিআই)
BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)
(The Academic Institute of CRP)
CRP-Chapain, Savar, Dhaka, Tel: 7745464-5, 7741404 , Fax: 7745069
BHPI-Mirpur Campus, Plot-A/5, Block-A, Section-14, Mirpur, Dhaka-1206. Tel: 8020178,8053662-3, Fax: 8053661

সিআরপি-বিএইচপিআই/০৬/২১/৬ তারিখ ঃ ১২.০৬.২০২১

প্রতি
পরিচালক,
আরএমসি হাসপাতাল
বাড়ী: ১৯, রাস্তা: ৫, সেক্টর: ৭,
উত্তরা, ঢাকা- ১২৩০।

বিষয় ঃ রিসার্চ প্রজেক্ট এর জন্য আপনার প্রতিষ্ঠান সফর ও তথ্য সংগ্রহ প্রসঙ্গে।

জনাব,
আপনার সদয় অবগতির জন্য জানাচ্ছি যে, পক্ষাঘাতগ্রস্তদের পুনর্বাসন কেন্দ্রে-সিআরপি'র শিক্ষা প্রতিষ্ঠান বাংলাদেশ হেলথ্ প্রফেশনস্ ইনষ্টিটিউট (বিএইচপিআই) ঢাকা বিশ্ববিদ্যালয় অনুমোদিত বিএসসি ইন ফিজিওথেরাপি কোর্স পরিচালনা করে আসছে।

উক্ত কোর্সের ছাত্রছাত্রীদের কোর্স কারিকুলামের অংশ হিসাবে বিভিন্ন বিষয়ের উপর রিসার্চ ও কোর্সওয়ার্ক করা বাধ্যতামুলক।

বিএইচপিআই'র ৪র্থ বর্ষ বিএসসি ইন ফিজিওথেরাপি কোর্সের ছাত্রী নাজিফা আনজুম তার রিসার্চ সংক্রান্ত কাজের তথ্য সংগ্রহের জন্য আপনার সুবিধামত সময়ে আপনার প্রতিষ্ঠানে সফর করতে আগ্রহী। তার রিসার্চ শিরোনাম
" Common work related Musculoskeletal disorders among the nurses in different Hospitals."

তাই তাকে আপনার প্রতিষ্ঠান সফর এবং প্রয়োজনীয় তথ্য প্রদান সহ সার্বিক সহযোগীতা প্রদানের জন্য অনুরোধ করছি।

ধন্যবাদান্তে

মোঃ সফিকুল ইসলাম
সহযোগী অধ্যাপক ও বিভাগীয় প্রধান
ফিজিওথেরাপি বিভাগ
বিএইচপিআই, সিআরপি।

Appendix 4

Permission letter from hospital

বাংলাদেশ হেল্‌থ প্রফেশন্স ইনষ্টিটিউট (বিএইচপিআই)
BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)
(The Academic Institute of CRP)
CRP-Chapain, Savar, Dhaka, Tel: 7745464-5, 7741404 , Fax: 7745069
BHPI-Mirpur Campus, Plot-A/5, Block-A, Section-14, Mirpur, Dhaka-1206. Tel: 8020178,8053662-3, Fax: 8053661

সিআরপি-বিএইচপিআই/০৬/২১/৬ তারিখ ঃ ১২.০৬.২০২১

প্রতি
মহাব্যবস্থাপক
শিন শিন জাপান হাসপাতাল
১৭ গরিব - ই - নেওয়াজ এ ভি ই, সেক্টরঃ ১১,
উত্তরা, ঢাকা-১২৩০।

বিষয় ঃ রিসার্চ প্রজেক্ট এর জন্য আপনার প্রতিষ্ঠান সফর ও তথ্য সংগ্রহ প্রসঙ্গে।

জনাব,
আপনার সদয় অবগতির জন্য জানাচ্ছি যে, পক্ষাঘাতগ্রস্তদের পুনর্বাসন কেন্দ্রে-সিআরপি'র শিক্ষা প্রতিষ্ঠান বাংলাদেশ হেলথ্ প্রফেশনস্ ইনষ্টিটিউট (বিএইচপিআই) ঢাকা বিশ্ববিদ্যালয় অনুমোদিত বিএসসি ইন ফিজিওথেরাপি কোর্স পরিচালনা করে আসছে।

