

**PREVALENCE OF COMMON WORK RELATED
MUSCULOSKELETAL DISORDERS AMONG THE
RESTAURANT WORKERS**

Khaleda Yesmin

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

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Bangladesh Health Professions Institute (BHPI)

Department of Physiotherapy

CRP, Savar, Dhaka-1343

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

**PREVALENCE OF COMMON WORK RELATED
MUSCULOSKELETAL DISORDERS AMONG THE
RESTAURANT WORKERS**

Submitted by **Khaleda Yesmin**, for partial fulfillment of the requirements for the degree of Bachelor of Science in Physiotherapy (B. Sc. PT).

.....
Md. Obaidul Haque

B. Sc. PT (Hons.), Dip. Ortho. Med, MPH
Associate Professor & Head of the Department
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka
Supervisor

.....
Mohammad Anwar Hossain

B. Sc. PT (Hons.), Dip. Ortho. Med, MPH
Associate Professor, Physiotherapy, BHPI &
Head of the Department, PT
BHPI, CRP, Savar, Dhaka

.....
Nasirul Islam

B. Sc. PT (Hons.), MPH
Assistant Professor & Course Coordinator
M. Sc. in Physiotherapy
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

.....
Md. Shofiqul Islam

B. Sc. PT (Hons.), MPH
Assistant Professor
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

.....
Md. Obaidul Haque

B. Sc. PT (Hons.), Dip. Ortho. Med, MPH
Associated Professor & Head of the Department
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

Declaration

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

Signature:

Date:

Khaleda Yesmin

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Acronyms

| | |
|-------------|---|
| BHPI | Bangladesh Health Professions Institute. |
| CRP | Center for the Rehabilitation of the Paralyzed. |
| CTS | Carpal Tunnel Syndrome. |
| EU | European Union. |
| MSD | Musculoskeletal Disorder. |
| OODs | Occupational Overuse Disorders. |
| RMI | Repeated Motions Injury. |
| ROM | Range Of Motion. |
| RSI | Repetitive Strain Injury. |
| SPSS | Statistical Package for the Social Sciences. |
| UK | United Kingdom. |
| USA | United State of America. |
| WRMD | Work Related Musculoskeletal Disorder. |

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Abstract

Purpose: The study was done to identify the prevalence of WRMDs among the restaurant workers. *Objective:* To identify the common work related musculoskeletal disorders among the restaurant workers. *Method:* The study design was cross-sectional. Total 100 samples were selected conveniently for this study from a restaurant The Westin Dhaka. Data was collected by using mixed type of questionnaire. Descriptive statistic was used for data analysis. *Result:* The result of the study shows that 78% participants had WRMDs and age range between 42-55 (27%) years is more vulnerable. Male (72%) was predominantly more affected than female (28%). Most of the education level was Diploma (59%). The duration of job experience 6-10 years (43.6%) most commonly suffered by the WRMDs. In this research, the researcher found 78% of the participants had musculoskeletal disorders with higher prevalence of pain. The result indicates that most discomfort of the body regions is in the neck (22%), spine (38%) and knee (24%). Most common symptom of WRMDs was pain (82%) and the most affected body part was spine (38%). The maximum severity of symptom was moderate (57.7%). The most common risk factors were working in same position for (38%) and carry heavy load for (35%) participants. Only (19.2%) participants had taken physiotherapy treatment for their condition. Among the 15 participants who had taken physiotherapy for their condition all of the participants had a good prognosis. The percentages of prognosis were improved in (83%). *Conclusion:* Work related musculoskeletal disorders represent a significant burden for restaurant workers. The study was represents the strong evidence that WRMDs was common among restaurant workers. In order to reduce musculoskeletal problems, correct postural practices, proper design of tools and equipment significantly can prevent MSDs.

Key words: Prevalence, WRMDs, Restaurant workers.

1.1 Background

The developed and industrially developing countries musculoskeletal disorders (MSDs) are a leading cause of occupational injury and disability (Shahnavaz, 1987). 37% of the disease burden which is attributable to occupational risk factors globally, resulting in substantial disability (Johnos, 2011). The economic loss due to those disorders affects not only the individual but also the organization and the society as a whole (Choobineh & Tabatabaee, 2009). Poor working conditions and the absence of an effective work injury prevention program in industrially developing countries has resulted in a very high rate of MSDs (Jafry & Neill, 2000).

Musculoskeletal disorders (MSDs) were recognized as having occupational etiologic factors as early as the beginning of the 18th century (Kumar et al., 2011). Work-related Musculoskeletal Disorders (WMSDs) in the restaurant workers have increased significantly over recent years (Guo et al., 2004). Musculoskeletal disorders are more common among waiters and helpers who usually bear load (Kokane & Tiwari, 2011). Risk factors of WMSDs include workplace activities such as heavy load lifting, repetitive tasks, and awkward working postures, demographic characteristics factors are also known to be important predictive variables (Linton & Kamwendo, 1989).

Among 905 restaurant workers, 785 (84%) reported experience of WMSD in the previous month, WMSD in the previous month, with a high prevalence of shoulder (58%), neck (54%), lower back/waist (53%) and finger/waist (46.5%) disorders, among hotel restaurant workers in Taiwan (Chyuan et al., 2004). According to the workers' medical records in this plant 22.75% of all occupational illnesses were related to the musculoskeletal system (Choobineh & Tabatabaee, 2009). In the USA, the Bureau of Labour Statistics estimated that in 1996, 64% of all new work-related disability (Eltayeb et al., 2007). In America, the proportion of WMSDs by repetitive movements was 33.6% in 1992. It peaked at 34.7% in 2000. In 2007, it decreased to 28.9% by various measures (Kun et al., 2010). In 2003, for every 100,000 workers, there were 32 new MSD cases. This means that MSDs account for 50% of all new cases of occupational disorders in the EU (2003 data), and 50% of all work-related

health problems in Europe (1999 data). Moreover, the number of MSD cases is increasing over time. In 2001, around 19 workers in every 100,000 suffered from a new MSD. This number had almost doubled by 2003 (32 per 100,000 workers) (European Agency for Safety and Health at Work, 1999). In the case of Europe, WMSDs has occupied 49% of the causes of absenteeism, and 100 million workers suffered WMSDs (Kun et al., 2010). In UK One-year prevalence of musculoskeletal symptoms was 79% (Choobineh & Tabatabaee, 2009). United States and the number of sufferers were increased from 50000 people in 1985 to 332000 in 1994 (Mirmohamadi et al., 2004).

In Britain 750,000 people working in the previous 12 months reported suffering from work-related MSD. Of these around 335,000 had to take time off work as a result of their work-related condition. The estimated working days lost is around 9,862,000 (back: 4,820,000; upper limb and neck: 4,162,000; and lower limbs 2,204,000) (Prins et al., 2000). In Sweden, WMSDs took up more than 57% of occupational diseases (Kun et al., 2010). In Japan, more often among the workers, increasing in musculoskeletal disorders between years 1960–1980 (Mirmohamadi et al., 2004). In Germany around 37% of all employees reported suffering from low back pain. Especially, the rapid increase mainly occurred in workplaces with over 1,000 employees and the social issue of labor management disputes was on the rise. In addition, the expense of the compensation insurance was 5.9 billion won in 2000 that became 105.3 billion in 2004 and 163.3 billion won in 2007. This data shows the considerable social expenses of WMSDs (Kun et al., 2010).

In Spain work-related low back pain was reported by 32.9%, neck pain by 29.6%, pain in the upper back by 19.7%, legs by 11.7%, feet-ankles by 8%, shoulders by 7.2%, buttocks-hips by 6.9%, knees by 6.7%, arms by 6.2%, and hands by 5.4%. In total around 69.2% of the workers reported some sort of musculoskeletal complaint (Prins et al., 2000). According to Bureau of Labor Statistics (BLS), 1982 nearly 20 percent of all injuries and illnesses in the work place and nearly 25 percent of the annual worker's compensation payment are attributed to back injuries (Srivastava and Vats, 2012). A more recent report by the National Safety Council indicated that over exertion is the most common cause of occupational injury, accounting for 31 percent of all injuries (Srivastava and Vats, 2012). The efficiency of any activity varies

according to the type of activity and the manner in which it is performed. It may be as high as 30 per cent and as low as 3 per cent (Grandjean, 1975). According to the US Bureau of Labor Statistics, these musculoskeletal disorders accounted for 29% of all lost time workplace injuries and illnesses in 2008. The Liberty Mutual Workplace Safety Index, repetitive motion injuries cost all employers about \$2 billion and overexertion injuries cost an additional \$ 12.7 billion in 2007 (Bureau of Labor Statistics, 2005). In the Netherlands the work-relatedness of sickness leave (less than 1 year) due to MSD is estimated at around 13% of all sickness leave (Borghouts, 1999). In Denmark the work-relatedness of MSD is estimated at approximately 33%. In Finland the work-relatedness of MSD is estimated at approximately 33% in 1992 and 1996. In a 1996 British survey of back pain, the most common reasons for the onset of pain were work related: around 25% considered the pain was related to the type of work they did, and 12% gave an accident or injury at work (Mikael, 1999).

WMSDs among the total approved occupational diseases increased from 49.6% in 2003 to 76.5% in 2007, and the total cost of WMSDs increased from 105.3 billion won in 2004 to 163.3 billion won in 2007. The approval rate of WMSDs by the OSHRI accounted for 65.6%. The ratio of MSD cases to work-related disorders cases was approximately 10% in the 1990s and showed a sharp increase since 2000. It currently is 60%-70%. The total amount of the industrial accident compensation insurance expenses was 105.3 billion won in 2004 and increased to 163.3 billion won in 2007. The proportion of compensated expenses reached 69.2% for occupational disease and 7.0% for the total compensation fund in 2008. In 2009, the distribution of 6,234 cases of WMSDs was as follows: 2,472 cases of accidental low back pain (39.7%), 2,407 cases of non-accidental low back pain (38.6%), and 1,355 cases of musculoskeletal burden work (21.7%). The general characteristics of WMSDs included 4,828 cases (77.5%) for males and 1,406 cases (22.5%) for females. In terms of age, we found 1,991 cases (31.9%) in their 30s, 1,867 cases (29.9%) in their 40s, 1,294 cases (20.8%) in their 50s, 643 cases (10.3%) under 20, and 439 cases (7%) over age 60 (Kun et al., 2010). Permanent return to work after any occupational injury or disease is estimated at 58% in Austria, 55% in Belgium and 57%-60% (Prins et al., 2000). The prevalence of WMSD was highest among Vietnamese (57.1%), followed by Thai (33.9%) and Filipino (25.8%) (Lee et al., 2011).

According to the workers' medical records in this plant 22.75% of all occupational illnesses were related to the musculoskeletal system. In Iran Most workers (87.1%) suffered from some kind of MSD symptoms during the 12 months prior to the study. The highest prevalence was reported in knees (58.6%) and the lower back (54.3%). In 99.1% of the workers, the level exposure to MSD risk. Awkward postures, manual material handling, and long hours of standing were the major ergonomics problems (Choobineh & Tabatabaee, 2009). In India the prevalence of MSD was very high contributing to more than 76% the occupation-related discomfort mostly affecting the lower back (97%), knees (85%) and shoulders (77%). 67% of the subjects experienced discomfort in the hands and 58% of the subjects suffered from discomfort in the wrists (Gangopadhyay et al., 2010). Most workers (87.1%) suffered from some kind of MSD symptoms during the 12 months prior to the study (Kumar et al., 2011).

1.2 Rationale

Work-related musculoskeletal disorders were one of the most important occupational health problems for restaurant workers. The disorders cause long periods of work disability and treatment was often necessary. From this study restaurant workers will be able to identify the risks that can control and review their activities. Restaurant workers may provide proper recommendation for every single risk which will be helpful for them. Beside this it will help to established ergonomic guidelines for space, equipment, furniture and environmental conditions which are mandatory in the design of workplace. This study will also help to discover the lacking area of a restaurant workers, especially about their posture before doing any activities. Beside this it will help to professional development which is mandatory for current situation. From this study researcher can identify the risk factors of the workplace which are harmful. So, this study can help them to teach and give proper education about the posture the condition and prevention method.

