PREVALENCE OF NECK PAIN AMONG THE FEMALE SEWING MACHINE OPERATORS

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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 NECK PAIN AMONG THE FEMALE SEWING MACHINE OPERATORS"

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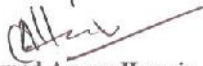
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ii

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 decline that for any publication, presentation or dissemination of information of the study. I would bound to take written consent from the Physiotherapy department, Bangladesh Health Professions Institute (BHPI).

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CONTENTS

Acronyms

BHPI **:**   Bangladesh Health Professions Institute

IRB   **:**   Institutional Review Board

BMRC **:**   Bangladesh Medical Research Council

CRP   **:**   Centre for the Rehabilitation of the Paralysed

SPSS **:**   Statistical Package of Social Science

VAS   **:**   Visual Analogue Scale

WHO **:**   World Health Organization

WRMD**:**   Work Related Musculoskeletal Disorder

WRNP**:**   Work Related Neck Pain

SMOs **:**   Sewing Machine Operators

&   **:**   And

NPQ   **:**   The Northwick Park Neck pain Questionnaire

List of Figures

Abstract

Purpose*:** To identify the prevalence of neck pain among the female sewing machine operators. ***Objectives: To identify the impact of neck pain on activities of daily living; to identify the possible causes of development of neck pain; to measure the pain intensity of sewing operators, to investigate the pain worsening posture during sewing; to see the impact or absenteeism of work due to pain; to explore the consequence of treatment after neck pain. ***Methodology*:** Cross sectional study design was selected. Total 65 samples were selected by purposive sampling from garments factory at Savar. Data was collected by The Northwick park Neck pain Questionnaire (NPQ). Descriptive statistics were used for data analysis and the results were showed in pie chart and bar chart. ***Results*:** The Prevalence of neck pain was 43% among the female sewing machine operators. 6% participants experienced neck pain 4 out of 10 of VAS scale and 65% participants experienced pain 7 out of 10 in VAS scale. 63% participants said forward flexion resulted worse the pain. 91% participants were notice symptoms during work due to pain. 95% participant's performance reduce due to neck pain. 72% participants received medication, 16% participants received Physiotherapy and 13% of the participants did not receive any treatment from health professionals. ***Conclusion*:** The findings of this study suggest that the prevalence of neck pain was 43% among the female sewing machine operators in Dhaka, Bangladesh. And this may be associated with the posture.

Back ground

Neck pain is the most common musculoskeletal problem in our country, at least in the industrialized world, and it also an important source of disability. Physicians said that, patient who visited him their most common complaint has neck pain (Trial & Nyka, 2003). Neck pain has been associated with poor general health status, psychological distress and previous neck injury, occupational task, obesity (Croft et al., 2008). Neck pain can be work related as well as non -work related. There are some factors are become to play a major role in development of neck pain (Arienset al.,2001). Neck pain is the pain that occurs in neck region. It also involves stiffness along with tenderness in the trapezius muscle. Neck pain including stiffness, radiates into the shoulder and occiput that can be episodic or chronic (Mc Cormack, & Weinstein, 2009).

Someone who sews by operating a sewing machine called sewing machine operator (World Net Inter face 2006). Sewing machine operators run high speed sewing machines to make clothing and other cloth piece (Sewing machine operator 2009). Sewing machine operators work with a variety of materials, including cloth, leather, canvas, nylon, polyvinyl, chloride and fur (Sewing machine operator 2005). Most sewing machine operators produce clothing in the world wide. All sewing machine operators have many basic tasks in common (Sewing machine operator carrier 2006). Neck pain are the common complains in the sewing machine operators. This profession involves highly monotonous, repetitive work in sitting position with bent neck and upper part of back curved on the sewing machine for longer duration (kaergaard & Andersen, 2011). Psycological factors are also related like emotional stress and anxiety, head-ache, neck bending, cervical lordosis causes neck pain (Bryan,et al., 2011). A number of physical factors that can lead to complains of cervical pain in service persons these factors are poor ergonomics, sustain muscle tension may increase the risk factors of neck pain. A literature has examined in working members their neck pain may arise for long time poor sitting position, held their neck in forward bent position and they are also physically and mentally fatigue (Cohen et al., 2012).

Neck radiographic appearance showed that locked facet, tumor, pedical syndrome, fractures and any bony lesion are some specific causes for recurrence of neck pain (Oh

et al., 2009). This study explores the relationship between house work and neck pain among sewing operators adjusting for social demographic and economic factors. Both psychosocial and physical factors showed significant associations with neck pain. Women from this community engage in a large number of hours of house work that along side other factors ,were associated with high prevalence of neck pain.

The prevalence of neck pain showed that 70% of adult's male and female are affected by neck pain some times in their lives. At any time 10% to 20% population have neck pain. 54% of individual people have neck pain at least 6 months. Prevalence of neck pain increases with age and it is most common in female in fifth decade of life. Recently one study showed that one year prevalence of neck pain in a population of 54% in males and 74% in female (Hush et. al., 2009) . A lower reported prevalence in age (risk factor). Some risk factors for developing new or episodes of neck pain and a history of neck injury is an independent risk for later neck pain. A long time history of neck pain can causes of loss of strength in arm and hands, poor quality of life and vitality as predisposing factors for the development of chronic neck pain. Cervical spondylosis is diagnosed on routine radiological examinations for recurring neck pain may arise various symptoms such as neck stiffness, radiculopathy, may or may not radiating pain both upper extremities (Oh et al., 2009). The patients with neck pain represent the second largest population seeking manipulation or manual therapy (Muye et al., 2003). Neck pain is commonly encountered in clinical practice and the prevalence of neck pain with or without arm pain is approximately 13% of females and 9% of males in the general population (Hush et al, 2009). One out of every three individuals can recall an incidence of neck pain at least once in their lifetime and percentage is greater in work place, where 51% to 80% of laborers can recall an episode of neck and arm pain (Wlodyka-Demaille et al., 2004). The frequency of neck complains increase with age in the workplace and in the 25 to 29 age group, 25% to 30% complain of neck stiffness and 5% to 10% complain of pain radiating into the upper limb. Overall, 45% of working men have experienced at least one episode of neck discomfort (Randall et al., 2000).

Neck pain may arise from any structures in the neck. These are intervertebral discs, ligaments, muscles, facet joints, dura and nerve roots (Bogduk, 2011). There are a large number of potential causes of neck pain. These are very from tumors, trauma, (e.g. fractures, whiplash), infections, inflammatory diseases. Mechanical disorders including degenerative changes may could as nonspecific neck pain (e.g. rheumatoid arthritis)

(Oberstein et al., 2011).Neck pain of a mechanical nature is a common complaint seen by practitioners of manual medicine, who use a multitude of methods of treat the condition. It can come from a number of disorders and diseases of any structure in the neck. Neck pain is also referred to as cervical pain in a more than half of people develop about of neck pain at some time in their life. A UK literature found that show that adults aged 45-75 years, about 1 in 4 women and 1 in 5 men had current neck pain (Gemmell & Miller, 2010).

A number of physical factors that can lead to complains of cervical pain in service persons. These factors are poor ergonomics, sustain muscle tension may increase the risk factors of neck pain. A literature has examined in working members their neck pain may arise for long time poor sitting position, held their neck in forward bent position and they are also physically and mentally fatigue (Cohen et al., 2012).

A high occurrence of musculoskeletal complains and neck and shoulder disorders have been found in studies of women sewing machine operators, and likewise among several other groups of women performing repetitive industrial work. The job involves monotonous, highly repetitive tasks performed in a sitting working posture with upper back curved and head bent over the sewing machine. The work is visually demanding and requires a high degree of concentration and accuracy. The prevalence of persistent neck and shoulder disorders has been found to increase with years of employment as a sewing machine operator. However, some women never experience more than slight or moderate symptoms and never develop clinical neck or shoulder disorders despite many years of work. Knowledge of what makes neck and shoulder complains develop into chronic conditions is sparse. (A Kaergaard & J H Andersen., 2000).The commonest risk factors among sewing machine operators are adaptation of awkward posture due to poorly designed seating devices that lack adjustable seat heights and back rests, and repetitive nature of sewing machine operator's tasks such as pedaling, and extreme flexion of the trunk and neck. (Sealetsa OJ &Thather A 2010).

Different countries had reported prevalence of WMSDs among sewing machine operators. In Portugal, 76% prevalent rate of WMSDs among sewing machine operators. (Afonso et al., 2014). In Denmark, prevalence of 15% and 5.8% for myofascial pain syndrome and rotator cuff tendinitis respectively among sewing machine operators. (Kaergaard A, Andersen JH, 2000). The prevalence of moderate to

3

severe musculoskeletal pain in the neck/ shoulder region and distal upper extremity were 24% and 16% respectively among sewing machine operators in Los Angeles. (Wang PC et al., 2007). A survey of sewing machine operators in Ibadan Southwest Nigeria by Akanbi and Ikemefuna,(2010) found that the workstations of the sewing machine operators, especially the sitting devices, were of various types and designs without consideration to ergonomic requirements.The tendency for a positive co-relation between neck flexion and neck pain was found, suggesting an increased risk of neck pain for those who spent a high percentage of the working time ($> 70\%$) with the neck at a minimum of 20° of flexion. Working with the neck at a minimum of 20° of flexion for 25%-50% or 50%- 60% of the working time showed no increased relative risk (RR) for neck pain (Chiu et al., 2001). The analysis of the neck at a minimum of 20° of flexion was concentrated on percentages higher than 60% of the working time and unexpectedly, the relative risk for neck pain were lower for the percentage of the working time with the neck at a minimum of 45° of flexion (Ariens et al., 2002). The significant positive relationship between sitting posture and neck pain, especially workers who sat for more than 95% of the working time and the risk of neck pain was twice as high as for workers who hardly ever worked in a sitting position (Blangsted et al., 2008). The plausible mechanism for the strong relation between prolonged sitting and neck pain which will lead to a continuous static load on the neck muscles, especially if the design of the workplace is not suitable for the worker (Linton & Tulder, 2001). Static loading of the neck muscles will induce biomechanical strain for example, an increased muscle tone which may in the long term lead to the development of neck pain (Ariens et al., 2000). Neck pain are formed gradually in people who have inappropriate position when working and the type of disorders may cause muscular pain and skeleton damages in different parts of body such as waist, shoulders, arms and hands. Neck pain also increase the possibility of disc hernia (Sadri, 2002). Public vehicle drivers showed to have a higher prevalence of MSDs, compared to other careers (Verhagen et al., 2007).

1.2 Rationale

Developing country like Bangladesh having many health related problem. Now in modern society neck pain increasing day by day, it is the most common multi-factorial disease in our developmental country. It has been identified as one of the most costly and disabling disorders. Life become more threatens for that patient. For this reason of neck pain suffering patients who has neck pain on can't move and perform any work properly this problem also harms our regular activity and our life.

The aim of the study were assess to find out the prevalence of neck pain among the female sewing machine operators in the community, the study give proper information about this area and to find out most affected age groups, to identify the impact of physical, psychosocial factors of them. Identification of these factors will development, modification, bad posture established for equipment, furniture, and environmental conditions how to develop appropriate measures to reduce the neck pain which are necessary for sewing machine operators. This study will also help us to create new things in lacking area of awareness of sewing machine operators especially about their posture.

This study also will helpful in making physiotherapist to aware about prevalence of neck pain among the female sewing machine operators .So that physiotherapist can give better treatment and give necessary advice to the sewing machine operators aware about their neck pain. This research will help to discover the role of physiotherapy in Bangladesh and proper step taken to preventive measure about prevalence of neck pain among the female sewing machine operators.

1.3 Research question

What is the prevalence of neck pain among the female sewing machine operators?

1.4: Objectives of the study

1.4.1 General objective

To find out the prevalence of neck pain among the female sewing machine operators.