উক্ত কোর্সের ছাত্রছাত্রীদের কোর্স কারিকুলামের অংশ হিসাবে বিভিন্ন বিষয়ের উপর রিসার্চ ও কোর্সওয়ার্ক করা বাধ্যতামুলক।

বিএইচপিআই'র ৪র্থ বর্ষ বিএসসি ইন ফিজিওথেরাপি কোর্সের ছাত্রী নাজিফা আনজুম তার রিসার্চ সংক্রান্ত কাজের তথ্য সংগ্রহের জন্য আপনার সুবিধামত সময়ে আপনার প্রতিষ্ঠানে সফর করতে আগ্রহী। তার রিসার্চ শিরোনাম
" Common work related Musculoskeletal disorders among the nurses in different Hospitals."

তাই তাকে আপনার প্রতিষ্ঠান সফর এবং প্রয়োজনীয় তথ্য প্রদান সহ সার্বিক সহযোগীতা প্রদানের জন্য অনুরোধ করছি।

ধন্যবাদান্তে

মোঃ সফিকুল ইসলাম
সহযোগী অধ্যাপক ও বিভাগীয় প্রধান
ফিজিওথেরাপি বিভাগ
বিএইচপিআই, সিআরপি।

Md. Zahidul Islam
Assistant General Manager
(Operational Management)
SHIN-SHIN Japan Hospital
Mobile:01916-265056

Appendix 5

Permission letter from hospital

বাংলাদেশ হেল্‌থ প্রফেশন্স ইনষ্টিটিউট (বিএইচপিআই)
BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)
(The Academic Institute of CRP)
CRP-Chapain, Savar, Dhaka, Tel: 7745464-5, 7741404 , Fax: 7745069
BHPI-Mirpur Campus, Plot-A/5, Block-A, Section-14, Mirpur, Dhaka-1206. Tel: 8020178,8053662-3, Fax: 8053661

সিআরপি-বিএইচপিআই/০৬/২১/ তারিখ ঃ ১২.০৬.২০২১

প্রতি
পরিচালক
প্রাইম জেনারেল হাসপাতাল
হোসেন মার্কেট, টঙ্গী, গাজীপুর।

বিষয় ঃ রিসার্চ প্রজেক্ট এর জন্য আপনার প্রতিষ্ঠান সফর এবং তথ্য ও উপাত্ত সংগ্রহ প্রসঙ্গে।

জনাব,
আপনার সদয় অবগতির জন্য জানাচ্ছি যে, পক্ষাঘাতগ্রস্তদের পুনর্বাসন কেন্দ্রে-সিআরপি'র শিক্ষা প্রতিষ্ঠান বাংলাদেশ হেলথ্ প্রফেশনস্ ইনষ্টিটিউট (বিএইচপিআই) ঢাকা বিশ্ববিদ্যালয় অনুমোদিত বিএসসি ইন ফিজিওথেরাপি কোর্স পরিচালনা করে আসছে।

উক্ত কোর্সের ছাত্রছাত্রীদের কোর্স কারিকুলামের অংশ হিসাবে বিভিন্ন বিষয়ের উপর রিসার্চ ও কোর্সওয়ার্ক করা বাধ্যতামুলক।

বিএইচপিআই'র ৪র্থ বর্ষ বিএসসি ইন ফিজিওথেরাপি কোর্সের ছাত্রী নাজিফা আনজুম তার রিসার্চ সংক্রান্ত কাজের তথ্য সংগ্রহের জন্য আপনার সুবিধামত সময়ে আপনার প্রতিষ্ঠানে সফর করতে আগ্রহী। তার রিসার্চ শিরোনাম
" Common work related Musculoskeletal disorders among the nurses in different Hospitals."