MSDs may cause a great deal of pain and suffering among afflicted workers. These were the most common lost time injuries and most costly occupational problems. Job activities that may cause MSDs span diverse workplaces. MSDs may decrease productivity and the quality of products and services. Workers experiencing aches and pains on the job may not be able to do quality work.

1.3 Research question

What is the prevalence of common worked related musculoskeletal disorder among the restaurant workers at one selected restaurant?

1.4 Objectives

General objective

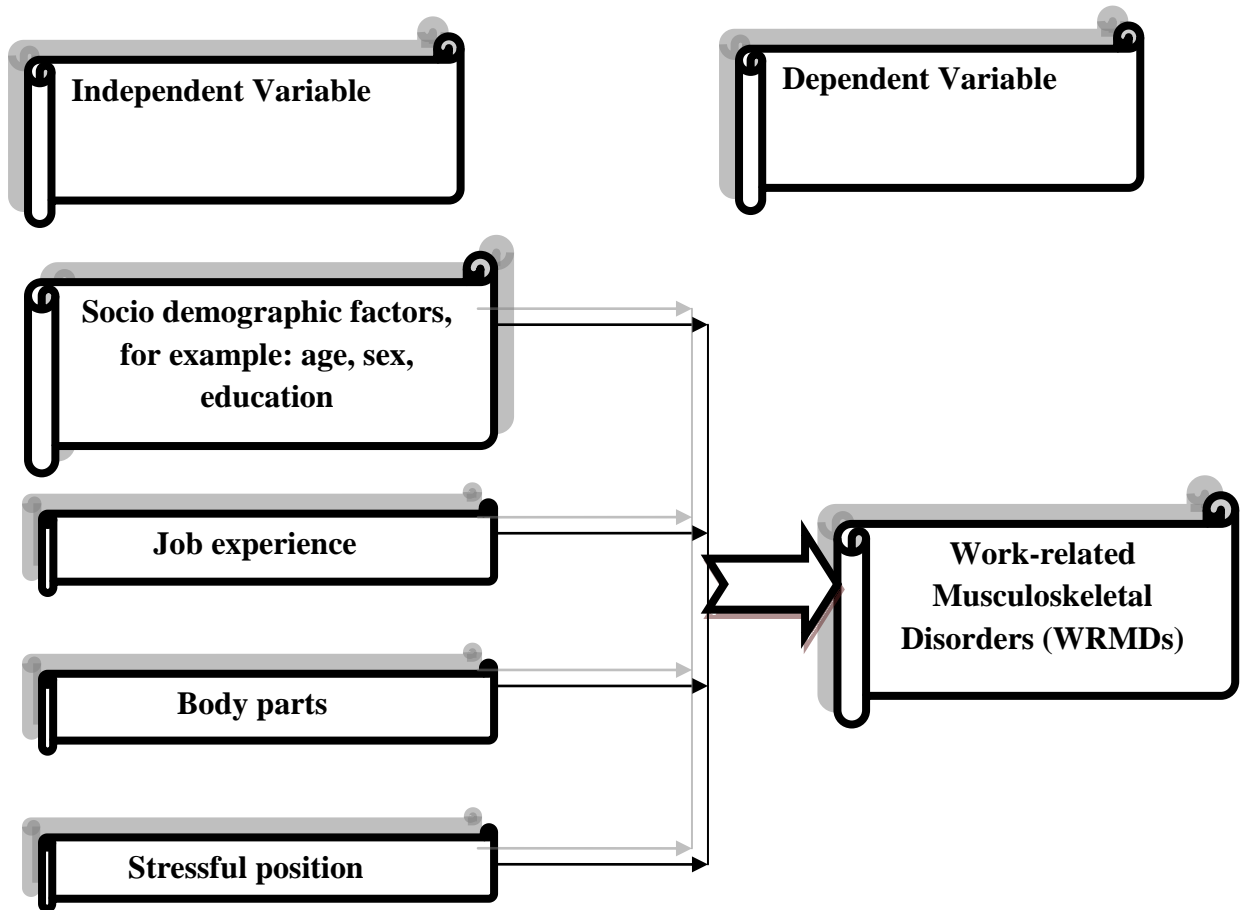
To identify the common work related musculoskeletal disorders among the restaurant workers.

Specific objectives

- To explore the socio-demographic characteristics of restaurant workers with musculoskeletal disorders.
- To find out the number of experience & episode of WRMD among the restaurant workers.
- To establish different body parts involved with musculoskeletal disorders & the risk associated with such disorders.
- To investigate types of treatment receive & consequences.

1.5 List of Variables

Conceptual Framework



1.6 Operational definition

Musculoskeletal disorder

Musculoskeletal disorders affect the soft tissue of the body, such as the muscles, tendons, ligaments, nerves etc.

Work related musculoskeletal disorder

Work related musculoskeletal disorders develop when the same muscles are used over and over again, usually applying force, and with little recovery time away from the task. They also develop when workers have to maintain a same position while working.

The term musculoskeletal disorder denotes health problems of the locomotor apparatus, i.e. muscles, joints tendons, the skeleton, cartilage, the vascular system, ligaments, nerves and the localized blood circulation system (Kumar et al., 2011). MSDs are disorders that affect the musculoskeletal system, resulting from a repetitive exposure to loading. Upper limbs (the hand, wrist, elbow and shoulder), the neck and lower back are particularly vulnerable to MSDs. Lower limbs and the upper back may also be affected (European Agency for Safety and Health at Work, 1999). The musculoskeletal disorders are characterized by the presence of discomfort, disability or persistent pain in the joints, muscles, tendons, and other soft parts. They are caused or aggravated by repeated movements and prolonged awkward or forced body postures (Samat et al., 2011). Work related musculoskeletal disorders are the most common self-reported, work related illness in many workplace that is characterized by discomfort, impairment, disability, or persistent pain in joints, muscles, tendons or other soft tissues (Putz-Anderson et al., 1997).

The risk factors for the development of musculoskeletal disorders are: repetitive work; painful positions, carrying or moving heavy loads, other risk factors such as, and prolonged standing or walking (Johnos, 2011). Musculoskeletal disorders are sometimes called ergonomic injuries and illnesses. Ergonomics is the study of the worker's interaction with tools, equipment, environment, jobs, tasks, work methods, work rates etc (Maier & Ross-Mota, 2000). Musculoskeletal disorders can developed when the same muscles are used over and over again or for a long time without taking time to rest. The chance of getting this type of injury increases if the force exerted is high and/or the job requires an awkward posture. Some examples of musculoskeletal disorders include back pain, carpal tunnel syndrome, tendonitis and tenosynovitis (Department of Labor Statistics, 1992). Work-related musculoskeletal disorders (WMSDs) include all MSDs that are induced or aggravated primarily by work and the circumstances of its performance. Most WMSDs are cumulative disorders, mainly affect the back, neck, shoulders and upper limbs, but can also affect the lower limbs. Some MSDs, such as carpal tunnel syndrome in the wrist, are specific because of their well-defined signs and symptoms (Johnos, 2011).

The group of painful disorders of muscles, tendons, and nerves is called Work-related musculoskeletal disorders (WMSDs). Carpal tunnel syndrome (CTS), tendonitis, thoracic outlet syndrome, and tension neck syndrome are examples. Work activities which are frequent and repetitive, or activities with awkward postures cause these disorders which may be painful during work or at rest. Almost all work requires the use of the arms and hands. Therefore, most WMSD affect the hands, wrists, elbows, neck, and shoulders. Work using the legs can lead to WMSD of the legs, hips, ankles, and feet. Some back problems also result from repetitive activities (Canadian Centre for Occupational Health & Safety, 2005).

Awkward postures, repetitive work or handling heavy loads are amongst the risk factors that may damage the bones, joints, muscles, tendons, ligaments, nerves and blood vessels, leading to fatigue, pain and musculoskeletal disorders (MSDs). Work-related MSDs are mostly cumulative, resulting from repeated exposure to loads at work over a period of time. Upper limbs (the hand, wrist, elbow and shoulder), the neck and lower back are particularly vulnerable to MSDs (European Agency for Safety and Health at Work, 2007). There are ranges of different terminologies used to describe WMSDs problems such as Cumulative Trauma Disorders (CTDs), Repetitive Strain Injury (RSI), Repeated Motions Injury (RMI) and Occupational Overuse Disorders (OODs) (Guo et al., 2004).

There are mainly four different groups of factors may potentially contribute to WRMDs there are Physical or biomechanical work related factors, Organizational or psychosocial work related factors, Individual or personal factors and factors relating to social context (European Agency for Safety and Health at Work, 1993). Physical factors include the work procedures, equipment and environment that lead to biomechanical stress in the muscles, tendons, spinal discs and nerves. Force, repetition, awkward postures or long-term static postures are considered the principal physical work-related risk factors in relation to MSDs. Applying manual force with the intention of moving objects loads the muscles and tendons of the arms. Repetitive work using the same muscles and tendons for a considerable part of the working day may be responsible for fatigue and injuries. In awkward postures (with the hands above shoulder height or with the wrists noticeably bent) the joints are more susceptible to injuries and the muscles have less capacity for exerting force.

Prolonged standing may result in fatigue and discomfort in the legs. It can lead to the development of musculoskeletal disorders (e.g. painful feet and other foot problems) and varicose veins. Manual handling refers to the transfer, pushing, pulling and carrying of loads by one or more employees. When heavy manual handling is repetitive, and combined with awkward work postures (e.g. with the trunk bent forward, or bent and twisted at the same time) there may be a high risk of MSDs in the lumbar region. Repetitive, forceful work with the joints in an awkward position is one of the most important combinations of risk factors (European Agency for Safety and Health at work, 1993).

Daily exposure to physical risk factors and insufficient rest or recovery time are among the principal organizational factors that can lead to MSDs. Providing knowledge, skills and information on working methods and techniques, and on working movements, postures and loads, can reduce the risk of MSDs. Mental strain can cause muscular tension, and increase existing physical strain. Work conditions that may increase mental strain include: Psychologically demanding activities, in which the workers are exposed to high levels of work stress, work pressure and mental demands, as a consequence for example of tight deadlines and low levels of autonomy and Activities in which there is little support from colleagues, supervisors and managers (European Agency for Safety and Health at work, 1993).

Individuals differ in their susceptibility to MSDs. Factors such as prior medical history, physical capacity and age are very important. Obesity, pregnancy, rheumatoid arthritis, acute trauma and endocrinological disorders are other examples of individual non-occupational factors that may affect the occurrence of MSDs (European Agency for Safety and Health at work, 1993). Social context provides some important non-work risk factors relating to MSDs. Some types of sports, leisure activities and housekeeping work at home can all increase susceptibility to MSDs. The relation between work activities and a particular musculoskeletal disorder is multi-factorial. This means that when different physical factors are present, coexisting with organizational factors (and also individual and social factors), a work situation may arise in which there is a high risk of developing MSDs (European Agency for Safety and Health at work, 1993).

Initially, most research on work-related symptoms focused only on physical exposure (Bongers et al., 1993). However recent studies have demonstrated that complain arm, neck, shoulder, back & lower limb have a multi-factorial origin; possible risk factors are of a physical, psychosocial or personal origin (Bongers et al., 2006). Physical activities such as manual material handling (e.g., heavy load lifting) and awkward working postures are very common. In this situation, a high rate of WMSD is expected (Choobineh and Tabatabaee, 2009). Heavy, static or monotonous work, extreme or constrained postures, repetitive movements, unsuitable workplaces and equipment, forces etc. Lifting heavy objects that shouldn't be lifted by one person without the help of assist devices or helpers. Working in unnatural or awkward positions can lead to strains, sprains, muscle pain and nerve damage in the neck, upper and lower back, shoulders, elbows, forearms, wrists and fingers. Standing for long periods of time in one position on a hard surface can lead to muscle fatigue, back pain and soreness in legs and feet (Bureau of Labor Statistics, 2005).