1.4.2 Specific Objectives

1. To explore the socio-demography (age, educational level, area of living , marital status)

2. To find out duration of neck pain.

3. To measure the severity of pain by using Vas scale.

4. To identify the pattern of onset of pain among female SMOs.

5. To identify the distribution of neck pain

6. To identify the impact of neck pain on work place.

7. To observe working posture among female SMOs.

8. To figure out whether sewing machine operator received physiotherapy treatment or not.

1.5 List of variables:

Conceptual Frame work

Independent variables   **Dependent variable**

$\rightarrow$ Age

$\rightarrow$ Sex

$\rightarrow$ Posture

$\rightarrow$ Working place

$\rightarrow$ Working environment   **Neck pain**

$\rightarrow$ Working Time

$\rightarrow$ Location of Pain

$\rightarrow$ Behavior of pain

$\rightarrow$ Duration of pain

$\rightarrow$ Aggravating movement

$\rightarrow$ Contributing factor
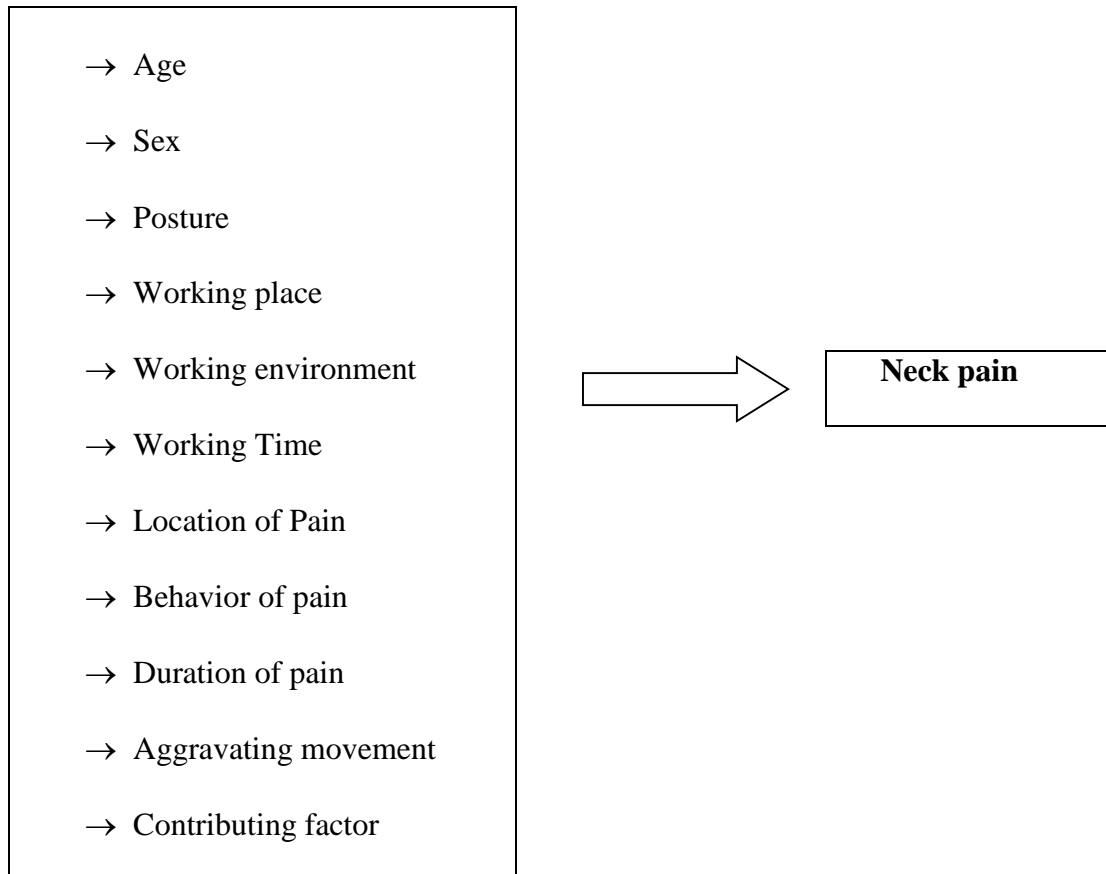
1.6 Operational defination:

Neck pain:

1. Neck pain is the sensation of discomfort in any of the structures in the neck. Neck pain include any structures in the neck, associated the cervical vertebra and inter vertebral disc, nerves, muscle, blood vessels. Neck pain is pain that occurs anywhere from the bottom of head to the top of shoulders. It may spread to the upper back or arm. Neck pain may arise from numerous different conditions. It referred to as cervical pain or neck pain.

Prevalence:

Prevalence is a statistical concept referring to the number of cases of a disease that are present in a particular population at a given time whereas incidence refers to the number of new cases that develop in a given period of time .The percentage of the female sewing machine operators who experienced pain in the neck due to sewing and house hold activities.

Sewing machine operator: Someone who sews by operating a sewing machine called sewing machine operator.

Pain is a complex unpleasant phenomenon composed of sensory experiences. Pain has been described as the perception of noxious stimuli or the distressing sensation that result from tissue damage. According to international association of the study of pain (IASP) "pain is an unpleasant sensory & emotional experience associated with actual or potential tissue damage or described in term of such damage." The pain pathway begins with the nerve ending and the nerve ending is the termination of nerve, at the distal end of an axon which sends messages to the brain to feel sensation such as heat, cold and pain. (English Dictionary, 2014).

Neck pain is the most common human phenomenon. In the general population 30% to 50% of adult persons will experience neck pain is any given year (Carroll et al., 2010). Numerous structures in the neck may be sources of neck pain. It may specific or nonspecific neck pain such as muscles, ligaments, nerves, soft tissues, joint structures, intervertebral discs and neural structure (Eck & Ystematic, 2010)

Neck pain progressively improves over 2-3 days without innervation. But pain and problem in neck region can petrises for weeks depending on injury or daily activities. Appropriate, slow and gradual rehabilitation will reduce healing time and help to prevent of neck pain. Most bengin cause of cervical spine stress with accompanying muscle tension can produce neck pain and tenderness others spondylosis refers to pathologic changes of cervical spine. It is also called degenerative disc disease and osteoarthritis of cervical spine (Pain management secrets 1997, p.67).The origin of neck pain is thought to be multifactorial disease excessive physical strain may related cause micro trauma in connective tissue and psychological stress, poor posture, degenerative changes may increases of neck pain (Trial & Nyka, 2003).

Pain and cannot proper function of neck is most common. Chronicity of neck pain is high. A recent survey said that 37% of individuals who experience neck pain will report persistent problems for at least 12 months. In a survey of workers with injuries to the neck and upper extremity said that 42% missed more than 1 week of work and 26% people of neck pain within one year (Jensen & Harms-ringdhal, 2007).In developed countries estimated 70% of adult male and female affected by neck pain each year 10%

to 15% neck pain persisted more than 6 months in the past year. In general population 30% to 50% people have mechanical neck pain (Eck & Ystematic, 2010).

Population based epidemiology studies showed lifetime prevalence of 67% to 71% in a Canadian people. In Netherlands recent prevalence data shows that one year prevalence of neck pain 15% male and 17% female (Ariens et al.,2011).Neck pain has a collection of symptoms and complains & sometimes causes disability, but it is not a specific disease. Neck pain arises from numerous different conditions and it is sometimes referred to as cervical condition. It is a common personal and social difficulty and is a major cause of work disability (Moffett & Mclean, 2006).

It is a sensation of discomfort in the neck area. Neck pain can result from disorders of any of the structures in the neck, including the cervical vertebrae & intervertebral disc, nerve, muscles, blood vessels, esophagus, larynx, trachea, lymphatic organs, thyroid gland or parathyroid glands (Barbuto et al., 2008). The neck contains the top end of the spinal column or spine, which supports the head and also protects spinal cord. Then seven bones in the neck are known as cervical vertebrae. These seven vertebrae are the bony building blocks of spinal cord. The neck nerve passes through between those vertebrae and many ligaments and muscles are attached to the spine, shoulder blade and neck to make it more stable. Within the neck, structures include the neck muscles, arteries, veins, lymph gland, thyroid & parathyroid gland, esophagus, larynx and trachea (Barbuto et al., 2008).

According to WHO (2003) the global burden of disease in chronic and mild neck pain (those with constant neck pain, those who have difficulty turning the head, holding the arms up and lifting things) is estimated as o.286 DW. Every year lives lost due to disability of neck pain are 33.64 million, and the prevalence of neck pain is 4.8%.Neck pain is common in young adults in developed countries and contributes importantly to the demand for medical services and the economic burden of absence from work due to sickness. Population based studies suggest a lifetime prevalence of over 70% and a point prevalence of between 12% and 34% (Buckle & Devereux, 2010). Neck pain, although felt in the neck, can be caused by numerous other spinal problems. Neck pain, most of the time arises due to musculat tightness in both the neck & upper back and pinching of the nerves emanating from the cervical vertebrae and joint disruption in the

neck also creates pain, as a joint disruption in the upper back or cervical region of the spine (Hanvold et al., 2013).

Muscle pain in the neck and shoulder girdle is a common complain. There are n generally accepted criteria for classification. In occupational medicine umbrella terms, such as repetitive strain injury (RSI), cumulative trauma disorder (CTD) occupational cervical-brachial disorder (OCD), or work-related musculoskeletal disorder (WMSD). is used. Neck & shoulder pain was strongly associated with reduced health related quality of life (Sabeen et al., 2013). Work-related physical and psychosocial factors, as well as several individual risk factors. are important in the understanding of neck & shoulder pain. The physical workplace factors were highly interred correlated, and so the effect of individual physical exposures could only be disentangled to a minor (Cooper et al. 2009).

Neck pain has different forms, includes general pain and stiffness in the neck region, which can include the neck, shoulders, arms, hands, or head. The muscles ca and tense. Patients often report of mild to severe headaches. Most pain is due to the aging of the spine. As the spine ages, the discs can degenerate and herniated. The joints may become arthritic, stenos is can occur (narrowing of the spinal canal), and instability may develop with pain (Lacerda et al., 2005).

There are three types or classifications of neck pain: Axial neck pain: Axial pain is musculoskeletal, and is pure neck or soft tissue pain. Whiplash or muscle strain is an example. Radiculopathy: Cervical radiculopathy refers to neck and arm pain due to nerve root compression. Symptoms include arm pain, numbness or weakness. Myelopathy: Myelopathy refers to pressure on the spinal cord, also referred to spinal cord compression. Symptoms include: neck pain with arm and/or leg weakness, numbness, or walking problems (Morken et. al.2007).

The types of neck pain can be Acute or Chronic. Acute pain occurs suddenly from an injury or stress. Most of the time neck pain will resolve itself within 7-10 days with rest, ice, and over the counter pain relievers. In case of chronic pain, symptoms persist more than two weeks. For symptoms that persist longer than a few weeks, a thorough evaluation by a primary care physician is recommended. The physician will generally gobtain X-rays and MRIs, and prescribe conservative therapy (Cote et al., 2008).

Chronic pain is defined as neck pain lasting longer than three months. People who have not found relief through conservative treatments, and suffer from chronic pain may benefit from pain management or surgical intervention (Andersen et al. 2012).Neck pain can result from a variety of causes, ranging from overuse injuries and whiplash diseases such as rheumatoid arthritis and meningitis. Muscles strains- Overuse, such as too many hours hunched over a steering wheel, often triggers muscle strains. Neck muscles, particularly those in the back of your neck, become fatigued and eventually strained. When you overuse your neck muscles repeatedly, chronic pain can develop. Even such minor things as reading in bed or gritting your teeth can strain neck muscles (Garra et al., 2010).

Worn joints-just like all the other joints in your body, neck joints tend to experience wear and tear with age, which can cause osteoarthritis in neck. Nerve compression-A variety of problems in your neck's vertebrae can reduce the amount of space available for nerves to branch out from the spinal cord. Examples include: Stiffened disks age; the cushioning disks between two vertebrae become dry and stiff, narrowing the spaces in the spinal column where the nerves exit. Herniated disks-This occurs when the inner gel-like material of a disk protrudes through the disk's tougher outer covering. The protrusion can press on nerves exiting the spinal column, causing arm pain or weakness, or on the spinal cord itself. Bone spurs- Arthritic joints in your neck can develop bony growths that may press on nerves. Injuries-Rear-end collisions often result in whiplash injuries, which occur when the head is jerked forward and then backward, stretching the soft tissues of the neck beyond their limits (Andersen et at., 2012)

Some trends for the peoples who are at risk and take some measures to help prevent neck pain or use as a guide for intervention. A total of 45.5% of the population studied reported neck pain in the past 12 months, of which 18.1% complaint of continuous neck pain. A total of 64.3% of the patients reported that there was a relation between their current job and the neck complaints. A total of 56.2% even mentioned that their complaints started during the current job. A total of 10.2% reported sick leave due to neck complaints. The work place and equipment were adapted in 24% of the patients due to neck pain, Work time was changes due to the same reason or different causes (Brandt et al., 2008).

Analyses of the association between neck pain and work related physic factors, revealed that neck pain was significantly associated with often holding the neck in a forward bent posture for a prolonged time, various short periods of movements with neck, often working in the same position for a prolonged time, often making the same movements per minute, often sitting for a prolonged time, dry air and temperature fluctuation, and computer working time. Often holding the neck in a forward posture for a prolonged time, and working in the same position for a prolonged time were significantly associated with neck pain. There is a positive relation between forward bending of the neck (neck flexion) and neck pain, suggesting an increased risk of neck pain for those who spent a high percentage of the working time with the neck at a minimum of 20° of flexion (Cote et al, 2009).Episodes of neck pain are common. 30-50°% general population annually affect neck pain, 15% of the population will experience of neck pain. Working population will experience 11% to 14% activity limitation due to neck pain (Cripps et al.2013).