তাই তাকে আপনার প্রতিষ্ঠান সফর এবং প্রয়োজনীয় তথ্য ও উপাত্ত প্রদান সহ সার্বিক সহযোগীতা প্রদানের জন্য অনুরোধ করছি।

ধন্যবাদান্তে

মোঃ আব্দুস সালাম
ম্যানেজিং ডিরেক্টর
প্রাইম জেনারেল হসপিটাল
হোসেন মার্কেট, টঙ্গী, গাজীপুর।

মোঃ সফিকুল ইসলাম
সহযোগী অধ্যাপক ও বিভাগীয় প্রধান
ফিজিওথেরাপি বিভাগ
বিএইচপিআই, সিআরপি।

Appendix 6

Informed consent

(please read out to the participant)

Assalamu Alaikum,

My name is Nazifa Anjum. I am conducting this research study which is the part of B.Sc. in Physiotherapy program and my research title is **"Common Work related common musculoskeletal disorders among the nurses in different hospitals"** under Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some personal and other related information about WMSDs among the nurses. You have to answer some questions which are mentioned in the attached form. This will take approximately 20-30 minutes.

I would like to inform you that this is a purely professional study and will not be used for any other purpose. All information provided by you will be treated as confidential and in the event of any report or publication it will be ensured that the source of information remains anonymous.

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

If you have any query about the study or your right as a participant, you may contact with me or my supervisor Farjana Sharmin, Lecturer of BHPI, OPD in charge and consultant, Department of Physiotherapy, CRP, Savar, Dhaka-1343.
Do you have any questions before I start?

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

Yes ☐ No ☐

Signature of the Participant's..... Date……

Signature of the Data collector's…… Date……

Appendix 7

সম্মতিপত্র

আসসালামু আলাইকুম,

আমি নাজিফা আনজুম, বাংলাদশ হেলথ প্রফেশন্স ইন্সটিটিউট এর বি.এস.সি ইন ফিজিওথেরাপি কোর্সের ৪র্থ বর্ষের একজন শিক্ষার্থী। অধ্যায়নের অংশ হিসেবে আমাকে একটি গবেষণা সম্পাদন করতে হবে এবং এটা আমার প্রাতিষ্ঠানিক কাজের একটা অংশ। নিম্নোক্ত তথ্যাদি পাঠ করার পর অংশগ্রহণকারীদের গবেষণায় অংশগ্রহনের জন্য অনুরোধ করা হলো।

আমার গবেষণার বিষয় হল **" বিভিন্ন হাসপাতালে কর্মরত নার্সদের কর্ম সম্পর্কিত অস্থি ও মাংসপেশির সাধারণ সমস্যাবলী"।** এই পরীক্ষামূলক গবেষণার মাধ্যমে আমি নার্সদের কর্ম সম্পর্কিত অস্থি ও মাংসপেশির সাধারণ সমস্যাবলী নিরূপণের একটি পরীক্ষা করব।

আমি প্রতিজ্ঞা করছি যে, এই গবেষণা আপনার জন্য ঝুঁকিপূর্ণ হবে না অথবা আপনার কোন ক্ষতি করবে না। গবেষণা চলাকলীন সময়ে কোন রকম দ্বিধা বা ঝুঁকি ছাড়াই যেকোন সময়ে আপনি এটাকে বাদ দিতে পারবেন। এই গবেষণার প্রাপ্ত তথ্য সম্পূর্ণভাবে গোপনীয় থাকবে এবং অংশগ্রহণকারীর ব্যক্তিগত তথ্য অন্য কোথাও প্রকাশ করা হবে না।

যদি আপনার গবেষণা সম্পর্কে কোনো জিজ্ঞসা থাকে তবে অনুগ্রহপূর্বক যোগাযোগ করতে পারেন আমার সাথে অথবা আমার সুপারভাইজার ফারজানা শারমিন, লেকচারার অব বিএইচপিআই, ওপিডি ইন চার্জ এবং কনসালট্যান্ট, ফিজিওথেরাপি বিভাগ, সিআরপি, সাভার, ঢাকা- ১৩৪৩ ।

শুরু করার আগে আপনার কি কোন প্রশ্ন আছে ?