Works categorized themselves as performing heavy work. Factors that Contributed to heavy workload as observed in the work place were that the joints were not in neutral position while performing the work. The workers maintained those abnormal postures for a long time, which contributed to their easy fatigability. Work was not close to the body of the workers and they had to adopt awkward postures to perform such works. The other factors that added up to the strain were bending forward, twisting trunk and straining the back along with sudden movements. These types of movements were always found to produce peak stress (Siva Priya et al., 2010).

Psychosocial risk factors in the workplace also contribute to MSDs (National Research Council, 2001). The psychosocial factors are work organization, interpersonal relationships, short cycle tasks, poor work control, poor management, unsatisfactory training, lack of breaks etc (Bongers et al., 1993). Personal factor are gender, age, seniority, exercise habits, life style, psychological characteristics and capacities) aspects into account as risk factors (Chaffin & Ayoub, 1976). In 1976, Chaffin and Ayoub reported results of work conducted by the National Institute for Occupational Safety and Health (NIOSH) that defined several broad components of the lifting task related to the risk of back injury (Chaffin & Ayoub, 1976). These components were classified into four categories: worker characteristics,

characteristics of the material or object to be lifted, task characteristics, and work practices. Important worker characteristics include age, sex, and anthropometry, and coordination, degree of formal training in manual material handling, work experience, general health, and general level of physical activity (Siva Priya et al., 2010).

Signs and Symptoms of WRMDs are weakness in the hands or forearms that make it difficult to lift or carry as normal. Tingling, pins and needles, Clumsiness: dropping or having to concentrate on holding things, Difficulty using hands for ordinary activities, Waking up at night with upper extremity pain Hands cold or tender, Chronic pain that gets worse Symptoms may appear in body parts distal to where stress or damage has occurred (Lenore et al., 2004). Pain is the most common symptom associated with WMSDs. In some cases there may be joint stiffness, muscle tightness, redness and swelling of the affected area. Some workers may also experience sensations of "pins and needles," numbness, skin colour changes, and decreased sweating of the hands. WMSDs may progress in stages from mild to severe (Canadian Centre for Occupational Health & Safety, 2005).

Early stage is the aching and tiredness of the affected limb occurs during the work shift but disappear at night and during days off work. No reduction of work performance (Canadian Centre for Occupational Health & Safety, 2005). Intermediate stage is aching and tiredness occurs early in the work shift and persists at night. Reduced capacity for repetitive work. Late stage is aching, fatigue, and weakness persist at rest. Inability to sleep and to perform light duties. Not everyone goes through these stages in the same way. In fact, it may be difficult to say exactly when one stage ends and the next begins. The first pain is a signal that the muscles and tendons should rest and recover. Otherwise, an injury can become longstanding, and sometimes, irreversible. The earlier people recognize symptoms, the quicker they should respond to them. WMSDs do not happen as a result of a single accident or injury. Rather, they develop gradually as a result of repeated trauma. Excessive stretching of muscles and tendons can cause injuries that only last a short time. But repeated episodes of stretching causing tissue inflammation can lead to long-lasting injury or WMSDs (Canadian Centre for Occupational Health & Safety, 2005).

Chronic low back pain is pain in the lower back, often referring into the hip, buttock or one leg. The cause may be muscle strains or trigger points, instability due to weak postural muscles, hypo mobile spinal facet joints, or degeneration or herniation of spinal disks (Quittan, 2002). Low back pain is one of the most common musculoskeletal disorders related to work. The connection between symptoms, disability and demonstrable pathology is often not clear or requires much focused investigation. A wide range of occupations, work tasks, workplace factors and psychological factors has been associated with low back pain, with heavy lifting the task most commonly associated. These include a study that investigated factors that affected the likelihood of the low back pain becoming chronic (Pearce et al., 2004). The tension neck syndrome is prolonged restricted posture then occur tension neck syndrome (Canadian Centre for Occupational Health & Safety, 2005). Irritation of the levator scapulae and trapezium, all muscles of the neck. Causes tightness of the muscle in the neck. Neck stiffness as well as headaches also presents. Headaches are often described as a pressure sensation around the head. Pain may build and intensify at the end of day (Safety & Health Assessment & Research for Prevention 2001)

Tendonitis/ tenosynovitis are due to inflammation of the synovial lining of the tendon sheath. Repetitive wrist motions Repetitive shoulder motions Sustained hyper extension of arms prolonged load on shoulders. Most commonly occurs pain, weakness, swelling, burning sensation or dull ache over affected area (Ebnezar, 2005). Epicondylitis (elbow tendonitis) are swelling of the tendon at the elbow (Washington state department of health, 2002). When repeated or forceful rotation of the forearm and bending of the wrist at the same time then occur this condition. Same symptoms as tendonitis (Canadian Centre for Occupational Health & Safety, 2005). The carpal tunnel syndrome is compression of the median nerve in the wrist (Washington state department of health, 2002). Repetitive wrist motions. Pain, numbness, tingling, burning sensations, wasting of muscles at base of thumb, dry palm. De-Quervain's disease condition is the common sheaths of abductor pollicis longus and extensor pollicis brevis tendons at the wrist are involve. Repetitive hand twisting and forceful gripping then occur this condition and present Pain at the base of thumb. Thoracic outlet syndrome is the prolonged shoulder flexion extending arms above shoulder height carrying loads on the shoulder. Pain, numbness, swelling of the hand is more common (Canadian Centre for Occupational Health & Safety, 2005).

Sciatic pain is the pain radiating from the lower back to below the knee (Washington State department of health, 2002). Rotator cuff disorder is swelling and tearing of the tendons around the shoulder (Washington state department of health, 2002). Abduction of the shoulder joint is mostly performed by the deltoid and supraspinatus. This is the basis for suspecting a high possibility of rotator cuff tendinitis or supraspinatus tendinitis and rupture when work involves abduction movement of the shoulder joint. In epidemiologic investigations, workers engaged in sewing work and similar workers who worked while repeatedly bending their back forward with overhead viewing action, were reported to have a high possibility of the occurrence of myofascial pain syndrome and rotator cuff tendinitis (Kun et al., 2010). Myofascial pain in the neck and upper back are heavy feeling, aching pain, stiffness in upper back and neck, due to overhead activity of arms in extended position (Safety & Health Assessment & Research for Prevention, 2001).

Physiotherapy plays an important role in the treatment of work related musculoskeletal disorders. Physical therapists assess an individual's physical ability to do a specific job or activity and aids in developing a safe return to work program. A program of stretching, aerobic exercise and apply therapeutic modalities will improve your overall fitness level. Research has shown that people who are physically fit are more resistant to back injuries and pain and recover quicker when they do have injuries than those who are less physically fit. Physical therapy can reduce the recurrence of back pain and neck-shoulder pain (Andersson, 1981). In order to be effective, however, the exercise should include vigorous exercise. And be repeated at least three times a week (Podniece, 2008). The identification and measurement of the various risk factors for these complaints is an important initial step in recognizing high risk subgroups also for developing targeted and effective intervention plans (Eltayeb et al., 2007).

The treatment of WMSDs involves several approaches including the following: Restriction of movement, Application of heat or cold, Exercise (Stretching, Strengthening) (Canadian Centre for Occupational Health & Safety, 2005). The first approach to treatment of WMSDs is to avoid the activities causing the injury. This often requires work restrictions. In some cases, transfer to a different job should be considered. A splint can also be used to restrict movements or to immobilize the

injured joint. However, the use of splints in occupational situations requires extreme caution. If used inappropriately, splints can cause more damage than good. Splints are usually used for two reasons: to mechanically support a joint where an excessive load on the joint is anticipated, or to restrict the movement of the injured joint. In the occupational context, splints should not be used as a mechanical support for the joint. Instead, the job should be redesigned to avoid the extreme load on the worker's joint in the first place. To be effective, the use of splints to immobilize an affected joint also requires that the work activity that caused the injury be stopped or changed. If injurious work continues, then the worker is exposed to risk of injury to other joints that have to compensate for the one that is splinted (Canadian Centre for Occupational Health & Safety, 2005).

Applying heat or cold seems to relieve pain and may accelerate the repair process. Heat is recommended for pain relief of minor injuries. It is not recommended for injuries with significant inflammation and swelling. Heat increases the flow of blood and increases swelling. Ice reduces pain and swelling (Canadian Centre for Occupational Health & Safety, 2005). In the case of serious conditions involving nerve entrapment, like CTS, prescribe period of rest to allow recovery and prevent more permanent damage. Refer to a physical therapist if possible. Stretching may also be prescribed. Some patients benefit from complementary therapies such as acupuncture or movement therapies (yoga, Feldenkrais, Alexander Technique, Shiatsu, etc) (Lenore et al., 2004). Stretching is beneficial because it promotes circulation and reduces muscle tension. However, people suffering from WMSDs should consult a physical therapist before exercising. Stretching or exercise programs can aggravate the existing condition if not properly design (Canadian Centre for Occupational Health & Safety, 2005).

Strengthening exercises help increase muscle tone and improve the quality of muscles. Muscle strength and endurance provide energy and a feeling of wellness to help you perform daily, routine activities. Adequate core strength that comes from abdominal and back muscles helps stabilize the spine, allows proper spinal movement, and makes it easier to maintain correct posture. Strong hip and leg muscles are important to perform proper lifting techniques and body mechanics (Spineuniverse, 2011)

The important point is Patient education, to prevent and reduce the WRMDs that are the ergonomic recommendations for minimizing the risks of back injuries focus on improving working posture and equipment design (Ergonomics, 2007). Preventive and control measures, in order to be truly effective, require significant involvement on the part of the workers, their representatives, and management to improve occupational health and safety. Therefore the main effort to protect workers from WMSDs should focus on avoiding repetitive patterns of work through job design which may include mechanization, job rotation, job enlargement and enrichment or teamwork. Where elimination of the repetitive patterns of work is not practical, prevention strategies involving workplace layout, tool and equipment design, and work practices should be considered. One way to eliminate repetitive tasks is to mechanize the job. Where mechanization is not feasible or appropriate, other alternatives are available (Canadian Centre for Occupational Health & Safety, 2005).

The guiding principle in workplace design is to fit the workplace to the worker. Evaluation of the workplace can identify the source or sources of WMSD. Proper design of the workstation decreases the effort required of the worker to maintain a working position. Ideally, the workstation should be fully adjustable, providing a worker with the options to work in standing, sitting or sitting-standing positions, as well as fitting the worker's body size and shape (Canadian Centre for Occupational Health & Safety, 2005).

Proper design of tools and equipment significantly decreases the force needed to complete the task. Providing the worker with the proper jigs or fixtures for tasks that require holding elements saves a lot of muscular effort in awkward positions. Good tools, maintained carefully and where necessary frequently changed, can also save a lot of muscle strain and preventing WMSD. A well-designed job, supported by a well-designed workplace and proper tools, allows the worker to avoid unnecessary motion of the neck, shoulders and upper limbs. However, the actual performance of the tasks depends on individuals (Canadian Centre for Occupational Health & Safety, 2005). To prevent recurrence or exacerbation of MSDs, office workstations should be assessed and modified. Insurance may cover workstation assessments performed by physiotherapists or ergonomists (Lenore et al., 2004).