Many variety of causes of neck pain has been explained and include osteoarthritis, disco genic disorder, tumor, myofascial pain syndrome, torticollis, whiplash injury, muscle spasm, muscle weakness, path physiological condition such as oxidative metabolism disturbed lead to impaired muscle circulation and generate neck pain (New et al., 2013). Physical and emotional stresses can causes muscles to tighten and contract, resulting in pain and stiffness, prolonged postures many people fall asleep on sofas and chairs and wake with sore necks, poor posture e-prolonged use of neck in household activity, referred pain- mostly from upper back problems; over use muscular strain is one of the most common causes (Bot et al,. 2005). Kumar (2006) focuses; Garments workers are concerned with long working hours or double consecutive shifts, personally unsafe work environment, poor working conditions, wage and gender discrimination. Indeed, employers treat the garmentsworkers as slaves, exploiting workers to increase their profit margins and keep their industry competitive in the face of increasing international competition. Workers in the garment industry work in clothes designing; sewing or cutting services, and clothes wholesaling (Chan, et al., 2002). Due to the nature of these jobs, the prevalence of neck pain has been high. The nature and severity of the disorders have been considered to be the results of the job characteristics constrained and sustained work postures, highly repetitive actions, and strong visual demands. The consequences are obvious from the ergonomics points of view – physical and emotional

suffering of the workers, high worker compensation costs, decreased productivity and overall inefficiency (Sarder, 2006). Mechanical neck disorder is a medical pathology such as cervical fracture or myelopathy has been patient with neck pain. Degenerative changes are still possible cause of mechanical neck pain. Clinicians should assess for impaired muscle function, nerve tissue, connective tissue function presents with neck pain (Jhon D et al., 2008). Recalled injury suggested that risk of developing neck pain. In order to determine risk factors for developing episodes of neck pain history of neck injury is an independent risk for later neck pain (Croft et al., 2001). The prevalence of persistent neck pain has been found to increase with years of employment in sewing machine operators. However, some women never experience more than slight or moderate symptoms and never develop clinical neck disorders despite many years of work. Knowledge of what makes neck complaints develop into chronic conditions is sparse. 15.2% and 5.8% among sewing machine operators compared with 9.0% and 2.2%, respectively, among controls. The presence of the disorders was strongly associated with a self perception of poor general health.

 The prevalence of neck pain is higher among women than men. This gender pattern is seen in most types of body pain and several sociological, cultural and physical differences have been proposed as explanations, but these hypotheses have not been shown to be satisfactory. Smaller stature and lower strength of the shoulder muscles have been suggested to partly explain the sex difference (Garra et al., 2010).

Neck pain affects 30-5o% of the general population annually.1 5% of the general population will experience chronic neck pain (>3 months) at some point in their lives. 11-14% of the working population will annually experience activity limitations due to neck pain. Prevalence peaks at middle age, and women are more often affected than men. Risk factors include repetitive work, prolonged periods of the cervical spine in flexion, high psychological job strain, smoking and previous neck or shoulder injury or may be any injury to the cervical region (Shahla et al. 2008). Neck disorders are considerably more prevalent in certain occupational groups. Using the Nordic questionnaire (Kuorinka, cited in Asakilbom 1987), Swedish occupational health services have compiled data from several occupations. The results indicate that the risk of neck trouble (pain, ache or discomfort) is very high among sewing machine operators, with a 12-month period prevalence greater than 60%. In addition, up to one-third of those who report disorders also state that the problems have an impact on their

working lives, either causing them to take sick-leave, or necessitating a change of job or work tasks (Asa Kilbom,2010). Individual characteristics like age, sex, muscle strength and endurance, physical fitness, body size, personality, intelligence, leisure time habits. Neck trouble among women was more common than among men, and there was an increase in prevalence up to age 25 to 30, when the rates stabilized; they again went down somewhat at age 50 to 55. In a representative sample of 200 men and women from Stockholm, aged 16 to 65 years, the 12-month prevalence was about 30% among the men and 60% among women. The experience of recent pain in the neck with duration of at least one month was found among 22% of a population sample in Gothenburg (Asa Kilbom, 2010).

Bad posture can cause neck pain. Ligaments are over-stretched, muscles become tired and the neck joints and nerves are put under pressure (Physio.net, 2000). Prolonged flexion, extension, lateral bending and twisting of the neck induce muscle fatigue, and may lead to chronic muscle injuries and degenerative changes of the cervical spine. Pain is common in neck flexion if prolonged work is performed. This is surprising as the garment industry typically carries one of the highest rates of neck and shoulder pain relative to other manufacturing fields. Stress at work is a growing problem for all workers, especially women. Many of the job conditions, along with the problem of balancing work and family issues, contribute to stress in the workplace (Nusrat Jahan, 2015) Musculoskeletal conditions are prevalent and their impact is pervasive. They are the most common cause of severe long term pain and physical disability, and they affect hundreds of millions of people around the world.

They significantly affect the psychosocial status of affected people as well as their families and careers. At any one time, 30% of American adults are affected by joint pain, swelling, or limitation of movement. Musculoskeletal conditions are a diverse group with regard to pathophysiology but are linked anatomically and by their association with pain and impaired physical function. They encompass a spectrum of conditions, from those of acute onset and short duration to lifelong disorders, including osteoarthritis, rheumatoid arthritis, osteoporosis, and musculoskeletal disorder pain. The prevalence of many of these conditions increases markedly with age, and many are affected by lifestyle factors, such as obesity and lack of physical activity. The increasing number of older people and the changes in lifestyle throughout the world mean that the burden on people and society will increase dramatically (Anthony, 2003).

Repetitive movements performed by the hands increase the demands on stabilization of the neck and shoulder region, and thereby increase the risk of neck complaints. Factors like high demands on speed and precision of movements, as well as high demands on force exerted by the hands, imply even larger demands on stabilization of the proximal body regions (Asa Kilbom). (Punnett, cited in Neck Musculoskeletal Disorders: Evidence for Work-Relatedness 1997) mentioned that repetitive work or repetitive movements found a statistically significant positive association between repetition and neck pain and found that workers involved in repetitive activity had 10% to 30% maximum voluntary contraction (MVC) of the trapezius muscle. Here was also significant association between neck and neck/shoulder MSDs and jobs with repetitive tasks, with (Onishi et al. cited in Neck Musculoskeletal Disorders: Evidence for Work-Relatedness 1997) indicating that workers exposed to higher levels of work risk factors have greater rates of neck and neck/shoulder symptom.

Treatment of neck pain depends on the cause. For the vast majority of people, neck pain can be treated conservatively Recommendations which may help alleviate symptoms include applying heat or cold (Garra et al. 2010). Exercise plus joint mobilization and/or joint manipulation (spinal adjustment) has been found to be beneficial in both acute and chronic mechanical neck disorders. Neither mobilization nor manipulation without exercise however has been found to be helpful (Hoving et al., 2002). Mobilization is equivalent to manipulation (Gross et al. 2010). Analgesics such as acetaminophen or NSAID are recommended for pain. Muscle relaxants such as cyclobenzaprine have not been found to be useful and are therefore not recommend. Over the counter topical creams and patches containing counterirritants have little evidence to support efficacy (Hoving et al., 2002).

Physiotherapists will be able to determine the source of neck pain and treat it.

They may use: Mobilization, manipulation, massage, remedial exercise postural assessment correction and advice relaxation therapy Laser, ultrasound, electrotherapy and heat treatment (Physio .net 2000).

Physical Therapist assess an individual's physical ability to do a specific job or activity and aids in developing a safe return to work program (Occupational health solution). All exercises should be performed slowly and comfortably to avoid injury. When performing strengthening and flexibility exercise, remember to breathe naturally and

do not hold breath; exhale during exertion and inhale during relaxation. A program of strengthening, stretching and aerobic exercise will improve 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 (Joel & press, 2008).

Massage- Massage can be helpful for relieving muscle spasm and can be performed after heating or icing the neck (Zacharia &Katherine 2008).

Stretching exercises- The range of motion of the neck must be restored and preserved after an injury; this is done with exercises that stretch and strengthen the neck muscles. Range of motion exercises and stretching may help decrease pain from muscle injury (Zacharia & Katherine 2008). Exercises can be performed in the morning to relieve stiffness and again at night before going to bed. Expect mild, achy muscle pain; sharp or electric pain in the shoulder or arm is not normal and should be reported to a healthcare provider (Zacharia & Katherine 2008).

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 (Jensen, 2003).

Reduce stress- Emotional stress can increase neck tension and interfere with or delay the recovery process. Reducing stress may help to prevent a recurrence of neck pain. Relaxation techniques can relieve musculoskeletal tension. An example of a relaxation exercise is to take a deep breath in, hold it for a few seconds, and then exhale completely. Breathe normally for a few seconds, and then repeat (Zacharia & Katherine 2008).

Posture- Activities and body positions that prevent or reduce neck pain include those that emphasize a neutral neck position and minimize tension across the supporting muscles and ligaments of the neck. Extremes of range of motion, activities and body positions that cause constant tension should be minimized or avoided. Avoid sitting in the same position for prolonged periods of time. Take periodic five minute breaks from the desk, work station, etc.

Practice good posture- ensuring the correct alignment of the spine is essential to avoiding neck pain. This includes sitting, standing and sleeping (Morken et al., 2007).

Use Comfortable Equipment- Use equipment that isn't too heavy, that can be used without awkward upper body posture and that feels comfortable to use. Ergonomically designed equipment helps to minimize stresses on the upper extremities and the back (Lacerda, 2010).

Manage Time- Avoid long appointments where possible, or intersperse these with frequent short rest breaks in which you change posture and relax the upper extremities (Alan, 2008).

Avoid placing pressure over the upper back with backpacks .Do not perform overhead work for prolonged periods at a time (Zacharia &Katherine 2008).

Self-reported one month and lifetime neck-shoulder pain prevalence in adolescents is not related to the level or intensity of physical activity or the type of sedentary activity over a one week period established in a cross sectional study (briggs et al, 2009). Maintain good posture by holding your head up and keeping your shoulders back and down (Zacharia &Katherine 2008).

The most recent review of mobilization, manipulation is effective for mechanical neck disorder include randomized controlled trials. The most beneficial manipulative therapy for patients with mechanical neck pain to reduce pain and improve patient's satisfaction. But sometime in case of systemic inflammatory disease manipulation therapy cannot apply due to risk of further injury (Hopkins et al., 2011). The recently published clinical practice guideline acute and chronic neck pain interventions combined with soft tissue mobilization and manual stretching procedures. After manipulation very few patients complain that nausea, dizziness, hot skin (Twisk et al., 2012). A randomized controlled trial assessed the effectiveness of manual therapy with a stretching exercise performed 5 times in a week in with non specific neck pain. Anterior, posterior, middle scalene, upper trapezius, pectoralis major muscle and pectoralis minor muscle can be used flexibility exercise (Catanzariti et al., 2005). Effectiveness of strengthening exercise, endurance exercise and coordination exercise are treatment procedure of deep flexor muscles in reducing neck pain (Trial & Nyka, 2003).

Mckenzie method of treatment procedure consists of patient positioning, specific repeated movements, manual procedure, and patients education in self-management in

case of neck pain. Repeated specific movements method intend centralized the neck pain (Vonk et al., 2009).

Exercise plus joint mobilization and/or joint manipulation (spinal adjustment) has been found to be beneficial in both acute and chronic mechanical neck disorders. Neither mobilization nor manipulation without exercise however has been found to be helpful (Hoving et al., 2002). Mobilization is equivalent to manipulation (Gross et al., 2010). Analgesics such as acetaminophen or NSAIDs are recommended for pain. Muscle relaxants such as cyclobenzaprine have not been found to be useful and are therefore not recommend. Over the counter topical creams and patches containing counterirritants have little evidence to support efficacy (Hoving et al., 2002).

A systematic review by Graham and Colleogues said that to support the use of mechanical intermittent cervical traction. The primary outcome measure after 5 session using mechanical traction but proper improve after 10 session of using intermittent traction (Twisk et al., 2009). If the patients have spinal stenosis, nerve root compression, spinal cord become smaller than surgery may the treatment of choice. It is an isolated case. In most cases conservative and physical therapy are preferable (L.Persson & A.Lilja., 2010). In case of neck pain patients can need some psychological intervention such as a result in better outcome, less pain and quality of life. Some psychological risk factors are associated for neck pain (Cohen et al., 2012).