আমি কি শুরু করতে পারি ?

☐ হ্যা ☐ না

অংশগ্রহনকারীর স্বাক্ষর.....তারিখ.....

তথ্য সংগ্রহকারীর স্বাক্ষর.....তারিখ.....

Appendix 8

QUESTIONNAIRE FOR WORK RELATED COMMON MUSCUOSKELETAL DISORDERS

Socio-demographic Questionnaire

Code:

Name:

1. Age: _____
2. Gender: a) Male ☐ b) Female ☐
3. Residence: (a) Rural ☐ (b) Urban ☐ (c) Semi urban ☐
4. Religion: (a) Islam ☐ (b) Hinduism ☐
   (c) Christianity ☐ (d) Buddhism ☐
5. Marital status :
   a) Single ☐
   b) Married ☐
   c) Widowed ☐
   d) Divorced ☐
6. Level of education: (please indicate by ticking)
   a) Diploma ☐
   b) Bachelor ☐
   c) Masters ☐
7. Which area does your current work involve?
   a) Neurology ☐
   b) Orthopaedics ☐
   c) Maternity Surgery ☐
   d) Medical wards ☐
   e) Psychiatry ☐
   f) Critical units (ICU, NICU, CCU, Burn unit etc.) ☐
   g) Others: _____
8. Total number of family member: _____

9. Total number of earning member: _____
10. Status of self-reported general health : (a) Good ☐ (b) Fair ☐ (c) Poor ☐
11. Body weight: _____ kg
12. Height: ____ ' ____"
13. BMI: _____ weight (kg) / height $(m)^2$

Section A: Information on work related musculoskeletal disorders

Instructions: You are kindly requested to fill in the questionnaire by putting a 'Tick' in the appropriate box. One 'tick' for each question.

1. How long have you been working as a nurse?
(a) Less than 5 years (b) 5-10 years (c) More than 10 years

2. How many hours do you work per day?
(a) Less than 8 hours (b) 8-10 hours (c) More than 10 hours

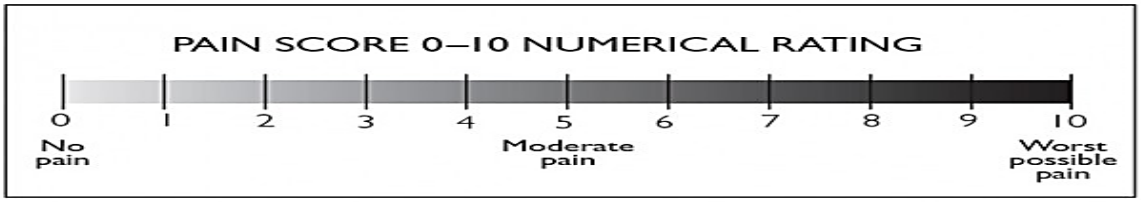
3. Have you ever experienced work- related musculoskeletal disorders in any part of your body?
(a) Yes (b) No

4. If yes, when did you first experience this work-related musculoskeletal disorder?
(a) 0-1 year (b) 1 -5 years (c) 5-10 years (d) 10-15 years (e) Can't remember

5. What words best describe your symptoms? (Please give a tick on your answer)
(a) Aching (b) Cramp (c) Pain (d) Tingling (e) Numbness (f) Stiffness (g) Burning sensation