Training should be provided for workers who are involved in jobs that include repetitive tasks. Workers need to know how to adjust workstations to fit the tasks and their individual needs. Training should also emphasize the importance of rest periods and teach how to take advantage of short periods of time between tasks to relax the muscles, and how to consciously control muscle tension throughout the whole work shift (Canadian Centre for Occupational Health & Safety, 2005). Weight training should focus on balance and symmetry that is left to right, front to back and upper body to lower body, deep and superficial. Our body is made up of many tissues which act synergistically to balance us. Don't worsen this by strengthening already shortened muscles, such as the pectorals, possibly making lengthened muscles, like trapezoids, weaker (Williams and Harris, 2007).

3.1 Study design

The aim of this study was to find out the prevalence of WRMDs among the restaurant workers. For this reason, choose a cross sectional study because the cross sectional study was the best way to determine prevalence. The most important advantage of cross sectional study was it need not more time and also cheap. As there was no follow up, fewer resources required to run the study (Mann, 2003). A cross-sectional design provides a snapshot of the variables included in the study, at one particular point in time (Fraenkel, 2000).

3.2 Study site

The sites of the study was one selected restaurant which was-

- The Westin Dhaka.

3.3 Study area

Musculoskeletal Conditions of the restaurant workers.

3.4 Study population and sampling

A population refers to the members of a clearly defined set or class of people, objects or events that was the focus of the investigation. So, all of restaurant workers of Bangladesh who fulfill the inclusion and exclusion criteria of this study were the population of this study. But it was not possible to study the total population within the time of this study, so took only 100 restaurant workers as sample that were selected conveniently from selected area of The Westin Dhaka according to the inclusion and exclusion criteria. Use the convenience sampling technique due to the time limitation and also for the small size of population and as it was the one of the easiest, cheapest and quicker method of sample selection.

3.5 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.

3.6 Subject inclusion criteria

- Both male and female were included in this study, the wanted to explore work related musculoskeletal disorders among the restaurant workers.
- All ages were included as there was objective of the study to explore the relationship between age and work related musculoskeletal disorders, so samples are selected from all age group.
- Subject who were willing to participate in the study otherwise they will not give exact information that was helpful to the study.

3.7 Subject exclusion criteria

- Subject who were not willing to participate in the study.
- Subject who were medically unstable. Because medically unstable patient can be confused with the question that can mislead the result of the study.

3.8 Sample size

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

Here,

$Z\left(1 - \frac{\alpha}{2}\right)$ = Confidence level at 95% (standard value of 1.96).

$$d = 0.05$$

$$p = 0.78$$

$$q = (1-p)$$

$$= (1-0.78)$$

$$= 0.22$$

According to this formula of sample size calculation, the actual sample size was about 263 but due to the limitation of time took only 100 samples conveniently from the population for this study.

3.9 Data collection method and tools

In this study data were collected by using both structured and semi structured mixed type questionnaire. Mixed type questionnaire include only close ended questions. Firstly, introduced her and describe the project study as well its purpose and also provided consent form to the participant and explained that to build a trustful relationship. After obtaining consent by sign and asked pre-determine question to the participant and gave time to understand the questions fully so that they might be answered accurately. During the interview, the wrote down field notes and observed the facial expression to collect accurate data from the participants because in grounded theory of qualitative research observation and interviewing both were commonly used for data collection. During the interview use pen, paper, written questionnaire, file, Consent paper.

3.10 Data analysis

Data was analyzed with the software named Statistical Package for Social Sciences (SPSS) Version 16.0. Data resolve numerically coded and captured in Microsoft Excel, using an SPSS 16.0 version software program. Microsoft Office Excel 2007 used to decorate the table, bar graph and pie charts.

3.11 Inform consent

The aims and objectives of this study must be informed to the subjects verbally. So, gave the consent from to the subject and explained them. The subjects had the rights to withdraw themselves from the research at any time. It supposed to 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 writing but they would not be identified. The participant must be informed or given notice that the result would not be harmful for them. It would be kept confidential and also ensuring the confidentiality of participant's information, sharing information only with the research supervisor. At any time the researcher available to answer any additional questions in regard to the study.

3.12 Ethical consideration

The proposal of the study was approved by the ethical committee of the member of faculty of physiotherapy Department. The study had done by following the guide line given by local ethical review committee and also followed WHO and BMRC guidelines. Strictly maintained the confidentiality and informed consent must be taken. All the interviews were taken in a confidential to maximize the participant's comfort and feelings of security.

3.13 Limitations

Though the expected sample size was 263 for this study but due to resource constrain researcher could manage just 100 samples which is very small to generalize the result for the wider population of the restaurant workers. There was no literatures about work related musculoskeletal disorders among the restaurant workers in the perspective of Bangladesh so; it was difficult to compare the study with the other research. The research was able to collect data from 1 selected restaurant for a short period of time which had affected the result of the study to generalize for wider population. The questionnaire was developed only through searching sufficient literature but considering the context of the demography of the population a pilot study would substantial before developing questionnaire.

Prevalence of WRMDs

The result of the study reveals that 78% (n=78) participants out of 100 participants had suffered from work related musculoskeletal disorders (WRMDs) (Figure 1).

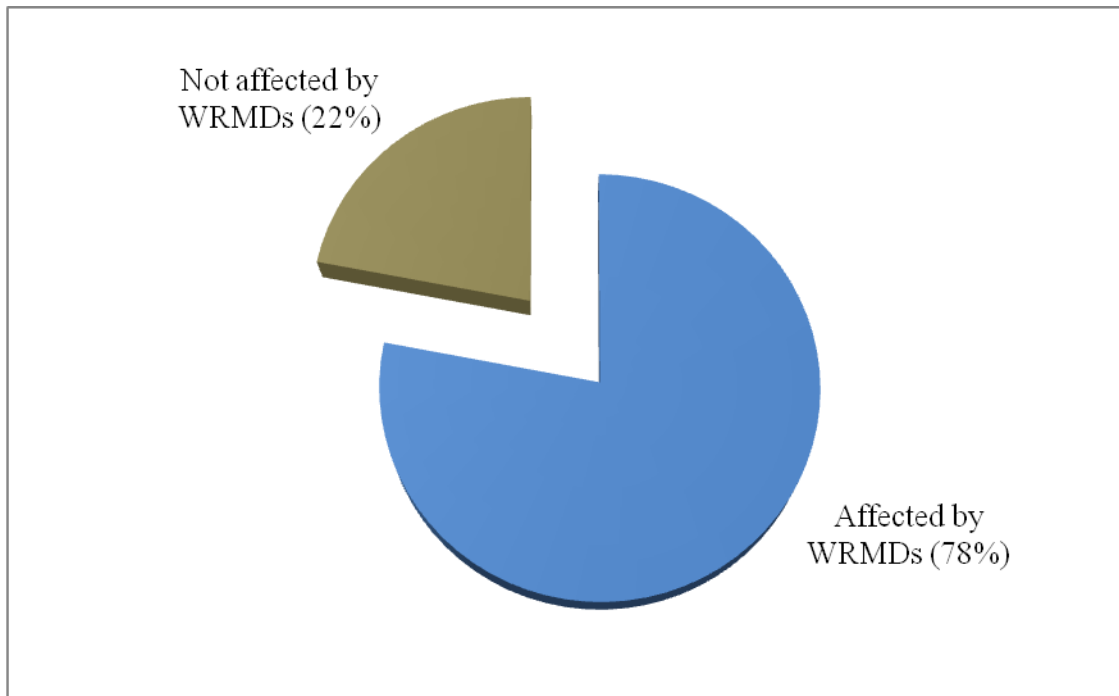


Figure-1: Prevalence of WRMDs.

Age & WRMD relationship

Analysis reveals that among the 78 participants who had suffered from WRMD lowest age were 22 years and highest age were 52 years. Their mean age was 35.05 (\pm 8.135) years and mean age of the unaffected group were 30.86 (\pm 5.130). Frequency of WRMD were 24% (n=19) participants in between 22-27 years, 23% (n=18) participants in between 28-34 years, 26% (n=20) participants in between 35-41 years, 27% (n=21) participants in between 42-52 years (Figure 2).

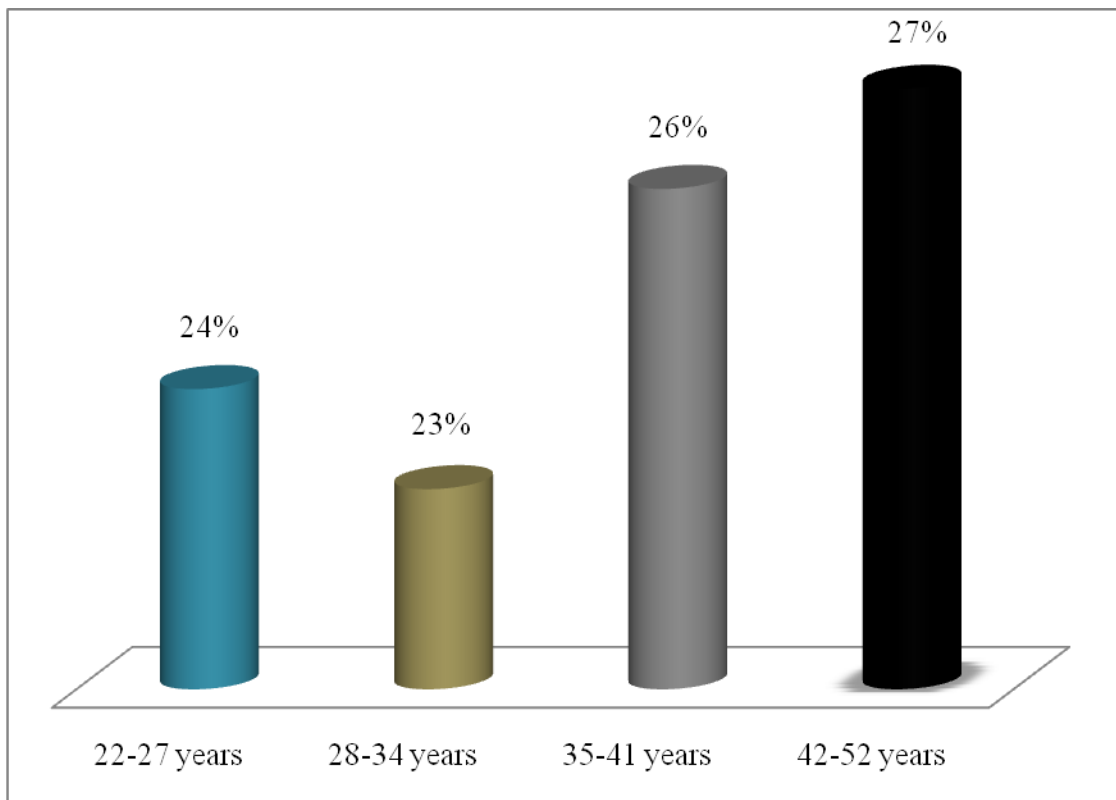


Figure-2: Age & WRMD relationship.

Among the 100 participants 61% were between 22-35 years where 42% participants had work related musculoskeletal disorders and 19% participants had not. 39% participants were between 36-52 years where 36% participants had work related musculoskeletal disorders and 3% participants had not (Table 1).

| Age Range | Work Related Musculoskeletal Disorders | | Total |
|------------------|---|-----------------|-------------------|
| | Yes | No | |
| 22-35 years | 42 (42%) | 19 (19%) | 61 (61%) |
| 36-52 years | 36 (36%) | 3 (3%) | 39 (39%) |
| Total | 78 (78%) | 22 (22%) | 100 (100%) |

Table-1: Cross Tabulation between Age and Work Related Musculoskeletal Disorders.

Gender and WRMD relationship

Analysis showed that among the 100 participants 72 were male and 28 were female. And among the 78 participants who had suffered from WRMD 72% (n=56) were male and 28% (n=22) were female (Figure 3).