The prognosis of neck pain is well but in recurrence case pain cannot fully recovery. Appropriate treatment procedure are minimize the further injury of neck pain and try to control neck pain (Hellstenius, 2006)

3.1 Study design

This study aimed to find out the prevalence of neck pain among the female sewing machine operators. For this reason a quantitative research model in the form of a sectional identify a defined population at a particular point in time .Through the cross sectional study comparing those of different ages. In other word Quantitative research method helps to use a large number of participants and therefore collect the data objectively through this way data was reduce to numbers for statistical analysis in order to draw conclusion and a cross sectional study was chosen because the cross sectional study is the best way to determine prevalence.

3.2 Study Area

This study was conducted in garments factory at Savar.

3.3 Study population

The study population was sewing machine operators with neck pain who fulfill the inclusion and exclusion criteria of this study. The investigator took only 65 sewing machine operators as sample that are selected purposive from the community according to the inclusion and exclusion criteria. The investigator use the purposive sampling technique due to the time limitation and also for the small size of population and as it is the one of the easiest and quicker method of sample selection.

3.4 Sample size

The equation of sample size calculation are given below:

Sample Size:

Sampling procedure for cross sectional study done by following equation-

$$\frac{Z(1-\frac{\alpha}{2})^2 p(1-P)}{d^2}$$

Here,

$$Z\left(1-\frac{\alpha}{2}\right) = 1.96$$

P= 0.43

q= 1-p

= 0.57

d= 0.05

So, for this cross sectional study researcher has to take at least 376 subjects. If the researcher want to increase the error (decrease the precision) than denominator will increase and hence sample size will decrease. But the researcher was able to include 65 subjects instead of 376 due to time limitation.

3.5 Sampling technique

Sixty five female sewing machine operators with neck pain were selected through purposive sampling technique from the community. In research participants were chosen purposively because participants had some particular features of characteristics which will enable detailed exploration of the research objective. 65 samples were selected following the inclusion and exclusion criteria.

3.6 Inclusion criteria

- Female sewing machine operators who have neck pain.
- Age group: 18-60 years.
- Female sewing machine operators who were willing to participate in this study.

3.7 Exclusion criteria

- Age group: Below 18 and above 60 years.
- Who are not motivated
- History of trauma to neck which can produce pain.
- History of any acute infection.
- History of any hypertension or low blood pressure.

3.8 Data collection procedure

The Northwick Park Neck pain Questionnaire (NPQ) was used after reviewing literature for asking to the participants. In the questionnaire participant's socio-demographic information including age, level of education, and leisure time of participant's area of living, how long time of working was asked. In this study data were collected by using The Northwick Park Pain Questionnaire include only close ended questions. The investigator introduces her and describe the project study as well its purpose. The investigator also provides consent from to the participant and explained that to build a trustful relationship. After obtaining consent by sign investigator asked pre-determine question to the participant. The investigator gave time to understand the questions fully so that participants could be answered accurately. The interview was conducted in Bengali so that participants could understand easily.

3.9 Data collection tools

During the interview investigator use pen, paper, written questionnaire, file and visual analog scale (VAS scale).

3.10 Data analysis

Descriptive statistics was used to analyze data. Descriptive statistics refers methods describing a set of results in terms of their most interesting characteristics. Data were analyzed with the software named Statistical Package for the Social Science (SPSS) version 20. The variables were labeled in a list and the researcher established a computer based data definition record file that consist of a list of variables in order. The researcher put the name of the variables in the variable view of SPSS and defined the types, values, decimal, label alignment and measurement level of data. The next step was cleaning new data files to check the inputted data set to ensure that all data had been accurately transcribed from the questionnaire sheet to the SPSS data view. Then the raw data are ready for analysis in SPSS. Data are analyzed by descriptive statistics and calculated as percentages and presented by using bar graph, pie charts etc. Microsoft office Excel 2013 is used to decorating the bar graph and pie charts. The result of this survey is consisted of quantitative data. By this survey a lot of information is collected.

3.11 Ethical considerations

The research proposal was submitted to the Institutional Review Board (IRB) of Bangladesh Health Professions Institute (BHPI) and permission was obtained from the Board. The Bangladesh Medical Research Council (BMRC) and World Health Organization (WHO) research guide line also were followed. A written consent was taken from the each participant. It was also describe the participant about Research objectives and advantages & disadvantages. It was ensured that all data from the participant would be disclosed anywhere and confidentiality will be maintained strictly.

3.12 Informed Consent

Before conducting research with the participants, it is necessary to gain consent from the subject. The researcher obtained consent to participate from every subject. For the study participants were selected purposively for this study according to the inclusion and exclusion criteria. The researcher gave the consent from to the subject and explained them, investigator and participants signed in willingly into the consent form .They were told that participation is fully voluntary and subjected might be published in any normal presentation or writing but they would not be identified. The participant will also be informed that the study result might not have any direct effects on them but the members of physiotherapy population may be benefited from the study in the future. At any time the researcher will be available to answer any additional questions in regard to the study.

Socio- demographic Information

4.1 Vulnerable age group

Among the 65 participants, about 36% participants were between 15-25 years, study showed that 52% participants were between 26-35 years, about 11% participants were between 36-45 years and 1% participants were between 46-55 years and 33 participants were between 26-35 years greater than 46-55 years. The mean age was 34 years. According to data view, the investigator could say that the percentage of neck pain among the female sewing machine operators was highest in between the 15-50 years (fig-4.1.)
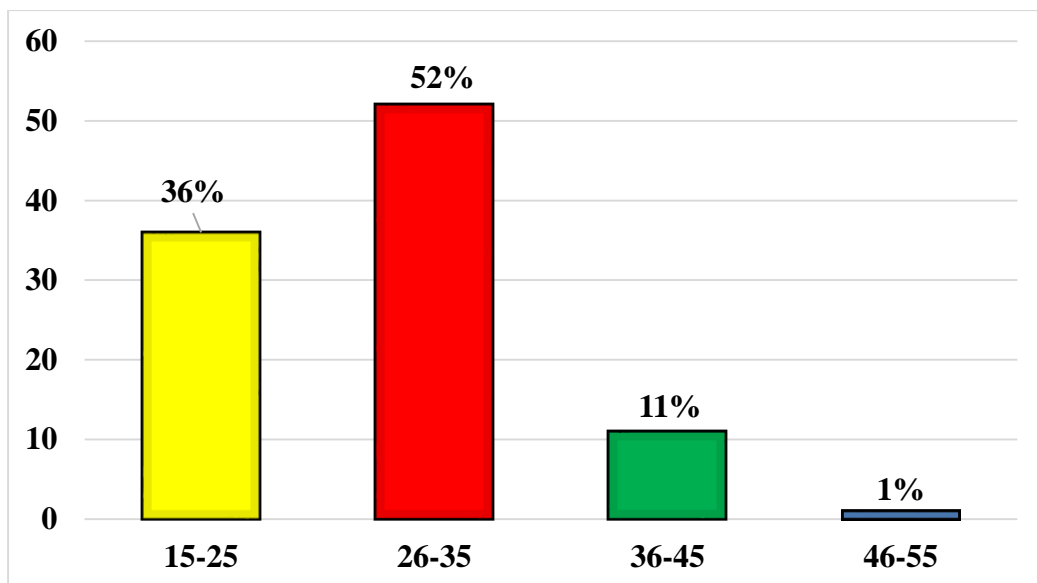
Figure- 4.1:Vulnerable age group of the participants

4.2. Educational level

In the study showed that 71% participants were completed primary education, and 29% participants were completed secondary education. According to data view the investigator can conclude that primary level and secondary level female sewing machine operators were the most affected by neck pain but it is not most effectively related with neck pain (fig-4.2)
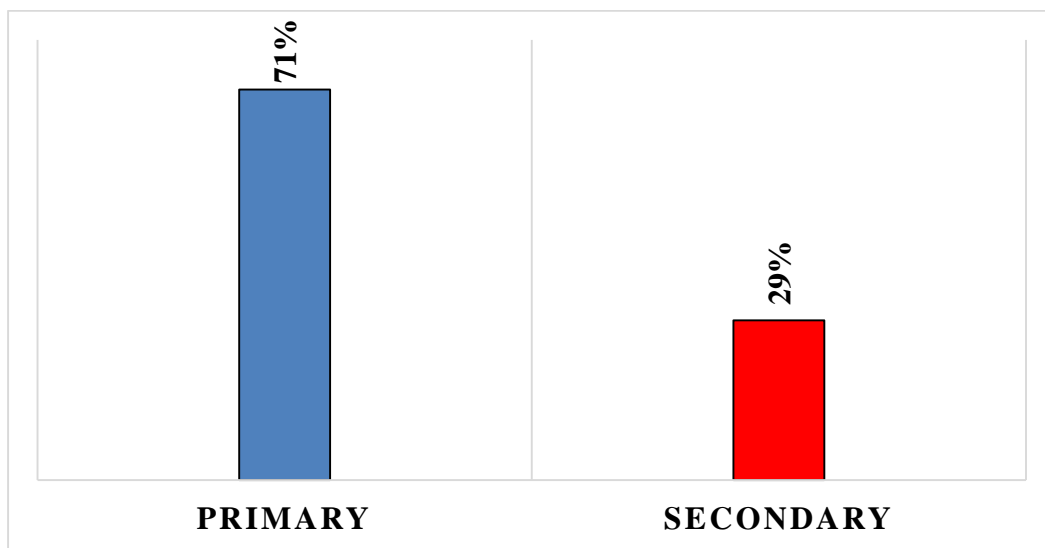
Figure- 4.2: **Educational level of the participants**

4.3.Living area

Total 65 female sewing machine operators who are suffering from neck pain in rural area participants and urban area participants. In percentage rural area was about 85% and urban participants were 15%. So it was clear that the rural area female sewing machine operators suffered from neck pain (fig-4.3)
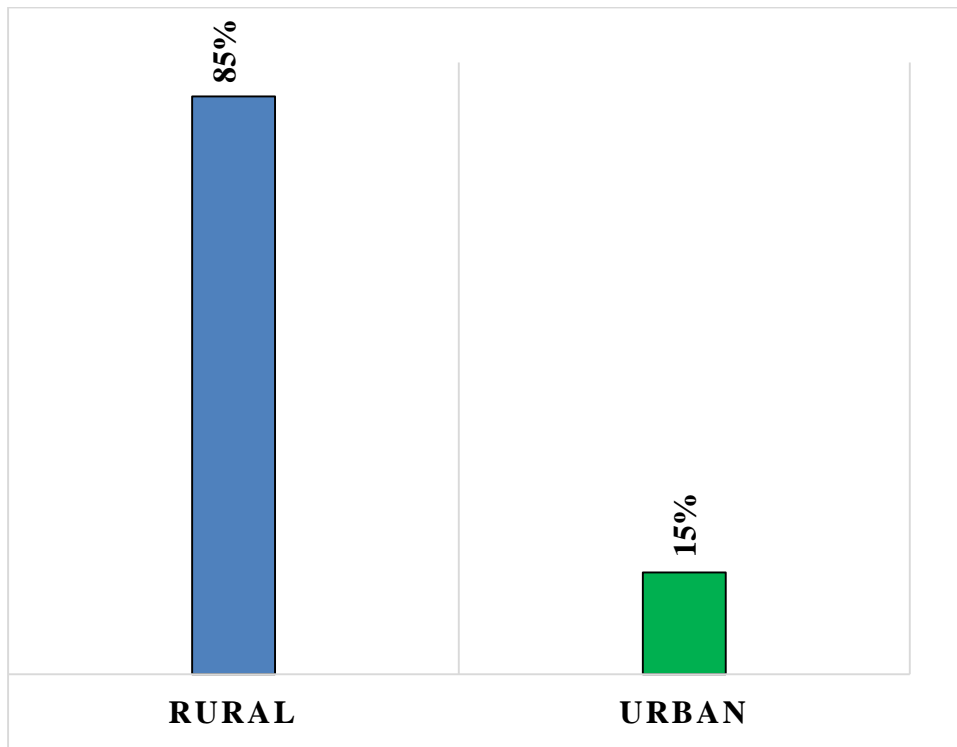
Figure- 4.3: Residential area of the participants