6. What is the severity of your pain?
(a) Mild (b) Moderate (c) Severe

7. Make the severity of your pain on the following scale (NPRS)



8. Does pain hamper your clinical practice as a nurse?

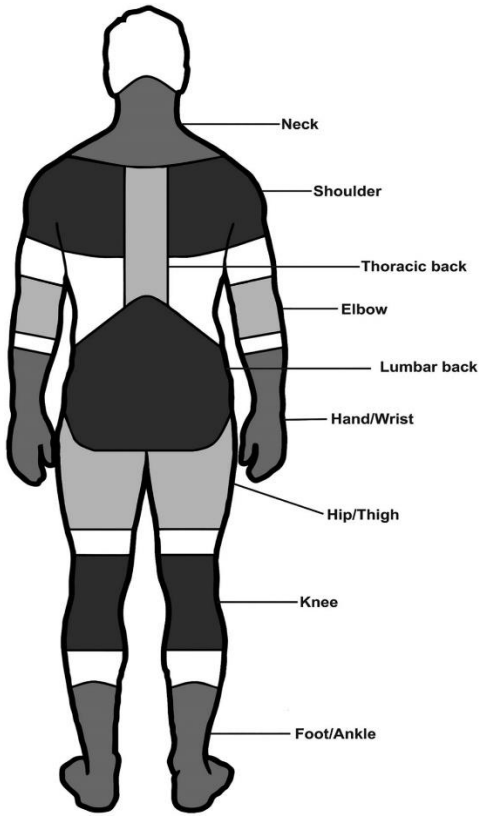
(a) Yes (b) No

9. Did you stay away from work because of pain?

(a) Yes (b) No

10. In the table below, the body parts are shown. Please indicate where your pain, ache, or discomfort is located, if any.

Body part	**Yes**	**No**
Neck		
Thoracic region		
Lumbar region		
Shoulder		
Elbows		
Wrist/hand		
Knees		
Hip/thigh/groin region		
Ankles/feet		



11. Have you taken any sick leave due to Back pain /Neck pain /Shoulder /Elbow/ Wrist/Hip/Ankle pain?

(a) Yes (b) No

12. Had your working performance reduced due to pain?

(a) Yes (b) No

13. Are you satisfied with the physical environment (structural facilities) of your workplace?

(a) Not at all (b) Moderately satisfied (c) Satisfied

14. Can you maintain correct posture during your practice?

(a) Yes (b) No (c) Sometimes

15. Which posture do you work most of the time during clinical practice?

(a) Sitting (b) Forward bending (c) Standing

16. Which posture makes your pain worse?

(a) Standing (b) Sitting (c) Bending (d) Walking

17. Which posture relives the pain?

(a) Standing (b) Sitting (c) Lying (d) Bending (e) Walking

18. How does your pain affect your ADLs?

(a) Not at all (b) Mildly hamper (c) Moderately hamper (d) Severely hamper

19. What do you like to suggest in order to improve the physical environment (structural facilities) of your workplace?

(a) Mobile bed (b) Sitting arrangement (chair & table) (c) Adequate space (Free floor space) (d) All

20. Did you go to physician or physiotherapist due to any musculoskeletal problem?

(a) Yes (b) No

21. Have you ever diagnosed your problem?

(a) Yes (b) No

22. If yes, what was the diagnosis?

_____

23. What kind of treatment did you receive?

(a) Medication (b) Physiotherapy (c) surgery (d) others (e) no treatment

24. If yes, what was the result?

(a) improved (b) unchanged (c) worse

Section B: Work related risk factors

The list below describes factors that could contribute to work related MSDs amongst nurses. Please indicate by ticking the most applicable option.

Risk factors	**Yes**	**No**
p) Repeatedly performing nursing tasks		
q) Treating a large number of patients each day		
r) Not enough rest/breaks during duty hour		
s) Performing manual nursing techniques		
t) Working in awkward or cramped positions		
u) Working in the same position for long periods		
v) Bending or twisting your back in an awkward way		
w) Unanticipated sudden movements or falls by patients		
x) Lifting or transferring dependent patients		
y) Carrying, lifting or moving heavy materials		
z) Working over your physical ability		
aa) Overtime, irregular shift, length of working day		
bb) Inadequate training in injury prevention		
cc) Lack of assistive devices and equipment		
dd) Malfunction of equipment		

Appendix 9

"নার্সদের কর্ম সম্পর্কিত অস্থি ও মাংসপেশির সাধারণ সমস্যার প্রশ্নাবলী"