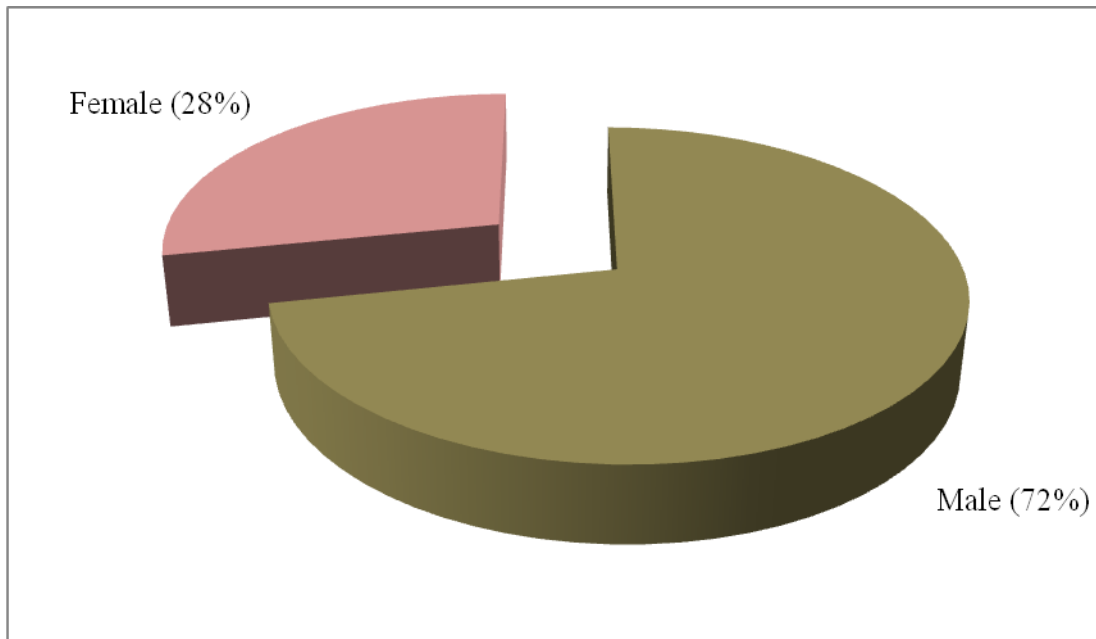


Figure-3: Male and female ratio.

Among the 100 participants 72% were male where 56% participants had work related musculoskeletal disorders and 16% participants had not. 28% participants were female where 22% participants had work related musculoskeletal disorders and 6% participants had not (Table 2).

| Sex of the participants | Experience of the WRMDs of the participants | | Total (%) |
|-------------------------|---|-----------------|-------------------|
| | Yes (%) | No (%) | |
| Male | 56 (56%) | 16 (16%) | 72 (72%) |
| Female | 22 (22%) | 6 (6%) | 28 (28%) |
| Total | 78 (78%) | 22 (22%) | 100 (100%) |

Table-2: Cross Tabulation between Sex and Work Related Musculoskeletal Disorders.

Education status

Among the 100 participants, 13% (n=13) participants had H.S.C with short course, 61% (n=61) participants had diploma in hotel management, 26% (n=26) participants had graduated.

Among the affected 78 participants who had suffered from WRMD in this study, 17% (n=13) participants were H.S.C with short course, 59% (n=46) participants were diploma, 24 % (n=19) participants were graduate (Figure 4).

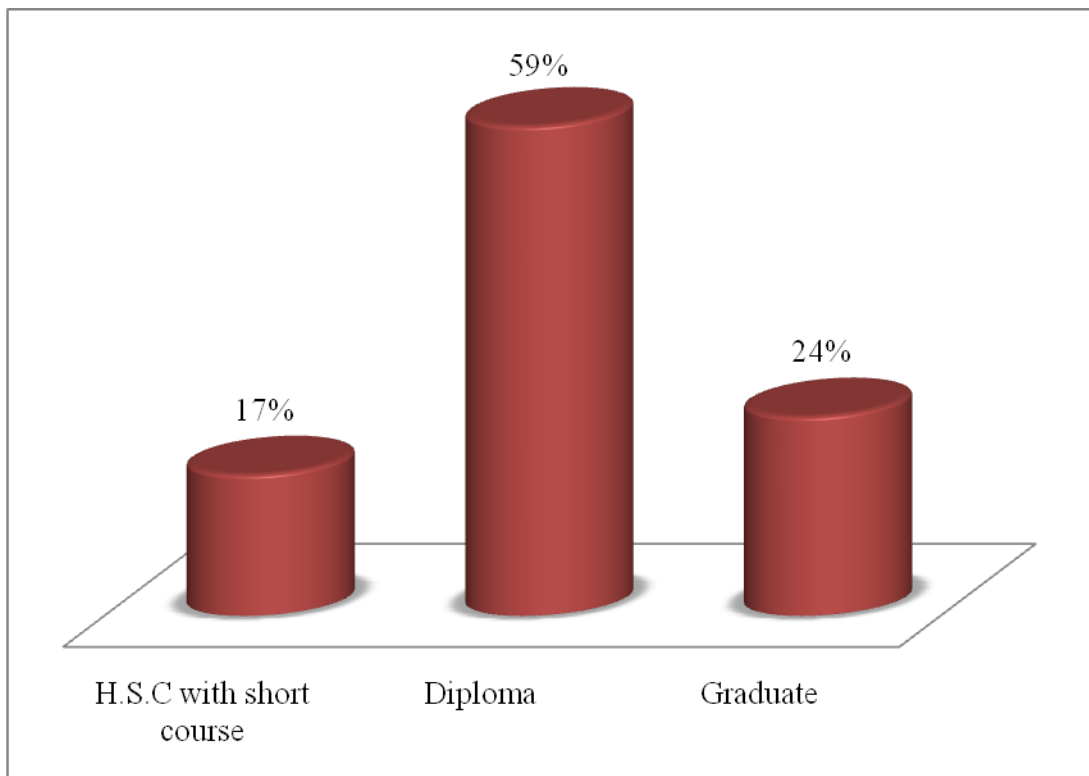


Figure-4: Education status of the participants.

Job experience and WRMDs

Outcome reveals that among the 78 participants out of 100 participants 11.5% (n=9) participants had job experience 0-1 year, 20.5% (n=16) participants 1-5 years, 43.6% (n=34) participants 5-10 years, 24.4% (n=19) were more than 10 years. Their mean job experiences were more than 11 years. Their mean job experiences were 2.81 ($\pm .941$). Mean job experience of the unaffected group was 2.27 ($\pm .827$). So, restaurant workers suffered from WRMD were in between (6-10) years and more than 11 years (Figure 5).

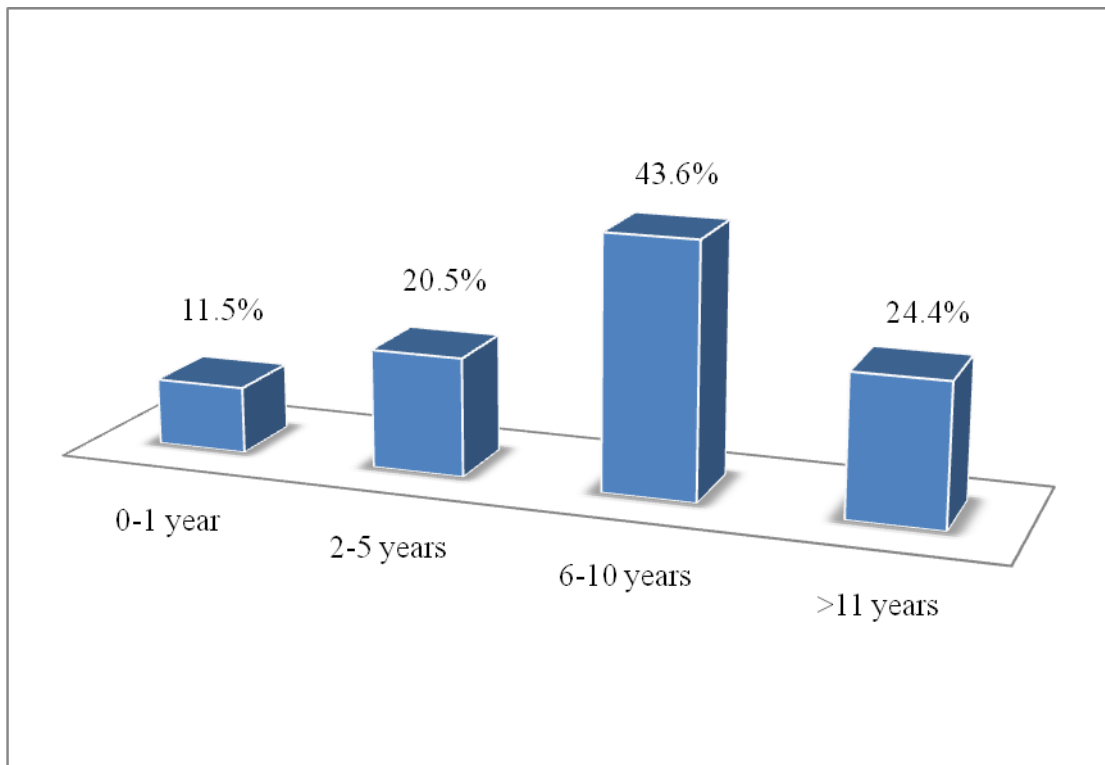


Figure-5: Job experience and WRMD relationship.

Among the 100 participants 13% were between 0-1 year job experience where 9% participants had work related musculoskeletal disorders and 4% participants had not. 25% participants were between 1-5 years job experience where 16% participants had work related musculoskeletal disorders and 9% participants had not. 42% participants were between 5-10 years job experience years where 34% participants had work related musculoskeletal disorders and 8% participants had not. 20% participants were between >10 years job experience where 19% participants had work related musculoskeletal disorders and 1% participants had not (Table 3).

| Job experience of the participants | Experience of the WRMDs of the participants | | Total (%) |
|---|--|-----------------|-------------------|
| | Yes (%) | No (%) | |
| 0-1 year | 9 (9%) | 4 (4%) | 13 (13%) |
| 1-5 years | 16 (16%) | 9 (9%) | 25 (25%) |
| 5-10 years | 34 (34%) | 8 (8%) | 42 (42%) |
| > 10 years | 19 (19%) | 1 (1%) | 20 (20%) |
| Total | 78 (78%) | 22 (22%) | 100 (100%) |

Table-3: Cross Tabulation between Job experience and Work Related Musculoskeletal Disorders.

Number of episode of WRMD

Analysis showed that among 78 participants out of 100 participants who suffered from WRMD 35% (n=27) participants suffered from 1 episode of WRMD, 31% (n=24) participants suffered from 2 episodes of WRMD, 28% (n=22) participants suffered from 3 episode of WRMD, 6% (n=5) participants suffered from 4 episode of WRMD (Figure 6).