4.4 . Marital status

In the study showed that 65% participant are married, 17% participant are unmarried, 10% are divorced and 10% are widow female. So it was clear that the married female were more suffered from neck pain than the others female (fig-4.4)
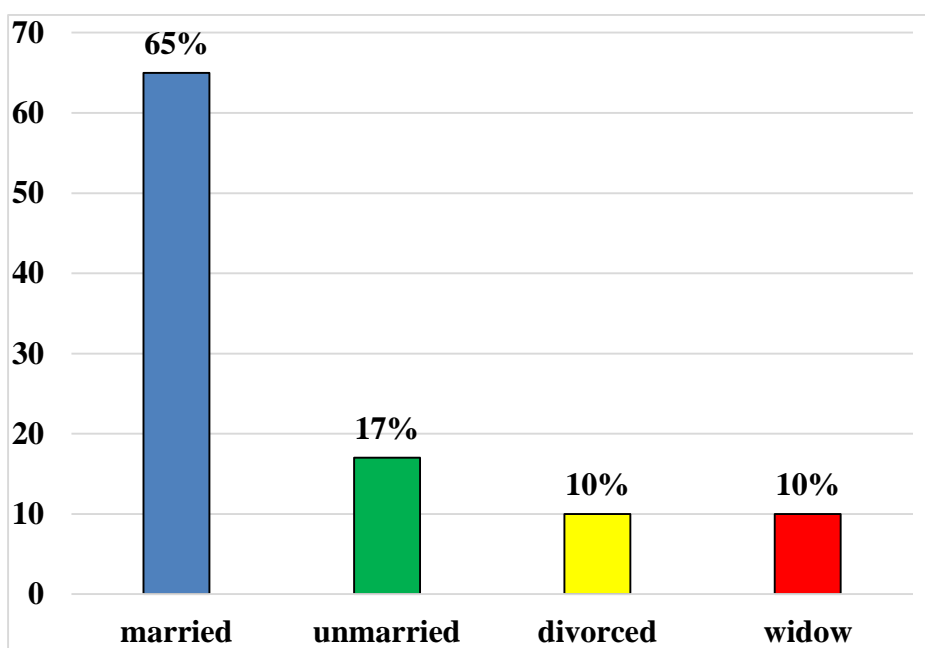
Figure-4.4: Marital status of the participants

4.5 : Duration of neck pain

Study shows that among the 65 participants, 60 participants were suffered from neck pain. And among the 40 participants, 10 (20%) of the participants were suffered from years, 60% of the participants were suffered from months and 15(20%) of the participants were suffered from days. (fig-4.5)
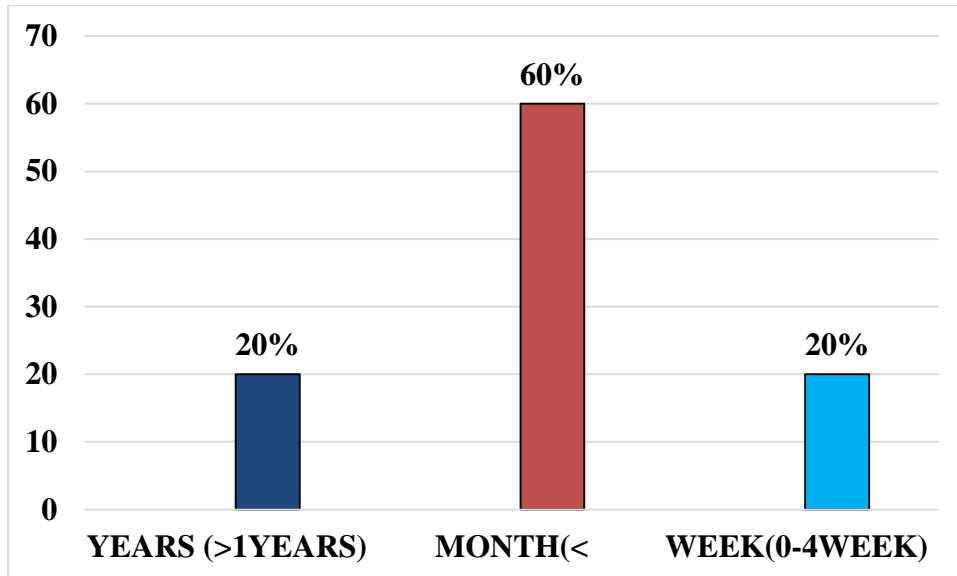
Figure- 4.5: Duration of pain in the participants

4.6 : Severity of pain

Among the 56 participants out of 65 participants, who experienced neck pain; the bar graph showed that, (2-4) = mild pain in vas scale, (5-7) = moderate pain and (7-10) = severe pain in vas scale 6% (n=4) suffered from mild pain. 65% (n=42) suffered from moderate pain. 29% (n=19) participants suffered from severe pain (fig-4.6)
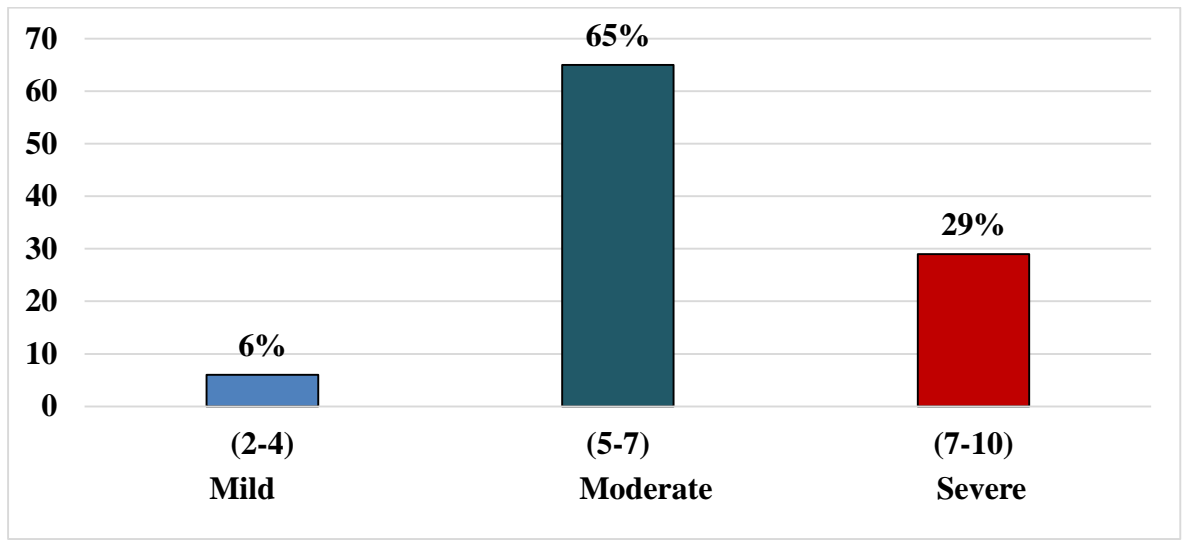
Figure- 4.6: Severity of neck pain of the participants

4.7: Behavior of neck pain

Among the affected sewing machine operators who were suffering from neck pain 77% (n=42) participants felt intermittent neck pain, about 23% (n=23) participants felt constant neck pain (fig-4.7)
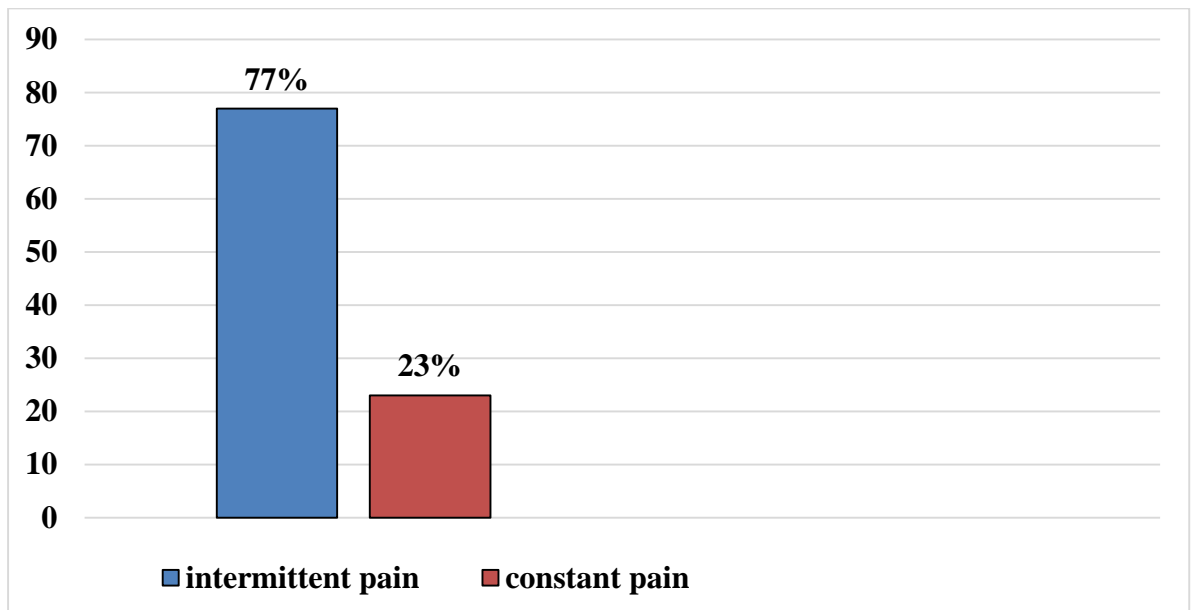
Figure- 4.7: Behavior of neck pain

4.8 : Area of neck pain

In this study 65 participants had complained of about 24% (n=16) participants suffered from pain in neck region, about 32% (n=24) participants had pain in neck and cervicoscapular area, this study showed that 1% (n=3) participants pain in shoulder and arm region, about 1% (n=3) participants feel neck pain in full upper limb, 40% (n =25) rest participants had no neck pain in any area.(fig-4.8)
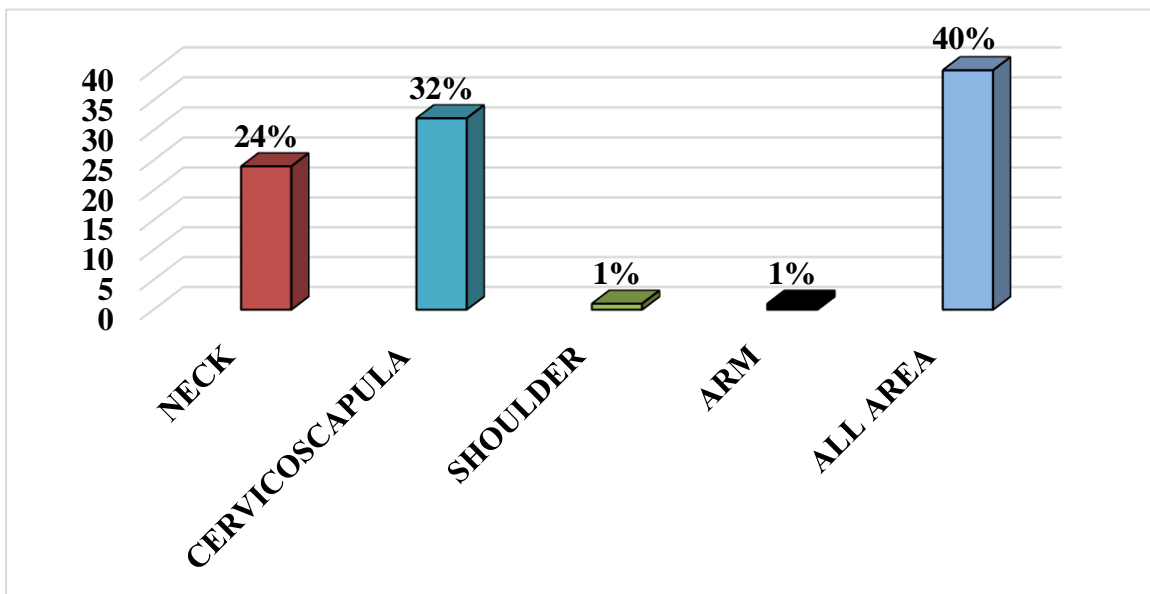
Figure- 4.8: Location of neck pain

4.9: Performance reduce due to pain

The finding of the study represented that about 95% were reduce performance of activity due to pain and rest of participants 5% were not affected due to pain.(fig-4.9)
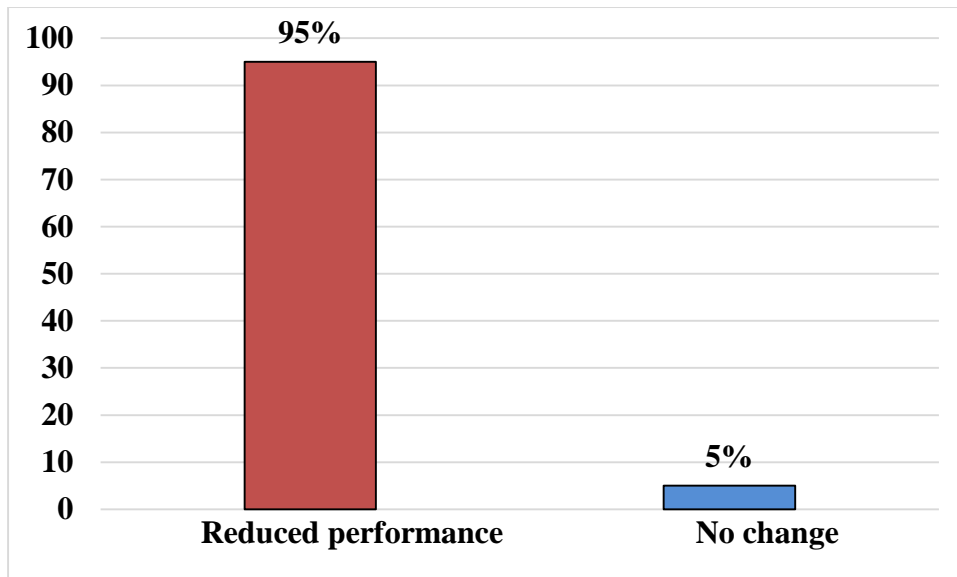
Figure- 4.9: Performance reduce due to pain