জনসংখ্যা ভিত্তিক প্রশ্নাবলী

কোডঃ

নামঃ

১) বয়সঃ

২) লিঙ্গঃ ক) নারী ☐ খ) পুরুষ ☐

৩) বাসস্থানঃ ক) গ্রাম ☐

খ) শহর ☐

গ) মফস্বল ☐

৪) ধর্মঃ ক) ইসলাম ☐

খ) হিন্দু ☐

গ) খ্রিষ্টান ☐

ঘ) বৌদ্ধ ☐

৫) বৈবাহিক অবস্থাঃ ক) অবিবাহিত ☐

খ) বিবাহিত ☐

গ) বিধবা ☐

ঘ) বিবাহ বিচ্ছেদ ☐

৬) শিক্ষাগত যোগ্যতাঃ ক) ডিপ্লোমা ☐

খ) ব্যাচেলর ☐

গ) মাস্টার্স ☐

৭) বর্তমান কাজের ক্ষেত্রঃ ক) নিউরোলজি ইউনিট ☐

খ) অর্থপেডিক ☐

গ) প্রসূতি অস্ত্রোপচার ☐

ঘ) মেডিক্যাল ওয়ার্ড ☐

ঙ) মনরোগ বিভাগ ☐

চ) বিশেষ বিভাগ

(আইসিইউ, এনআইসিইউ, সিসিইউ, বার্নইউনিট ইত্যাদি) ☐

ছ) অন্যান্য _____

৮) পরিবারের সদস্য সংখ্যাঃ _____

৯) অর্থ উপার্জনকারীর সংখ্যাঃ _____

১০) সর্বোপরি স্বাস্থ্যের অবস্থাঃ ক) ভাল ☐

খ) এত খারাপ না ☐

গ) খারাপ ☐

১১) ওজনঃ _____কেজি

১২) উচ্চতাঃ : _____’ _____”

১৩) বিএমআইঃ _____ (ওজন/ উচ্চতা ^{2})

ক বিভাগঃ কর্ম সম্পর্কিত অস্থি ও মাংসপেশির সমস্যার তথ্য

নির্দেশনাঃ উপযুক্ত উত্তরের ঘরে টিক চিহ্ন দিয়ে প্রশ্নাবলী পূরণ করার জন্য অনুরোধ করা হচ্ছে । প্রতিটি প্রশ্নের জন্য একটি টিক চিহ্ন ।

১) আপনি কত বছর ধরে নার্স হিসেবে কাজ করেন?

ক) ৫ বছরের কম খ) ৫-১০ বছর গ) ১০ বছরের বেশি

২) আপনি দিনে কত ঘন্টা কাজ করেন?

ক) ৮ ঘন্টার কম খ) ৮-১০ ঘন্টা গ) ১০ ঘন্টার বেশি

৩) আপনার শরীরের যেকোন অংশে কখনও কর্ম সংক্রান্ত অস্থি ও মাংসপেশির সমস্যা অনুভব করেছেন?

ক) হ্যা খ) না

৪) যদি হ্যা হয়, তাহলে সেটা কখন প্রথম অনুভব করেছিলেন?

ক) ০-১ বছর খ) ১-৫ বছর গ) ৫-১০ বছর ঘ) ১০-১৫ বছর

ঙ) মনে করতে পারছি না

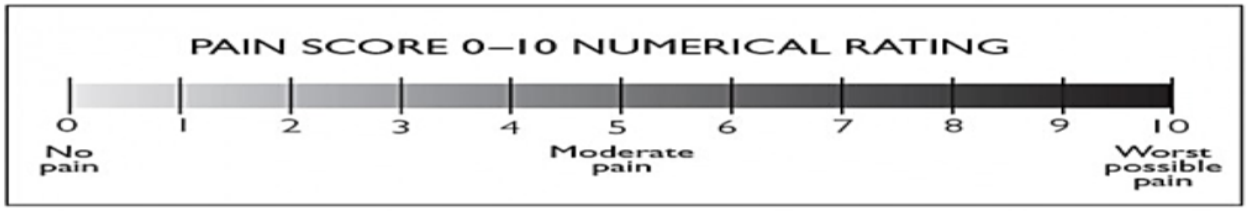
৫) নিচের কোনটি আপনার সমস্যাকে সবচেয়ে ভালভাবে ব্যাখ্যা করতে পারে?