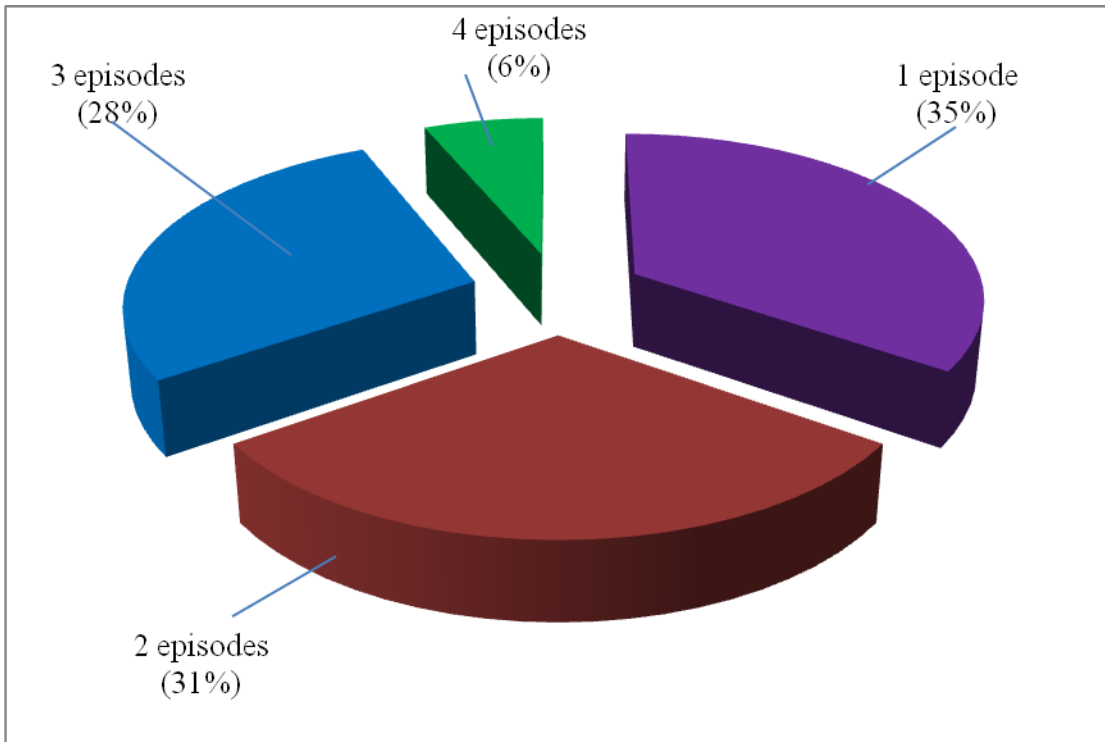


Figure-6: Number of episode of WRMDs.

Symptoms

Analysis demonstrated that 78 participants out of 100 participants who suffered from WRMD 7% (n=5) participants suffered from aching, 1% (n=1) participants had cramp, 1% (n=1) had numbness, 82% (n=64) had pain, 4% (n=3) had weakness, 5% (n=4) had restricted ROM. So, most restaurant workers suffered from WRMD symptoms was pain (Table 4).

| Symptoms of the participants | Number (n) | Percentage (%) |
|------------------------------|------------|----------------|
| Aching | 5 | 7% |
| Cramp | 1 | 1% |
| Numbness | 1 | 1% |
| Pain | 64 | 82% |
| Weakness | 3 | 4% |
| Restricted ROM | 4 | 5% |
| Total | 78 | 100% |

Table-4: Symptoms of WRMD.

Affected body parts

After analysis researcher found that among 78 participants who suffered from WRMD most affected body parts were neck in 22% (n=16) participants, shoulder in 10% (n=8) participants, spine in 38% (n=30) participants, elbow in 1% (n=1) participants, wrist in 5% (n=4) participants, knee in 24% (n=19) participants (Table 5) and (Figure 7).

| Affected body parts | Number (n) | Percentage (%) |
|----------------------------|-------------------|-----------------------|
| Neck | 16 | 22% |
| Shoulder | 8 | 10% |
| Spine | 30 | 38% |
| Elbow | 1 | 1% |
| Wrist | 4 | 5% |
| Knee | 19 | 24% |
| Total | 78 | 100% |

Table-5: Affected body parts.

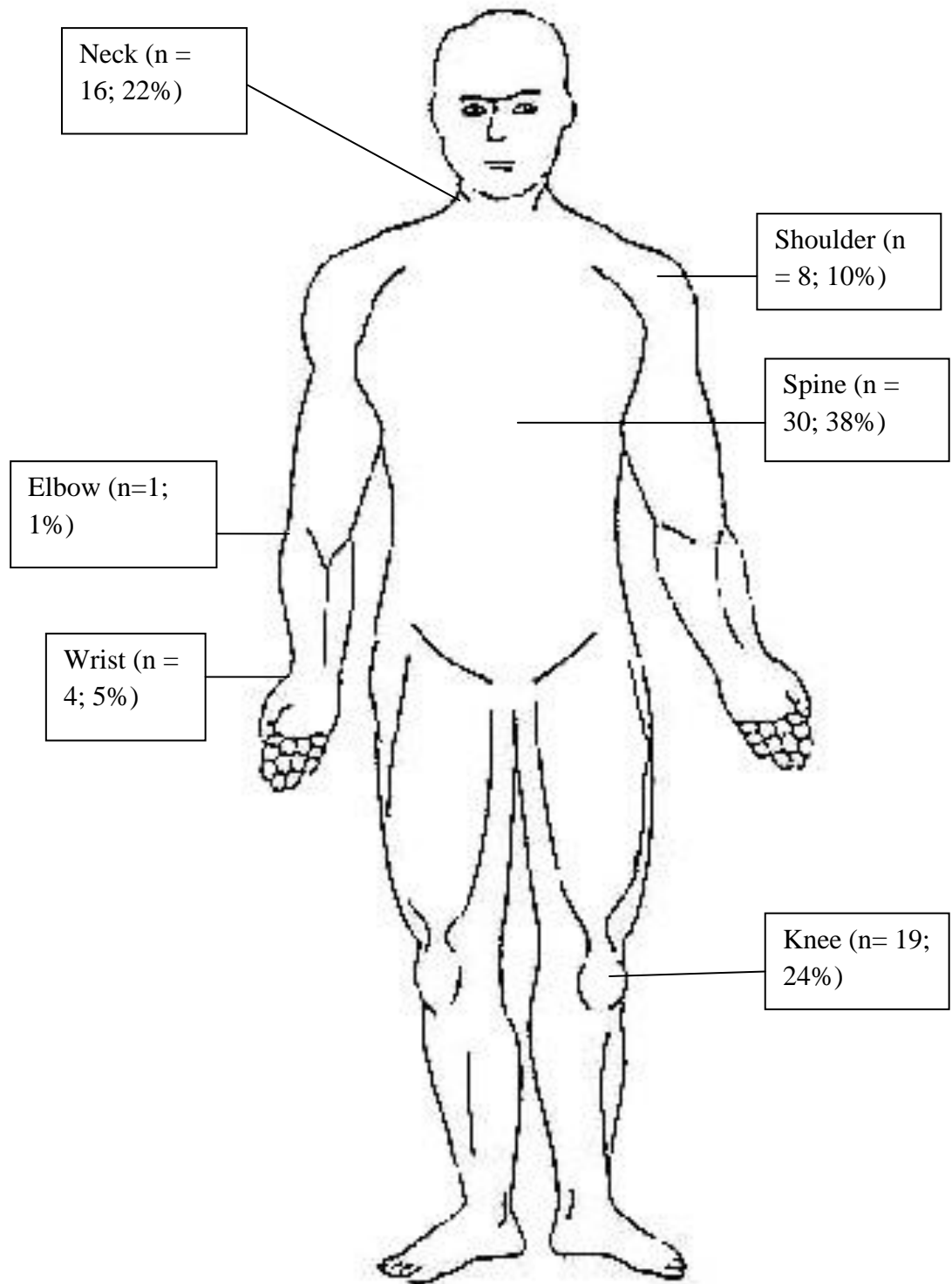


Figure-7: Affected body parts (Health advisors, 2012).

Severity of symptoms

Analysis demonstrated that 42.3% (n=33) participants had mild symptoms and 57.7% (n=45) participants had moderate symptoms out of 78 participants (Figure 8).

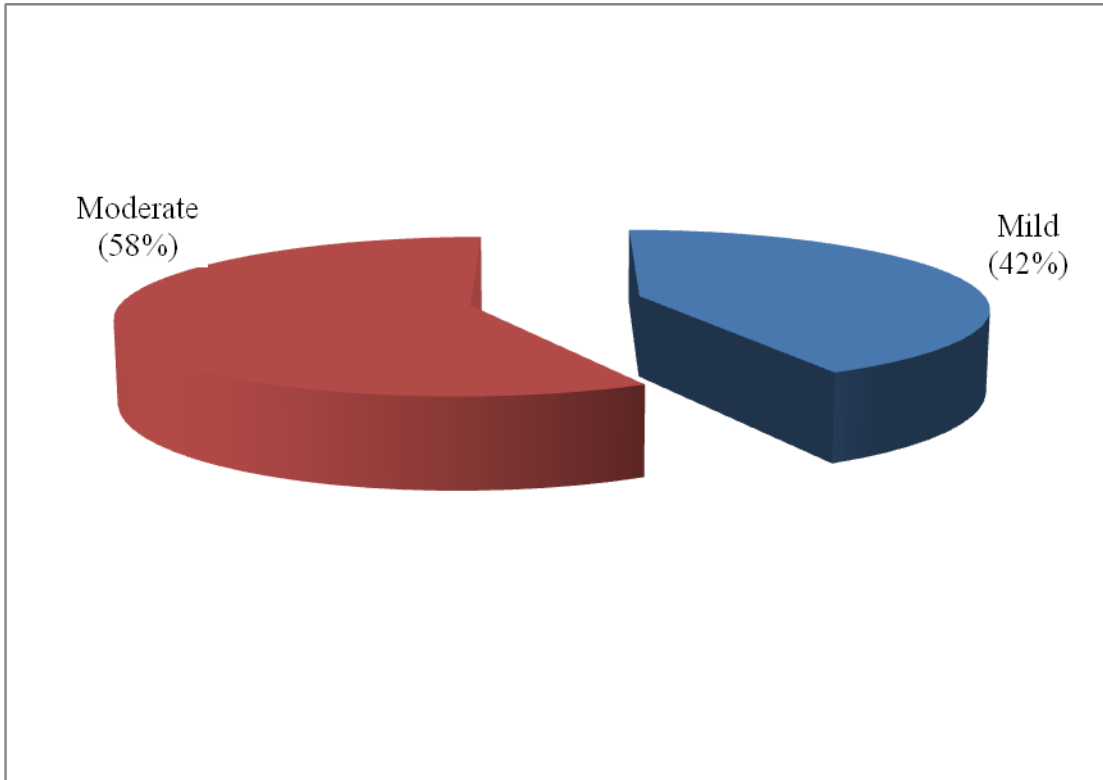


Figure-8: Severity of symptoms.

Work interruption

Analysis showed that 20.5% (n=16) participants out of 78 participants had work interruption due to WRMD (Figure 9).

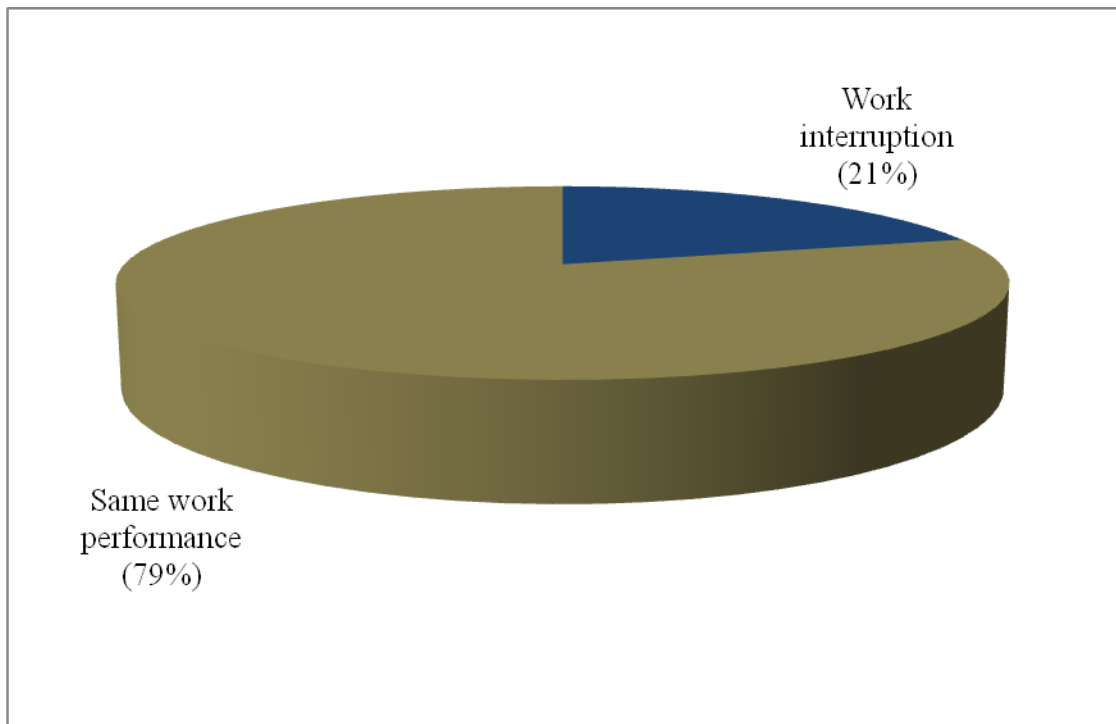


Figure-9: Work interruption.