4.10: Notification of symptoms

Along with 91% participants were notice symptom during work, 6% participants were notice symptoms after work, and 3% participants were notice symptoms during resting period. So, maximum noticed their symptoms during work (fig-4.10)
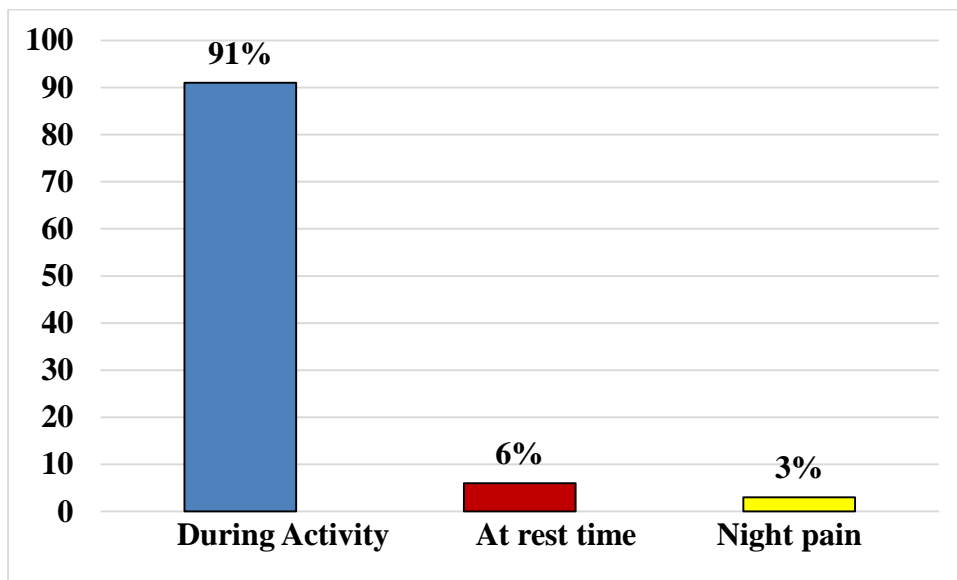
Figure- 4.10: Notification of symptoms

4.11: Contributing factors for developing neck pain of the participants

Contributing factors From the graph, it was observed that 65 participants developing neck pain due to bending on neck, 12 participants repetitive movement on neck, 63 work in same position, 25 participants pain due to performing task over and over.(fig-4.11)
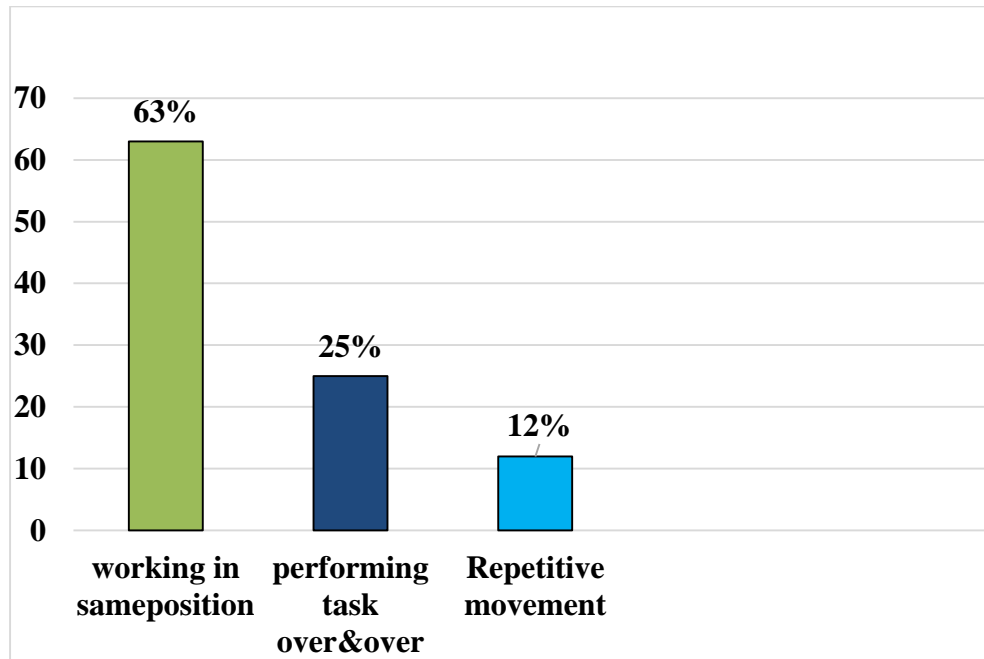
Figure- 4.11: Contributing factors for developing neck pain of the participants.

4.12: Leisure time

Leisure time from the graph, it was observed that 49% participants passing time in Lying, 32% participants watching TV, 17% participants in sitting , 2% participants doing performing task others (fig-4.12)
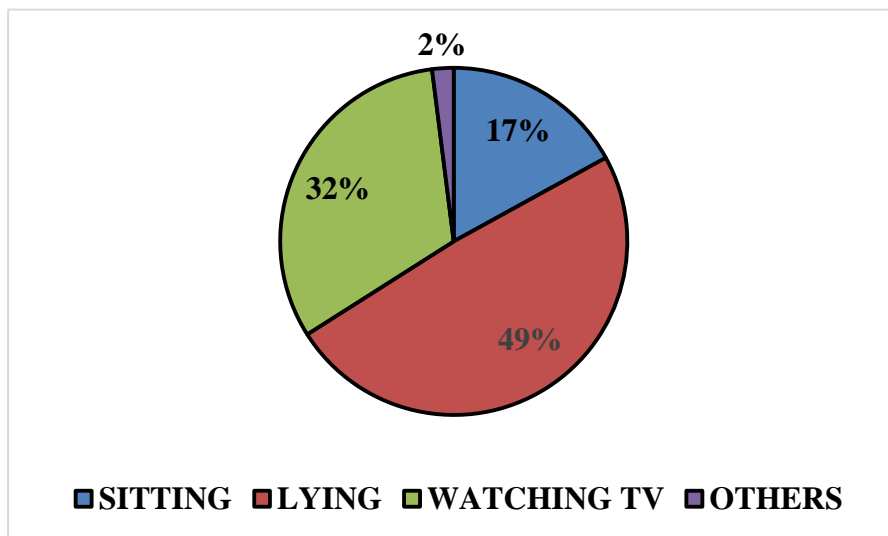
Figure- 4.12: Leisure time

4.13: Treatment received of the participants.

Study shows that among the 65 participants who had suffered from neck pain received medication 77%, received Physiotherapy 16% and 12% of the participants did not received treatment from health professionals (fig-4.13)
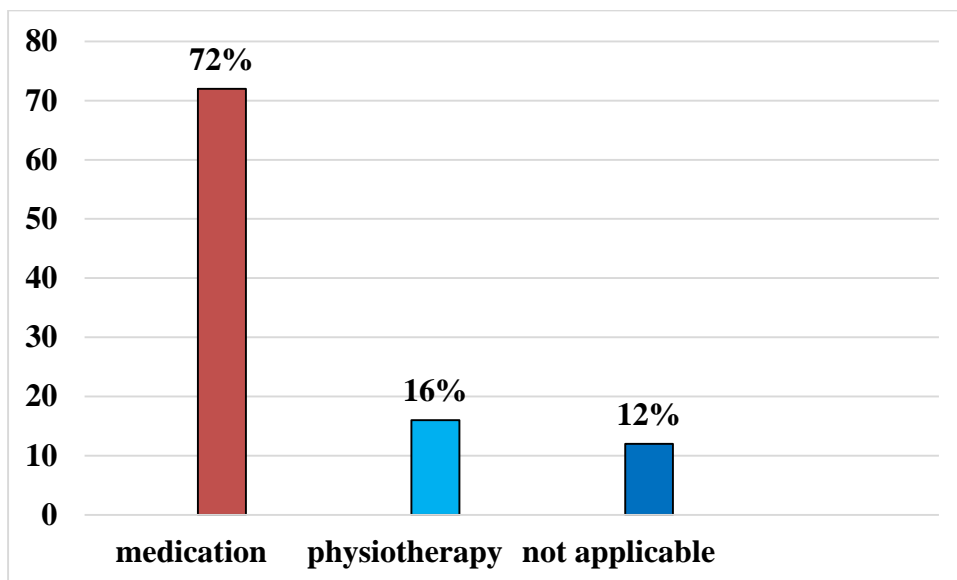
Figure-4.13: Treatment received of the participants.

4.14: Outcome of Treatment

In this study shows that 65 participants experienced neck pain and received treatment from health professionals and non-health professionals. And 15%) of participants improved from neck pain 2% of participants had worse neck pain and 83% of participants did not experienced any significant change from neck pain (fig-4.14)
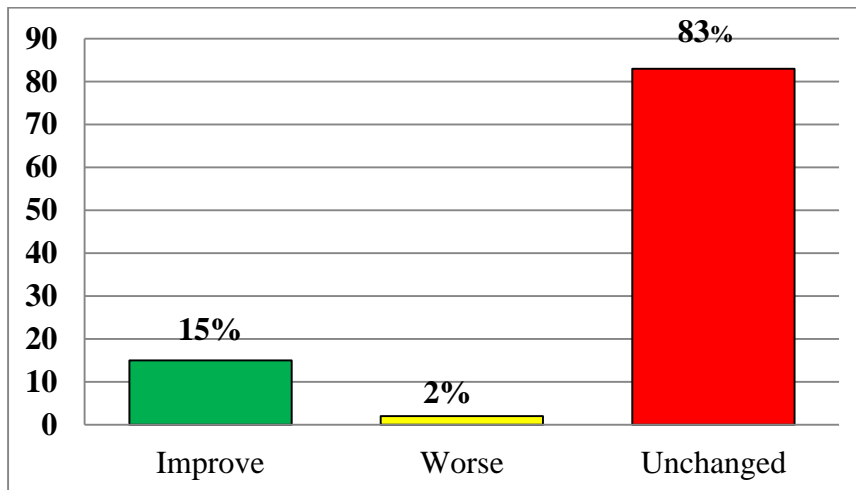
Figure-4.14: Outcome of Treatment.

The result of the study shows that neck pain is prevalent among the female sewing machine operators. In this study the prevalence of neck pain was 43%. Pehkonen et al., (2012) reported the prevalence neck pain among the female sewing machine operators in Sweden was 71% and Sadri (2003) shows that the 35% sewing operators suffered from neck pain in Iran. This is in concordance with a research by Lacerda et al., (2005) who reported the prevalence neck pain among the garments workers in Northeast Brazil. In this study the prevalence was 45.71%. One year prevalence of neck pain in garments workers at a Hong Kong university was found to be 59% (Chiu et al., 2002) and 63% in a Swedish study of medical secretaries (Kamwendo, 1991).

Analysis shows that most frequent age range of participants had suffered from neck pain in between 43-56 years followed by 26.67% participants. Palmer et al., (2001) showed that 22% people in < 35 years old were affected by neck pain, in between 35-45 years 30% people were suffered from neck pain and in > 45 years old 48% people were suffered from neck pain. (Lotters et al. 2003) showed that 22% people in < 35 years old were affected by neck pain, in between 35-45 years 30% people were suffered from neck pain and in > 45 years old 48% people were suffered from neck pain. A statistics by (Health and safety executive, 2008) showed that the people in between 55-64 years are more suffered by neck pain. Study shows that 65%% of the participants were married, 17% of the participants were unmarried and 10% of the participants were divorced. In this study, 71% of the participant completed their primary education, 29% completed their secondary education and 2.7% of the participants never attended in the school. In this study, 20% of participants were suffered from years, 60% of participants were suffered from months and 20% of participants were suffered from days due to neck pain. Sadri (2003) reported that 22.3% of the sewing machine operators were suffered from pain for several months in Iran. Study shows that 63% participants experienced pain due to prolong forward flexion; 12% of participants experienced pain due to prolong side flexion and 10.7% of participants experienced pain due to extension posture. Ariens et al., (2000) shows that awkward neck posture found to be risk factor for neck disorder. (Babatunde, 2008) showed in his research that among the all risk factor performing excessive work in one day (83.5%), working in same position for long period (71.3%), performing manual techniques (67.8%), working in awkward

(64.6%), bending or twisting back in awkward way (62.6%), not having enough rest break during the day (61.7%), continuing to work when injured (52.2%), performing same task over (52.2%) and inadequate training in injury prevention (29.6%). (Palmer, 2007) claimed that repetitive work, static loading are responsible for most of the neck pain. Warren (2005) found in his research the common risk factors were performing the same tasks over and over, working in the same position for long periods' and performing excessive work of patients in 1 day. A positive relationship between fixed postures and musculoskeletal disorders (including pain, weakness, and paresthesia) has been documented for a number of occupations (Akesson et al., 2000).