ক) বিরামহীন ব্যাথা খ) মাংসপেশি টেনে ধরা গ) ব্যাথা ঘ) ঝিন ঝিন করা ঙ) অবশ অনুভূতি চ) জ্বালাপোড়া করা

৬) আপনার ব্যথার তীব্রতা কেমন?

ক) কম খ) মাঝারি গ) বেশি

৭) নিম্নোক্ত স্কেলে আপনার ব্যথার তীব্রতা নির্ণয় করুন ।



৮) ব্যথার কারনে নার্স হিসেবে আপনার দায়িত্ব ক্ষতিগ্রস্ত হয়?

ক) হ্যা খ) না

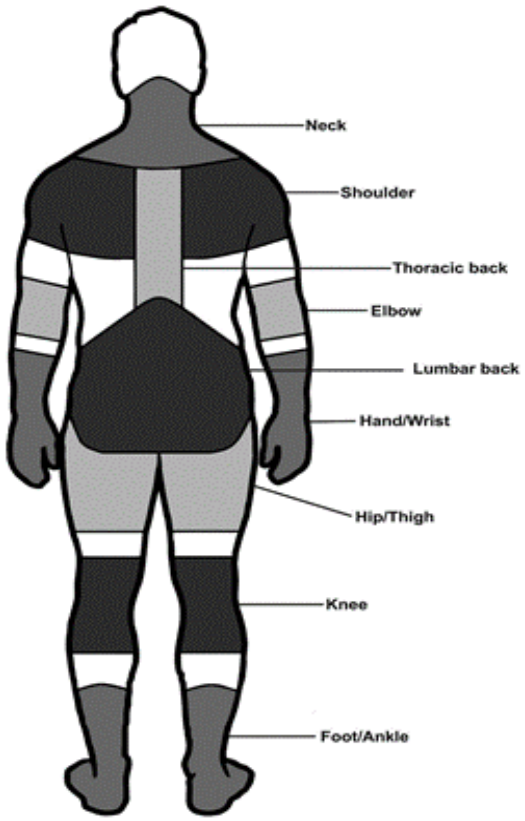
৯) আপনি কি ব্যথার কারনে কাজ থেকে বিরত ছিলেন?

ক) হ্যা খ) না

১০) নিচের টেবিলে দেহের বিভিন্ন অংশের নাম দেয়া আছে । যে অংশে

আপনার ব্যথা কিংবা কোন সমস্যা হয় তা চিহ্নিত করুন ।

দেহের বিভিন্ন অংশের নাম	**হ্যা**	**না**
ঘাড়		
পিঠের উপরের অংশ		
পিঠের নিচের অংশ		
কাঁধ		
কনুই		
কব্জি/ হাত		
হাঁটু		
নিতম্বের সংযোগ বা উরু		
গোড়ালি বা পায়ের পাতা		



১১) ব্যাথার কারনে আপনি কখনও ছুটি নিয়েছেন?

ক) হ্যা খ) না

১২) ব্যাথার কারনে আপনার কর্মক্ষমতা হ্রাস পেয়েছে?

ক) হ্যা খ) না

১৩) আপনার কাজের পরিবেশ নিয়ে কি আপনি সন্তুষ্ট ?

ক) একেবারেই না খ) সীমিতভাবে সন্তুষ্ট গ) সন্তুষ্ট

১৪) আপনি কি অফিসে সবসময় সঠিক শারীরিক অবস্থান/ভঙ্গি বজায় রাখতে পারেন?

ক) হ্যা খ) না

১৫) আপনি বেশিরভাগ সময় অফিসে কোন অবস্থায় থাকেন?