Reduce work performance

Outcome reveals that 57.7% (n=45) participants out of 78 participants working performance had reduced due to WRMD (Figure 10).

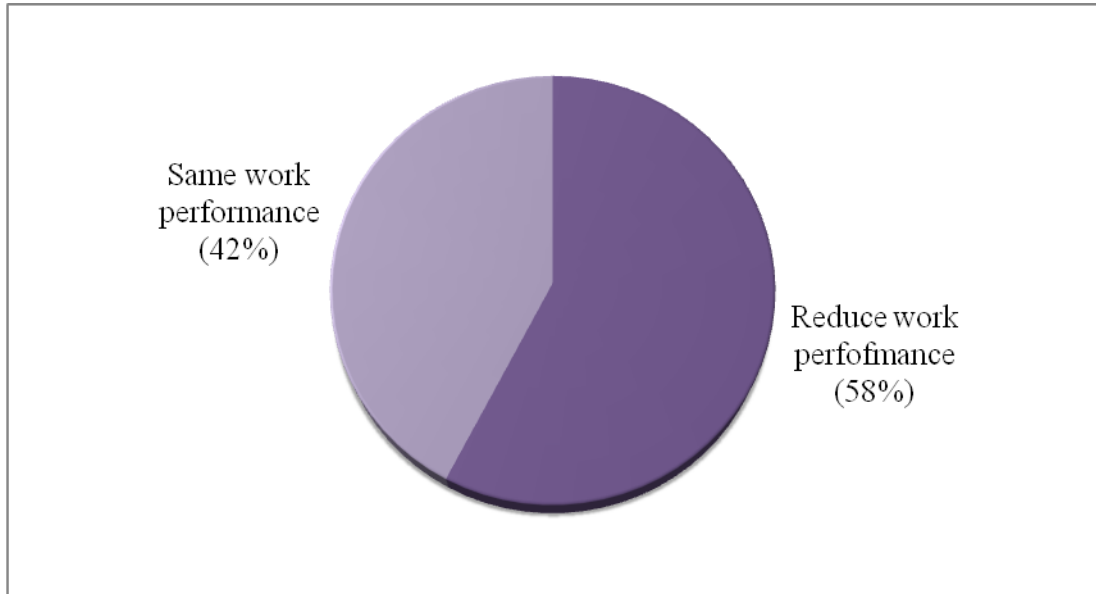


Figure-10: Reduce work performance.

Safety equipment use

Analysis demonstrated that 83% (n=65) participants out of 78 participants had use Safety equipment (Figure 11).

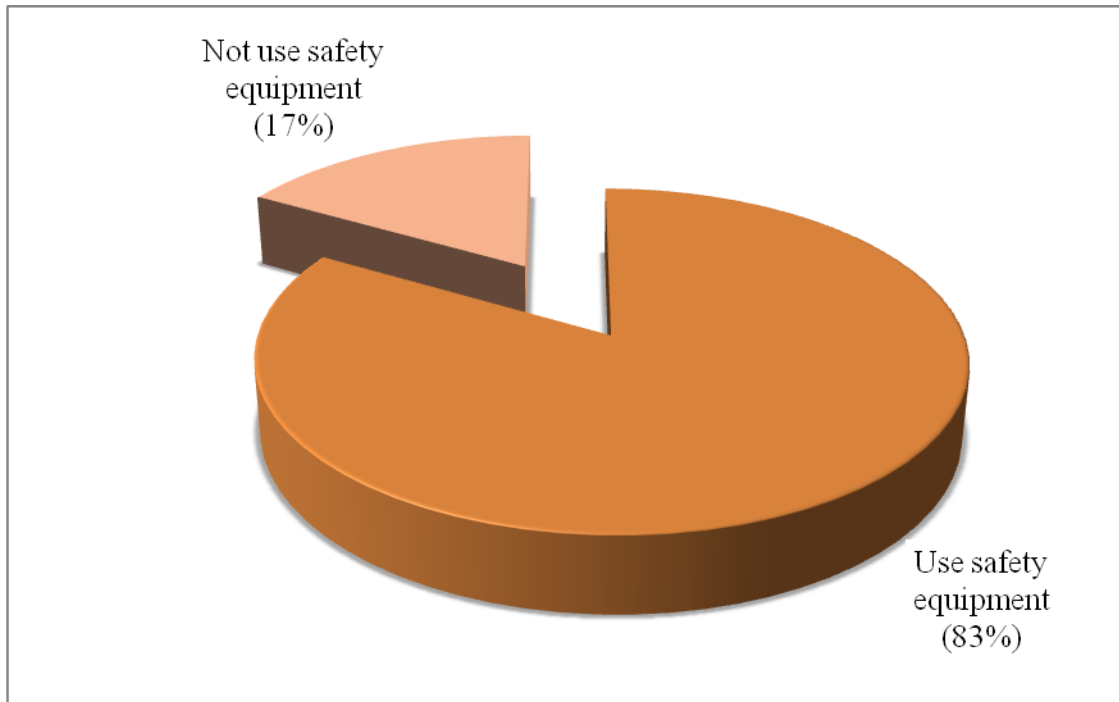


Figure-11: Safety equipment use.

Stressful positions

Analysis showed that among the 78 participants who had suffered from WRMD stressful position were working in same position for long periods for 38% (n=30) participants, performing same task over and over for 18% (n=14) participants, bending or twisting back or neck in an awkward way for 6% (n=5) participants, repetitive movement of upper limb for 3%(n=2) participants, carry heavy load for 35% (n=27) participants. So, most common risk factors were working in same position for: (38%) and carry heavy load for: (35%) (Table 6).

| Stressful positions | Number (n) | Percentage (%) |
|------------------------------------|-------------------|-----------------------|
| Working in same position | 30 | 38% |
| Performing same task | 14 | 18% |
| Bending or twisting in awkward way | 5 | 6% |
| Repetitive movement of upper limb | 2 | 3% |
| Carry heavy load | 27 | 35% |
| Total | 78 | 100% |

Table-6: Stressful positions of WRMDs.

Receiving physiotherapy treatment

Analysis showed that among 78 participants who suffered from WRMD only 19.2% (n=15) participants had taken physiotherapy treatment for their condition (Figure 12).

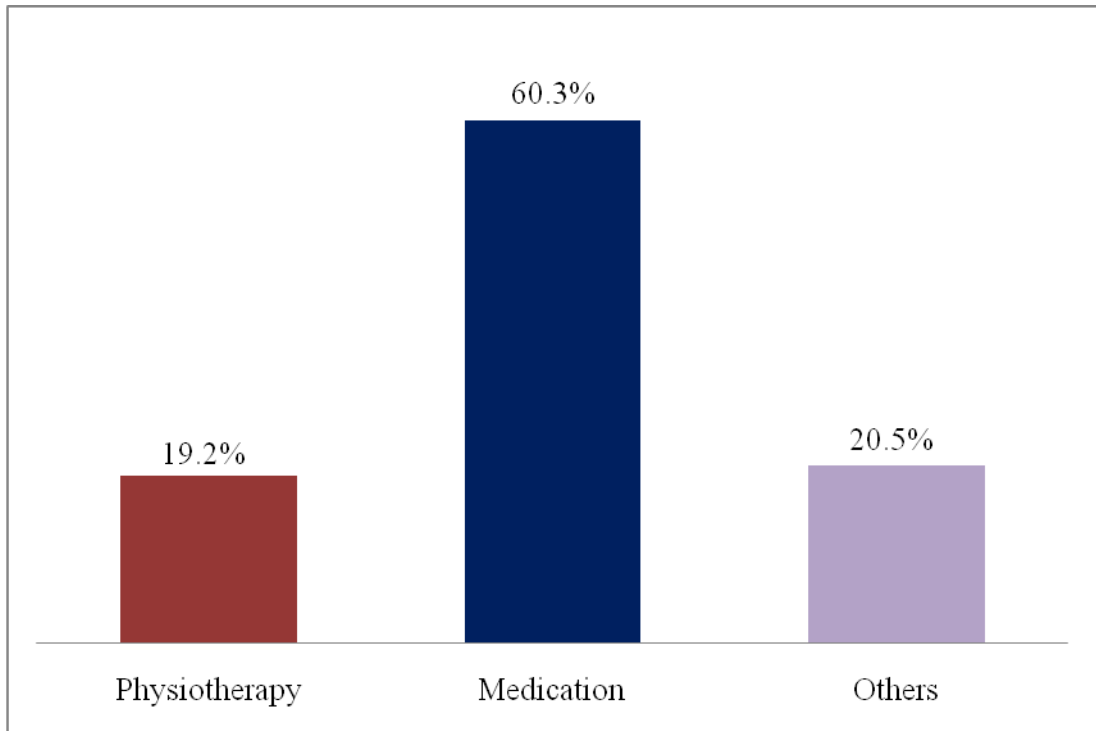


Figure-12: Receiving physiotherapy treatment.

Treatment Consequences

Among the 15 participants who had taken physiotherapy for their condition all of the participants had a good prognosis. The percentages of prognosis were improve in 83% (n=13), no result in 17% (n=3) participants (Figure 13).

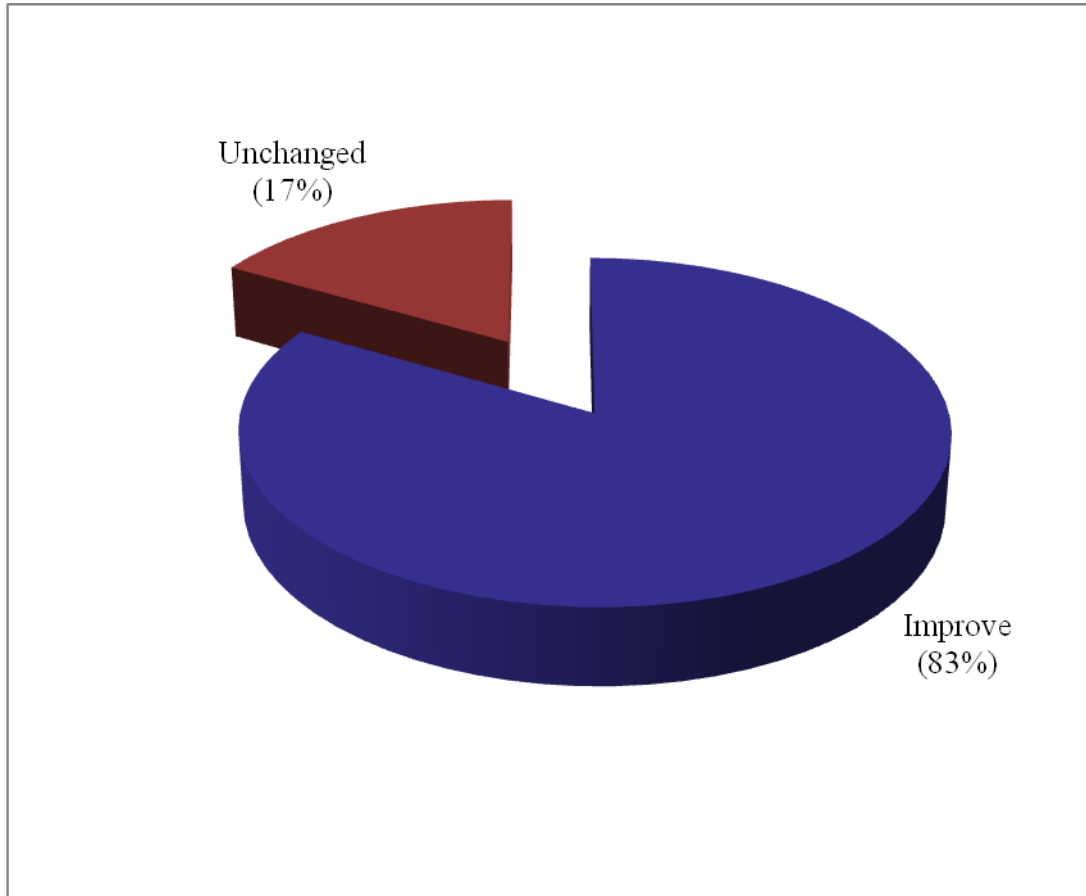


Figure-13: Treatment Consequences.