In this study, 6% of the participants experienced neck pain 2-4 score in VAS scale, 65% experienced 5-7 score and 29% of the participants experienced neck pain 7-10 score in VAS scale. Study shows that, 73.2% participants experienced hamper sewing machine operators due to pain and 26.8% participants did not experience any hamper during activity.Analysis shows that near about one third 95% of the participants reduce sewing activity due to neck pain. Al wazzan et al. found in his research at Riyadh in 2001 that only 21.62% missed work due to neck pain. Just only 72% participants who suffered from neck pain had taken physiotherapy treatment for their condition. Kompier (2008) stated that between 1974 and 1977, 7% sewing operatoras in former West Berlin stop sewing due to pain. According to (LEGGAT PA et al., 2007) said that 28% sewing machine operators seeking medical attention for Neck pain in the Queensland, which were very similar (37%) sewing operators in Saudi Arabia

Recent literature has identified work place ergonomics as a determinant for musculoskeletal injury; Ergonomics is the science of designing the job, equipment, and workplace to fit the worker. Proper ergonomic design is necessary to prevent repetitive strain injuries, which can develop over time and can lead to long-term disability (Berkeley, 2008). This study shows that there is a high prevalence of neck pain among the sewing operators with a poor posture and ergonomics such as back rest of the sewing operator's seat, break and accelerator etc. This is in accordance with study by Pehkonen et al., (2012) who stated that known risk factors neck pain included personal attributes, working posture and seating arrangement of sewing operators.

Limitations

Complete accuracy is not possible in any research so that some limitation may exist. Regarding this study, there were some limitations or barriers to consider the result of the study as below**:** The small sample size may constitute a limitation as to the general ability of findings from this study. Other limitation of this study was its short duration, because here exist some course work of other subject & placement of 3 month and data were collected just from one centre. So the result might be generalized lack ability. The samples were collected only from the garments in savar area . So the result of the study could not be generalized to the whole population in Bangladesh. Only find out the results about prevalence of neck pain among the female sewing machine operators. So the results of the study was not compare with others worker.

6.1 Conclusion

Neck pain is a frequent phenomenon in Bangladesh and as well as all over the world. Sometime neck pain causes physical disability and give rise to huge costs for the society. Literature shows that neck pain is frequent among the bus sewing machine operators. The prevalence of neck pain among the sewing machine operators are 74.7% due to poor posture and the poor ergonomic setting arrangement. Age is also a main factor for developing neck pain. The study showed that among the 75 participants, 56 participants had suffered from neck pain which lowest age was 22 and highest age was 56 years. The study also shows that 16 (28.6%) participants stopped sewing due to pain and 40 (71.4%) of participants did not stop sewing due to pain among the 56 participants out of 75 participants. Among the affected group who suffered from neck pain 23.2% received medication , 17.9% received Physiotherapy and (58.9%) of the participants did not received treatment from health professionals. According to the participants view age, prolong neck bending posture and faulty setting arrangement had positive effect on the neck pain. In this study the researcher tried to found the factors which are harmful for them. So avoiding these factors the sewing machine operators can fully concentrate on their sewing activity.

It is important to develop research based evidence of physiotherapy practice in this area. Physiotherapist's practice which is evidence based in all aspect of health care. There are few studies on sewing operators. These cannot cover all aspect of the vast area. So the next generation of physiotherapy members should continue study regarding this area, this may involve-use of large sample size and participants form different Garments of Bangladesh. Conduct research on other musculoskeletal problems among the Sewing operators where physiotherapist can work. So it is very important to conduct such type research in this area.

6.2 Recommendations

The aim of the study was to find out the prevalence of neck pain among the sewing machine operators. The main recommendations would be:

In this study the sample were only the female sewing machine operators. In future, if sample are all over sewing operators, the research may be more precious.

In this study used only 65 participants as the sample, in future the sample size would be more.

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APPENDIX

IRB from

Permission letter

English consent from

Bangla consent from

Bangla questionnare

English questionnare

Ref.

Date: 22/10/2018

CRP-BHPI/IRB/10/18/1247

To
Most.Taslima khatun
B.Sc. in Physiotherapy
Session: 2013-2014, Student ID:112130221
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of research proposal, **"Prevalence of neck pain among the female sewing machine operators"** by ethics committee.

Dear Most. Taslima khatun,
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. The Following documents have been reviewed and approved:

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

The purpose of the study is to determine quality of life among the female sewing machine operators. The study involves use of a The Northwick Park Neck Pain Questionnaire (NPQ) to identify prevalence of neck pain among female sewing machine operators that may take 20 to30 minutes to answer questionnaire or participate in the test for collection of specimen and there is no likelihood of any harm to the participants. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 9.30 AM on 24 January, 2018 at BHPI.

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

Best regards,

Millat Hossain
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

52

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 I would like to draw your kind attention that I am a student of B.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI)- an academic institute of CRP under Faculty of Medicine of University of Dhaka (DU). I have to conduct a thesis entitled, "Prevalence Of Neck Pain Among The Female Sewing Machine Operators" under honorable supervisor, Md. Obaidul Haque, professor & Head of the department, BHPI,CRP, Savar, Dhaka-1343, Bangladesh. The purpose of the study is to identify Prevalence Of Neck Pain Among The Female Sewing Machine Operators. The study involves use of Northwick park neck pain Questionnaire to explore to the Prevalence Of Neck Pain Among The Female Sewing Machine Operators that may take 20 to 30 minutes to answer the Questionnaire for collection of specimen. There is no likelihood of any harm to the participants Data collectors will receive informed consents from all participants. All collected data will be kept in secure and confidential.

Therefore I look forward to having your kind approval for the thesis proposal and to start data collection. I can also assure you that I will maintain all the requirements for study.

Sincerely,

Taslima Khatun
Most. Taslima Khatun
Student of B.Sc. in Physiotherapy.
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Recommendation from the thesis supervisor:

Md Obaidul Haque.
Professor & Head of the Department, Physiotherapy
BHPI, CRP, Savar, Dhaka-1343, Bangladesh.

Attachment: Thesis Proposal including measurement tools and process and procedure for maintaining confidentiality, Questionnaire (English and Bengali version). Information sheet & consent.

Date: 22-7-2018

To,

Head of the Department of physiotherapy,

Bangladesh Health Professions Institute,

CRP- Chapain, Savar, Dhaka -1343

Subject: **Prayer for seeking permission to collect data for conducting a research project.**

Sir,

With due respect and humble submission I am Most Taslima Khatun, student of 4th year B.Sc. in physiotherapy at Bangladesh Health Professions Institute (BHPI).In 4th year we have to do a research project for the partial fulfillment of the requirement for the degree of B.Sc. in physiotherapy. My research project title is **"Prevalence of neck pain among the Female sewing machine operators"**under the supervision of Md. Obaidul Haque, professor & Head of the Physiotherapy Department, BHPI .Conducting this research project is partial fulfillment of the requirement for the degree of B.Sc. in physiotherapy. I want to collect research data for my research project from the sewing machine operators. So, I need permission for data collection from the sewing machine operators.I would like to assure that anything of my research project will not be harmful for the participants and the department as well.

So, I therefore pray and hope that you would be kind enough to grant my application and give me the permission for data collection and oblige thereby.

Yours faithfully,

Most. Taslima Khatun

Roll: 26

4th years B.Sc.in physiotherapy

Session: 2013-2014

Bangladesh Heath Professions Institute

(An academic Institution of CRP)

CRP- Chapain, Savar, Dhaka-1343.

Sr. So, BHPI
Issue a letter

Prof. Md. Obaidul Haque
Head, Department of Physiotherapy
Bangladesh Health Professions Institute (BHPI)
CRP, Savar, Dhaka-1343

CRP-BHPI/07/18/6921

Date : 22.07.2018

To
Most. Taslima Khatun
4th year B.Sc in Physiotherapy
Session: 2013-2014.

Subject: Data Collection.

Most. Taslima Khatun,

In response to your request, you are permitted to collect data from persons with spinal cord injury who has been discharged after completion rehabilitation from CRP and living in their community.

Your research title is " Prevalence of neck pain among the Female sewing machine Operators."

Prof. Md. Obaidul Haque
Vice- Principal
BHPI, CRP.

55

Assalamualaaikum,

My name is Most. Taslima Khatun. I am conducting a research project (dissertation) study for the partial fulfillment of Bachelor of Science in physiotherapy degree from Bangladesh Health Professions Institute (BHPI) under medicine faculty of the University of Dhaka. The title of the study is "Prevalence of neck pain among the Female sewing machine operators". I want to find out the impact of neck pain on quality of life. That's why I want to know about some personal and other related information about your problem. This will take approximately 10-15 minutes. I would like to inform you that it is purely academic study and will not be used for any other purpose. The researcher is not directly related with the musculoskeletal area where you are taking treatment and you are not directly benefited as well as not harmed for this participation. You will not get any payment for this. 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 particular question that you do not like or do not want to answer during interview.

Do you have any questions before I started? You consent (signature) will indicate that you have understood the information provided above and you are willingly agreed to participate.

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

Yes ☐   No ☐

Signature of the participant …………………………….. Date: ……………

Signature of the researcher ………………………………. Date: …………...

সম্মতিপত্র

আসসালামুআলাইকুম / নমস্কার,

আমি মোছাঃ তাসলিমা খাতুন , আমি বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই)-এর একজন ছাত্রী। আমি এই গবেষণা প্রকল্পটি বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই)-এ পরিচালনা করছি যা ঢাকা বিশ্ববিদ্যালয়ের অধিনে আমার ৪র্থ বর্ষ বিএসসি ইন ফিজিওথেরাপী কোর্সের অধিভুক্ত। আমার গবেষণার শিরোনাম **"মহিলা সেলাইকর্মীদের ঘাড় ব্যথার হার "**। আমি এখন আপনাকে কিছু ব্যক্তিগত এবং কর্মস্থল সম্পর্কে আনুষাঙ্গিক কিছু প্রশ্ন করতে চাচ্ছি। এতে আনুমানিক ১০-১৫ মিনিট সময় নিব।

আমি আপনাকে অবগত করছি যে, এটা আমার অধ্যয়নের অংশ এবং যা অন্য কোন উদ্দেশ্যে ব্যবহৃত হবে না। এই গবেষনায় আপনার অংশগ্রহণ বর্তমান কর্মস্থলে কোন প্রকার প্রভাব ফেলবে না। আপনি যেসব তথ্য প্রদান করবেন তার গোপনীয়তা বজায় থাকবে এবং আপনার প্রতিবেদনের ঘটনা প্রবাহে এটা নিশ্চিত করা হবে যে এই তথ্যের উৎস অপ্রকাশিত থাকবে।

এই অধ্যয়নে আপনার অংশগ্রহণ স্বেচ্ছাপ্রণোদীত এবং আপনি এর জন্য কোনো পারিশ্রমিক পাবেন না, আপনি যেকোন সময় এই গবেষণা থেকে কোন নেতিবাচক ফলাফল ছাড়াই নিজেকে প্রত্যাহার করতে পারবেন। এছাড়া ও কোন নির্দিষ্ট প্রশ্ন অপছন্দ হলে উত্তর না দেয়ার এবং সাক্ষাৎকারের সময় কোন উত্তর না দিতে চাওয়ার অধিকার ও আপনার আছে।

এই অধ্যয়নে অংশগ্রহণকারী হিসেবে যদি আপনার কোন প্রশ্ন থাকে তাহলে আপনি আমাকে অথবা আমার সুপারভাইজার মোহাম্মদ ওবায়দুল হক , অধ্যাপক ও বিভাগীয় প্রধান ফিজিওথেরাপী বিভাগ , বিএইচপিআই, সিআরপি, সাভার, ঢাকা-১৩৪৩ তে যোগাযোগ করতে পারেন।

সাক্ষাৎকার শুরু করার আগে কি আপনার কোন প্রশ্ন আছে ?

সুতরাং আমি আপনার অনুমতিতে এই সাক্ষাৎকার শুরু করতে পারি ?