ক) বসা খ) সামনে ঝুঁকে থাকা গ) দাঁড়ানো

১৬) কোন অবস্থায় আপনার ব্যাথা সবচেয়ে বেশি হয়?

ক) দাঁড়ানো খ) বসা গ) সামনে ঝুঁকে থাকা ঘ) হাঁটা

১৭) কোন অবস্থায় ব্যাথা কমে যায়?

ক) দাঁড়ানো খ) বসা গ) শুয়ে থাকা ঘ) সামনে ঝুঁকে থাকা ঙ) হাঁটা

১৮) আপনার দৈনন্দিন কাজকর্মকে ব্যথা কিভাবে প্রভাবিত করে?

ক) একেবারেই ক্ষতিগ্রস্ত হয় না খ) কম ক্ষতিগ্রস্ত হয় গ) সীমিতভাবে ক্ষতিগ্রস্ত হয়

ঘ) অনেক বেশি ক্ষতিগ্রস্ত হয়

১৯) কর্মক্ষেত্রের পরিবেশ উন্নত করার জন্য আপনি কি পরামর্শ দিতে চান?

ক) চলনশীল বিছানা খ) বসার ব্যাবস্থা (চেয়ার, টেবিল) গ) পর্যাপ্ত খোলা জায়গা ঘ) সবগুলো

২০) অস্থি ও মাংসপেশির সমস্যার কারণে চিকিৎসক কিংবা ফিজিওথেরাপি চিকিৎসক এর কাছে গিয়েছিলেন?

ক) হ্যা খ) না

২১) আপনার সমস্যা কখনও নির্ণয় করা হয়েছিল?

ক) হ্যা খ) না

২২) যদি হ্যা হয়, তাহলে সমস্যার নাম কি ছিল?

_____

২৩) আপনি কি ধরনের চিকিৎসা নিয়েছিলেন?

ক) ঔষধ খ) ফিজিওথেরাপি গ) অস্ত্রোপচার ঘ) অন্যান্য ঙ) কোন চিকিৎসা নেয়া হয় নি ।

২৪) যদি হ্যা হয়, তাহলে ফলাফল কি ছিল?

ক) উন্নত হয়েছিল খ) কোন পরিবর্তন নেই গ) খারাপ হয়েছিল ।

খ বিভাগঃ কর্ম সম্পর্কিত ক্ষতির কারণ

নিম্নোক্ত তালিকাটি কর্মক্ষেত্রে অস্থি ও মাংসপেশির সমস্যার কারণ বর্ণনা করে। সর্বাপেক্ষা উপযুক্ত উত্তরটি টিক চিহ্নের মাধ্যমে দেখিয়ে দিন ।

ক্ষতির কারণ	হ্যা	না
১) বিরামহীন নার্সিং এর কাজ করা		
২) প্রতিদিন বিপুল সংখ্যক রোগীকে সেবা দান		
৩) অফিসের সময়ে অপর্যাপ্ত বিশ্রাম		
৪) নার্সিং এর কাজগুলো ম্যানুয়ালভাবে করা		
৫) আবদ্ধ অবস্থায় কাজ করা		
৬) একই অবস্থায় অনেকক্ষণ কাজ করা		
৭) ভুল পদ্ধতিতে কোমর ভাঁজ করা বা ঘুরানো		
৮) রোগীদের অপ্রত্যাশিত চলাফেরা বা পড়ে যাওয়া		
৯) নির্ভরশীল রোগীদের বহন করা কিংবা স্থানান্তর করা		
১০) ভারী জিনিসপত্র বহন করা		
১১) শারীরিক সক্ষমতার অধিক কাজ করা		
১২) অধিকালীন কর্ম, অনিয়মিত কাজ ও দীর্ঘ কার্যদিবস		
১৩) দুর্ঘটনা প্রতিরোধে অপর্যাপ্ত প্রশিক্ষন		
১৪) সহায়ক যন্ত্রপাতির স্বল্পতা		
১৫) ত্রুটিপূর্ণ যন্ত্রের ব্যবহার		