This study examined the prevalence of work related musculoskeletal disorder (WRMD) among the restaurant worker. This study found that more than three fourth (78%) suffered from WRMD. This result was comparable at Taiwan (84%) reported experience of WMSD (Chyuan et al., 2004). In India musculoskeletal problems were reported by 76.5% (Talwar et al., 2009). The European Agency for Safety and Health at Work (2007) found that 84% WRMD reported in Europe countries. Priya et al. (2010) found that With MSD 76.25 % and Without MSD 23.75 %. In Iran 87.1% experienced some form of MDS symptoms (Choobineh and Tabatabaee, 2009). In America Work-related pain was experienced by 75% (Scherzer et al., 2005).

The higher number of age ranges of participants 27% had suffered from WRMDs between 42-52 years and lower number of age ranges of participants 23% had suffered from WRMDs in between 28-34 years. European Agency for Safety and Health at Work (1999) the higher number of age ranges suffered from WRMDs between 55-64 years and lower number of age ranges suffered from WRMDs 25-34 years. The mean age was 35.05(SD \pm 8.135) years. Chyuan et al. (2002) the mean Age was 33.3 \pm (SD \pm 11.3) years. Choobineh & Tabatabaee (2009) the mean age was 34.63(SD \pm 11.07) years.

Near about two third (72%) were male and (28%) were female suffered from WRMD. Literature says that men are more vulnerable to WRMDs then female. In Chennai, India 77.5% male and 22.5% suffered from WRMD (Priya et al., 2010). In Korea Kun et al. (2010) found that 74.2% male and 25.8% female suffered from WRMD.

The symptoms of WRMDs were 7% (5) participants suffered from aching, 1% (1) participants has cramp, 1% (1) has numbness, 82% (64) had pain, 4% (3) had weakness, 5% (4) had restricted ROM. So, most restaurant workers suffered from WRMD symptoms was pain. Chyuan et al. (2004) 84% participants reported experience of WRMD related pain. Scherzer et al. (2005) 75% was experienced Work-related pain.

The most affected body parts were neck in 22% (16) participants, shoulder in 10% (8) participants, spine in 38% (30) participants, elbow in 1%(1) participants, wrist in 5%(4) participants, knee in 24%(19) participants. In India most of the workers were affected body parts were neck (80%), shoulder (20%), wrist (45%), and low back (75%) (Ghosh & Das, 2010). Alexopoulos et al. (2004) found that prevalence of affected body parts were head/neck (42%), low back (34%), upper back (28%), wrists/hands (20%), shoulders (16%), ankles/feet (13%), knees (12%), hips (6%) and elbows (5%). Work-related musculoskeletal disorders mostly affecting the lower back (97%), knees (85%) and shoulders (77%) (Gangopadhyay et al., 2010).

Work interruption due to WRMD in 20.5%. In Germany work interruption due to WRMD in 28.7% (Prins et al., 2000). Al-wazzan et al. found in his research at Riyadh in 2001 that only 21.62% missed work due to neck pain and only 24.66% due to back pain. (57.7%) 45 of the participants had work performance reduce due to WRMDs. According to European Agency for Safety and Health at Work (1999) 61% of work performance reduces due to WRMDs.

Most of the common risk factors were working in same position for (38%) participants and carry heavy load for (35%) participants, performing same task over and over for 18% participants, bending or twisting back or neck in an awkward way for 6% participants, repetitive movement of upper limb for 3% participants, carry heavy load for 35% participants. Working in same position for long period (71.3%), bending or twisting back or neck in an awkward way (62.6%), performing same task over and over (52.2%). Palmer (2007) claimed that repetitive work, static loading are responsible for most of the WRMDs. A positive relationship between fixed postures and musculoskeletal disorders (including pain, weakness, and paraesthesia) had documented for a number of occupations (Akeson et al., 1995).

In this study 19.2% participants had taken physiotherapy treatment for their condition. 60% participants had taken medical treatment for their condition. Krause et al. (1999) found that 73% taken medical treatment for WRMDs.

6.1 Conclusion

This study aims to identify the WMSDs among restaurant workers by identifying the body regions with significant discomfort and risk factors of WRMDs. A comprehensive literature review was given. This study was aimed to find out the common work related musculoskeletal disorders among restaurant workers. For the fulfillment of the study the researcher was designed a quantitative study design (cross-sectional study) and collected 100 data from the samples through a standard questionnaire. From the data base, it was found that 78% participants had WRMDs and age range between 42-55 (27%) years is more vulnerable. Male (72%) were predominantly more affected than female (28%). Most of the education level was Diploma (59%). The duration of job experience 6-10 years (43.6%) most commonly suffered by the WRMDs. In this research, the researcher found 78% of the participants had musculoskeletal disorders with higher prevalence of pain. The result indicates that most discomfort of the body regions was in the neck (22%), spine (38%) and knee (24%). Most common symptom of WRMDs was pain (82%) and the most affected body part was spine (39%). The maximum severity of symptom was moderate (57.7%). The most common risk factors were working in same position for (38%) and carry heavy load for (35%) participants. Only (19.2%) participants had taken physiotherapy treatment for their condition. Among the 15 participants who had taken physiotherapy for their condition all of the participants had a good prognosis. The percentages of prognosis were improved in (83%). In conclusion, work related musculoskeletal disorders represent a significant burden for restaurant workers. The study was represents the strong evidence that WRMDs was common among restaurant workers. In order to reduce musculoskeletal problems, correct postural practices, proper design of tools and equipment significantly can prevent MSDs.

6.2 Recommendations

A recommendation evolves out of the context in which the study was conducted. The purpose of the study was to estimate the work related musculoskeletal disorders among restaurant workers. Though, the research had some limitations but some further step that might help for the better accomplishment of further research. For the ensuring of the generalization of the research it is recommended to investigate a large sample. In this study only investigate the restaurant workers from 1 selected restaurant. But due to time limitation there was not able to gather huge amount 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 restaurant workers in Bangladesh.

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CONSENT FORM

(Please read out to the participant)

Assalamualaikum, my name is *Khaleda Yesmin*, I am conducting this study for partial fulfillment of Bachelor of Science in Physiotherapy degree, titled “*common work related musculoskeletal disorders among the Restaurant workers*” from Bangladesh Health Professions Institute (BHPI) under medicine faculty of University of Dhaka. I would like to know about some personal and other related information about musculoskeletal problems. With great kindness you are requested to answer some questions of that are mentioned in this form. This will take approximately 20-30 minutes.

The aim of this study is to find out the prevalence of common work related musculoskeletal disorders among the restaurant workers. The participation must be voluntary. You have the right to withdraw consent and discontinue participation at any time. You might be benefited or not, but in future it may be benefited and would not be harmful. I am assuring you that all information given by you will be kept in confidential place and you will not personally identify in this research. If you have any query about the study or your right as a participant, you may contact with, researcher *Khaleda Yesmin* or *Md.Obaidul Haque*, Associate Professor & Head of the Department, Department of Physiotherapy. BHPI, CRP, Savar. Dhaka-1343.

Do you have any question before you start?

So may have your consent to proceed with the interview?

YES

NO

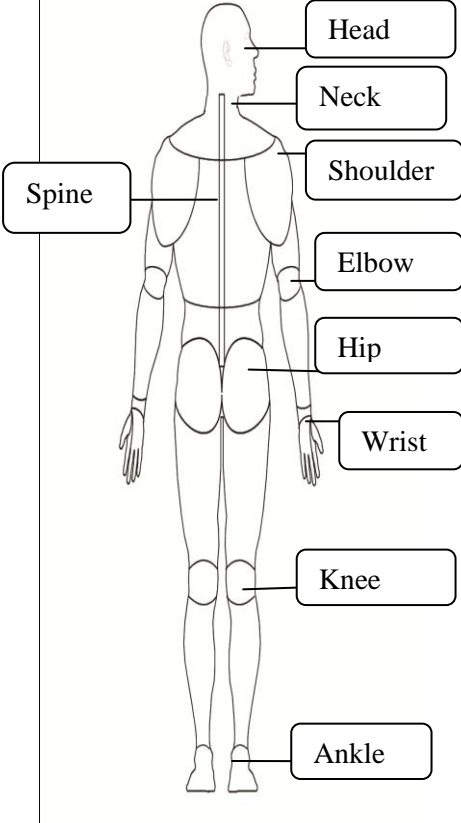
Signature of the interviewer & date_____

**PREVALENCE OF COMMON WORK RELATED
MUSCULOSKELETAL DISORDERS AMONG THE
RESTAURANT WORKERS**

Questionnaire

| Part-A: Socio-demographic Information | | |
|--|----------------------------------|---|
| 1.1 | Name | |
| 1.2 | Age | |
| 1.3 | Sex | 1=Male 2=Female |
| 1.4 | What is your educational status? | 1=S.S.C 2=H.S.C with short course 3=Diploma 4=Graduate 5=Post Graduate(Masters) 6=Post Graduate (PhD) 7=Other (Specify) |
| 1.5 | Job experience: | 1=0-1 years 2=1-5 years 3=5-15 years 4=>15 years |

Part-B: Symptoms & Risk indicator related questions

| QN | Questions and filters | Responses |
|-----|---|---|
| 2.1 | Have you ever experience work-related musculoskeletal disorders in any part of your body? | 1=Yes 2=No |
| 2.2 | If yes, what number of episode you suffer due to work-related musculoskeletal disorder? | 1=1 episode 2=2 episode 3=3 episode 4=4 episode 5=5 episode 6=>5 episode |
| 2.3 | Please fill the affected body part where the symptoms arise? (Aching, Cramp, Numbness, Tingling, Pain, Parasthesia, Swelling, Stiffness, Weakness, Restricted range of motion) |  |
| 2.4 | What is the severity of your pain? | 1=Mild 2=Moderate 3=Sever |
| 2.5 | Did you stay away from work due to pain? | 1=Yes 2= No |

| | | |
|------|---|---|
| 2.6 | Had your working performance Reduced due to pain? | 1=Yes 2=No |
| 2.7 | Do you use any adequate safety equipment during work? | 1=Yes 2=No |
| 2.8 | What types of factor at work could contribute to work related musculoskeletal disorder? | 1=Working in the same position for long time (Standing, bend over, sitting etc) 2=Performing the same task over and over 3=Bending or twisting you're in an awkward way 4=Repetitive movement of upper limb 5=Work scheduling (over time, irregular shift, length of work day 6=Carry heavy load |
| 2.9 | Did you go physician Or physiotherapist due to any musculoskeletal problem? | 1=Yes 2=No |
| 2.10 | What kind of treatment did you receive? | 1=Physiotherapy 2=Medication 3=Others |
| 2.11 | If yes, then what was the result? | 1=Improve 2=Worse 3=Unchanged |