হ্যাঁ   না

১। অংশগ্রহণকারীর স্বাক্ষর ও তারিখ_____

২। উপাত্ত সংগ্রহকারীর স্বাক্ষর ও তারিখ _____

৩। গবেষকের স্বাক্ষর ও তারিখ_____

গবেষণার বিষয়ঃ ''মহিলা সেলাইকর্মীদের ঘাড় ব্যথার হার''

প্রশ্নাবলীঃ

অংশগ্রহণ কারীর নামঃ		মোবাইল নংঃ
ঠিকানাঃ		
সাক্ষাৎকারের তারিখঃ		
সাক্ষাৎ গ্রহণঃ	হ্যা.................	না...............

আর্থ-সামাজিক তথ্যাবলীঃ

ক্রমিক নং	প্রশ্নাবলী	ফলাফল
১	বয়স	.... বছর
২	ধর্ম	১. ইসলাম ২. হিন্দু ৩. অন্যান্য
৩	বৈবাহিক অবস্থা	১. বিবাহিত ২. অবিবাহিত ৩. তালাক প্রাপ্ত ৪. বিধবা
৪	বসবাসের স্থান	১. শহর ২. গ্রাম
৫	শিক্ষাগত যোগ্যতা	১. অশিক্ষিত ২. প্রাথমিক স্তর ৩. মাধ্যমিক স্তর ৪. উচ্চ মাধ্যমিক পাশ ৫. স্নাতক ৬. অন্যান্য

৬	আপনি কত সময় কাজ করেন?	.... ঘন্টা
৭	আপনার প্রিয় সখ কী?	১. টিভি দেখা
		২. বাগান করা
		৩. খেলাধুলা করা
		৪. অন্যান্য
৮	আপনি কী ওভারটাইম কাজ করেন?	১. হ্যাঁ
		২. না
৯	আপনি অবসর সময়ে কী করেন?	১. বসে থাকেন
		২. শুয়ে থাকেন
		৩. টিভি দেখেন
		৪. অন্যান্য

The Northwick Park Neck Pain Questionnaire (NPQ)

ঘাড় ব্যথা সম্পর্কিতঃ

ক্রমিক নং	প্রশ্নাবলী	ফলাফল
১	কতদিন যাবত ব্যথা	১. বছর (১বছরের বেশি)
		২. মাস (১ বছরের কম)
		৩. সপ্তাহ (০-৪ সপ্তাহ)
২	ব্যথার তীব্রতা	১. হালকা
		২. মাঝারী
		৩. তীব্র
		৪. শূণ্য
৩	ব্যথা ছড়ায় কিনা	১. হ্যাঁ
		২. না
৪	ঘুমের বিঘ্ন ঘটে কিনা	১. হ্যাঁ
		২. না

৫	কখন ব্যথা হয়	১. কাজের সময়
		২. বিশ্রামের সময়
		৩. রাতে
৬	কোথায় ব্যথা হয়?	১. ঘাড়ে
		২. পিঠ বরাবর
		৩. কাঁধে
		৪. হাতে
		৫. সব জায়গা
৭	আপনার ঘাড় ব্যথার ধরণ কেমন?	১. সবিরাম
		২. অবিরাম
		৩. প্রযোজ্য নয়
৮	এই স্কেলে আপনার ব্যথার তীব্রতা কত?	+++++++++++ ১ ২ ৩ ৪ ৫ ৬ ৭ ৮ ৯ ১০ ১. ২-৪ ২.৫-৭ ৩. ৭-১০ ৪. প্রযোজ্য নয়
৯	ব্যথার জন্য আপনার কাজের গতি কী কমে গিয়েছে?	১. হ্যাঁ
		২. না
১০	ব্যথা তীব্রতা	১. এই মুহূর্তে আমার কোন ব্যথা নেই।
		২. আমার ব্যথা এখন খুব হালকা।
		৩. আমার ব্যথা এখন মাঝারি
		৪. আমার ব্যথা মোটামুটি গুরুতর
		৫. আমার ব্যথা খুব গুরুতর
১১	ব্যথা এবং ঘুম	১. আমার ব্যথা দ্বারা ঘুম বিরক্ত হয় না
		২. আমার ঘুম মাঝে মাঝে ব্যথা দ্বারা বিরক্ত হয়
		৩. আমার ঘুম নিয়মিত ব্যথা দ্বারা বিরক্ত হয়
		৪. ব্যথার কারণে আমার মোট ৫ ঘন্টার কম ঘুম হয়
		৫. ব্যথার কারণে আমার মোটামুটি ২ ঘন্টার কম ঘুম হয়।

১২	রাতে হাতে পিন, সূচ বা শ্বাসরোধ	১. রাতে আমার কোন পিন ও সূচ বা শ্বাস-প্রশ্বাস নেই
		২. আমার রাতে মাঝে মাঝে পিন এবং সূচ ব্যথা হয়।
		৩. আমার ঘুম নিয়মিত পিন, সূচ ব্যথা দ্বারা বিরক্ত হয় ও অসাড়তা আসে।
		৪. পিন ও সূচ ব্যথার কারণে আমার ৫ ঘন্টার কম ঘুম হয়।
		৫. পিন এবং সূচ বা শ্বাস-প্রশ্বাসের কারণে আমার ২ ঘন্টার কম ঘুম হয়।
১৩	লক্ষণগুলির সময়কাল	১. আমার ঘাড় ও হাত সব দিন স্বাভাবিক মনে হয়।
		২. হাঁটার সময় আমার ঘাড় এবং হাতে ব্যথা হয়, যা ১ ঘন্টার মত স্থায়ী হয়।
		৩. উপসর্গ শুরু হয় এবং ১-৪ ঘন্টা স্থায়ী হয়।
		৪. উপসর্গ শুরু হয় এবং সারাদিন উপস্থিত থাকে।
১৪	বহন ক্ষমতা	১. আমি ব্যথা ছাড়াই ভারী বস্তু বহন করতে পারি।
		২. আমি ভারী বস্তু বহন করতে পারি, কিন্তু অতিরিক্ত ব্যথা পাই।
		৩. আমি ভারী বস্তু বহন করতে পারি না।
		৪. আমি শুধু হালকা ওজনের বস্তু বহন করতে পারি।
১৫	পড়া এবং টিভি দেখা	১. যতক্ষণ ইচ্ছা আমি এটা করতে পারি।
		২. আরামদায়ক অবস্থায় আমি যতক্ষণ ইচ্ছা এটা করতে পারি
		৩. যতক্ষণ ব্যথা না হয় ততক্ষণ করতে পারি
		৪. এটাতে আমার অতিরিক্ত ব্যথা হয়।
১৬	হাঁটাচলা ও গৃহকর্ম	১. আমি অতিরিক্ত ব্যথা ছাড়া আমার স্বাভাবিক কাজ করতে পারি।
		২. আমি স্বাভাবিক কাজ করতে পারি কিন্তু আমি

		ব্যথা পাই।
		৩. ব্যথার জন্য আমি স্বাভাবিক কাজে বাধাপ্রাপ্ত হই।
		৪. ব্যথার জন্য আমি কাজ থেকে বিরত থাকি ।
১৭.	সামাজিক ক্রিয়াকলা	১. আমার সামাজিক জীবন স্বাভাবিক
		২. আমার সামাজিক জীবন স্বাভাবিক কিন্তু মাঝে মাঝে ব্যথা পাই।
		৩. ব্যথা আমার সামাজিক জীবন সীমিত করেছে
		৪. ব্যথার জন্য আমার সামাজিক জীবন ঘ সীমাবদ্ধ হয়েছে।
		৫. ব্যথার জন্য আমার কোন সামাজিক জীবন নেই।
১৮	এই ব্যথার কারণে আপনি কোন চিকিৎসকের কাছে গিয়েছেন?	১. হ্যাঁ
		২. না
১৯	কী ধরনের চিকিৎসা নিয়েছেন?	১. ঔষধ
		২. ফিজিওথেরাপী
		৩. অন্যান্য
		৪. প্রযোজ্য নয়
২০	চিকিৎসা করে কী ফল হয়েছে?	১. উন্নতি
		২. বেড়েছে
		৩. অপরিবর্তিত
২১	কোন নড়াচড়ায় আপনার ঘাড় ব্যথা বাড়ে?	১. সামনের দিকে ঘাড় ঝুকালে
		২. পিছনে ঘাড় বাকা করলে
		৩. ঘাড় ঘুড়ালে
		৪. বাম দিকে ঘাড় কাত করলে
		৫. ডান দিকে ঘাড় কাত করলে
		৬. সামনের দিকে ঝুঁকে কাত করলে

২২	নিচের কোন ঝুঁকি কি ঘাড় ব্যাথার সাথে জড়িত?	১. ঘাড় ভাজ করা
		২. একই অবস্থায় কাজ করা
		৩. বারবার একই কাজ করা।
		৪. বারেবারে ঘাড়ের নাড়াচাড়া

Title: "Prevalence of neck pain among the Female sewing machine operators".

Questionnaire

Patient's Name:	Mob No:
Address:	
Date of interview:	
Consent taken: Yes: …….… No: ……	

Part I: Socio demographic Questions

SL. No:	Questions	Outcomes
1.	Age	……………year
2.	Religion	1= Islam 2= Hindu 3= Others
3.	Marital Status	1=Married 2=Unmarried 3=Divorced 4=Widow
4.	Area of living	1= Rural 2= Urban
5.	Education	1= Illiterate 2=Primary level 3= Secondary 4= Higher secondary 5= Honors 6= Others

6.	HOW long time do you work?	…………..Hours

The Northwick Park Neck Pain Questionnaire (NPQ)

Part 2: Neck pain related

Ques No	Question & filters	Response
1.	Duration of pain	1= Years (>1 years) 2= Months (<1 years) 3=Week (0-4 week)
2.	Severity of pain	1=Mild 2=Moderate 3=Severe 4=Nill
3.	Referred pain	1= Yes 2= No
4.	Disturbed sleep	1= Yes 2= No
5.	Pain at	1= At rest pain 2= During activity 3= Night pain
6.	Location of pain	1= Neck 2= Cervicoscapula 3= Shoulder 4= Arm

		5= All area
7.	What is the behavior of your pain?	1= Intermittent 2= Constant
8.	How severe in your pain in VAS scale?	
9.	Had your working performance reduce due to pain?	1= Yes 2= No
10.	Pain Intensity	1= I have no pain at the moment. 2= My pain is very mild at the moment. 3= My pain is moderate at the moment 4= My pain is fairly severe at the moment. 5= My pain is very severe at the moment.
11.	Pain and sleeping	1=My sleep is never disturbed by pain. 2= My sleep is occasionally disturbed by pain. 3= My sleep is regularly disturbed by pain. 4= Because of pain I have less than 5 hours sleep in total. 5= Because of pain I have less than 2 hours sleep in total

12.	Pins, Needles or Numbness in Arms at Night	1= I have no pins and needles or numbness at night.
		2= I have occasional pins and needles or numbness at night.
		3= My sleep is regularly disturbed by pins and needles or numbness.
		4= Because of pins and needles or numbness I have less than 5 hours sleep in total.
		5= Because of pins and needles or numbness I have less than 2 hours sleep in total.
13.	Duration of Symptoms	1=My neck and arms feel normal all day.
		2= I have symptoms in my neck or arms on walking, which last less than one hour.
		3= Symptoms are present on & off for a total period of 1-4 hrs.
		4= Symptoms are present on & off for a total of more than 4hrs
		5= Symptoms are present continuously all day.
14.	Carrying	1= I can carry heavy objects without extra pain.

		2= I can carry heavy objects, but they give me extra pain.
		3= Pain prevents me from carrying heavy objects, but I can manage medium weight objects.
		4= I can only lift light weight objects. E. I cannot lift anything at all.
15.	Reading and Watching TV	1= I can do this as long as I wish with no problems.
		2= I can do this as long as I wish, if I'm in a suitable position.
		3= I can do this as long as I wish, but it causes extra pain.
		4= Pain causes me to stop doing this sooner than I would like.
		5= Pain prevents me from doing this at all
16.	Working/Housework, Etc	1= I can do my usual work without extra pain.
		2= I can do my usual work, but it gives me extra pain.
		3= Pain prevents me from doing my usual work for more than half the usual time.
		4= Pain prevents me from doing my usual work for more than a quarter of the usual time.

		5= Pain prevents me from working at all.
17.	Social Activities	1= My social life is normal and causes me no extra pain. 2= My social life is normal but increases the degree of pain. 3= Pain has restricted my social life, but I am still able to go out. 4= Pain has restricted my social life to the home. 5= I have no social life because of pain.
18.	Compared with the last time you answered this question, is your neck pain:	1= Much better. 2= Slightly better. 3= The same. 4= Slightly worse. 5= Much worse