

# **PREVALENCE OF NECK PAIN AMONG THE HIGHWAY BUS DRIVERS**

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

Session: 2007-2008

BHPI, CRP, Savar, Dhaka



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

**PREVALENCE OF NECK PAIN AMONG THE HIGHWAY BUS DRIVERS**

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## **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 of my supervisor.

**Signature:**

**Date:**

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## Acronyms

<b>BHPI</b>	Bangladesh Health Professions Institute
<b>BMRC</b>	Bangladesh Medical Research Council
<b>CRP</b>	Center for the Rehabilitation of the Paralysed
<b>MSD</b>	Musculoskeletal Disorder
<b>SPSS</b>	Statistical Package of Social Science
<b>VAS</b>	Visual Analogue Scale
<b>WHO</b>	World Health Organization
<b>WRMD</b>	Work Related Musculoskeletal Disorder
<b>WRNP</b>	Work-Related Neck Pain

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## Abstract

*Purpose:* To identify the prevalence of neck pain among the highway bus drivers. *Objectives:* To find out the percentage of participants experiences neck pain among the bus drivers; to identify the possible causes of development of neck pain; to measure the pain intensity of bus drivers, to investigate the pain worsening posture during bus driving; to see the impact or absenteeism of bus driving due to pain; to explore the consequence of treatment after neck pain. *Methodology:* Cross sectional study design was selected. Total 75 samples were selected by convenience sampling from Gabtoly, Syedabad and Kollanpur bus terminals, Dhaka. Data was collected by mixed type questionnaire. 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 74.7% among the bus drivers. 27% participants experienced neck pain 4 out of 10 of VAS scale and 2% participants experienced pain 1 out of 10 in VAS scale. 66.1% participants said forward flexion resulted worse the pain. 73.2% participants experience hampered bus driving due to pain. 28.6% participants stopped bus driving due to neck pain. 23.2% participants received medication, 17.9% participants received Physiotherapy and 58.9% 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 74.7% among the highway bus drivers in Dhaka, Bangladesh. And this may be associated with the posture and interior design of the driver seat.

### **1.1 Background**

The driver-motor vehicle system is a complex system that involves the interaction of human, technological systems and their environment (Nasrin et al., 2012). Faulty design of driver's workplace has been identified as a major risk factor responsible for the uncomfortable conditions which operators of motor vehicles are exposed to while driving especially for a long period (Onawumi & Lucas., 2012). The professional drivers have a higher prevalence of occupational disorders than other occupational groups; and neck pain is more prevalent among the bus drivers with long driving hours than in those with short driving hours (Hossain, 2003).

Postural damage and Work-related musculoskeletal disorders (WRMD) may result in physiological illness that may develop over a long period due to prolonged mechanical stresses imposed on the musculoskeletal system that are prevalent in occupational driving especially among bus drivers (Verhagen et al., 2007). Faulty design of driver's workplace and poor sitting posture are parts of what are responsible for stresses and strains imposed by the uncontrollable conditions of the elements of workplace on drivers (Blangsted et al., 2008). Consequently, there is a need to integrate both the driver's (operator/user) capabilities and vehicular performance requirements adequately in order to reduce or eliminate the untold occupational hazards to which drivers are frequently subjected (Onawumi & Lucas, 2012).

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).

Pain in the neck is a common musculoskeletal disorder in the general population and in Saskatchewan, Canada, Cote neck pain was 66.7% and the point prevalence was 22.2%, thus it is costly in terms of treatment, individual suffering, and time lost due to work absentee (Rubinstein and van Tulder, 2008). It is generally accepted that muscles play an important role in the support and protection of joints; muscles that have direct attachments to the vertebrae are responsible for the segmental stability through the control of the neutral zone. The deep muscles of the neck, which act like dynamic ligaments, play an important role in maintaining the stability of the cervical spine (Mechelen et al., 2002).

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).

Pain in the neck is a wide entity which includes e.g. non-specific neck pain and neck pain associated disorders and the symptoms are vary with physical activity and over time. Each form of acute, sub-acute or chronic neck pain, where no abnormal anatomic structure as cause of pain can be identified (Giannoula et al., 2009).

Musculoskeletal disorders (MSDs) 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. MSDs 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).

In view of the fact that the drivers spend long times behind wheels, MSDs are progressively formed over time; which may have considerable impacts on their personal and social life. The evidence showed that the people driving at least half of working hours each day suffer three times more than other workers (Waersted et al., 2010). High prevalence of spinal disorders observed among professional drivers, especially back and neck pain, usually lead to constant suffering and disease and probably pre-retirement (Pehkonen et al., 2012).

Disorders of the musculoskeletal system are the leading causes of occupational injury and disability in the United States, with neck pain is the second most common reason for the filing of workers' compensation claims. Neck pain accounts for about one fourth of all claims and for about 40 percent of absences from work and there is strong evidence of an association between musculoskeletal disorders, workplace physical factors, and non-work related characteristics (Raghuvanshi & Vinay, 2011).

The aim of the current study is to determine the frequency of neck pain in the bus drivers and its connection to some risk factors in this profession (Sadri, 2003).

## **1.2 Rationale**

Driving is an important occupation in all perspective of a country in regards of ambulation. Several people around the world involve themselves in driving occupation. The drivers especially bus drivers suffered from many musculoskeletal symptoms including neck pain due to long duration of driving. In addition Bangladesh is a developing country and facing a lot of challenges including health issues. Some studies have showed the neck pain among the bus drivers in the few countries of the world, but the nature and prevalence has not studied before in Bangladesh. This study was designed to gather proper information about this area. The purposes of the study were to assess the nature and prevalence of neck pain among the bus drivers and the occupational and psychological factors on them. During bus driving, the drivers work in awkward body posture, sometime slouch posture, often accompanied by repetitive movements of both upper & neck. Changing posture, increased muscle activity and prolonged static head and back postures. Moreover, this helps to establish an ergonomic guideline for back rest of chair and other design of the equipments for the drivers. This study also helps to identify the bad posture that creating neck pain and to provide proper information that can help s preventive method of neck pain. At last, in the therapeutic view, the result of this study would highlight the nature of neck pain among the bus driver which may play an important role in creating physiotherapy practice in the transport sector.

### **1.3 Research question**

What is the prevalence of neck pain among the bus drivers?

### **1.4 Objectives**

#### **1.4.1 General objective:**

- Identify the prevalence of neck pain among the bus drivers.

#### **1.4.2 Specific objectives:**

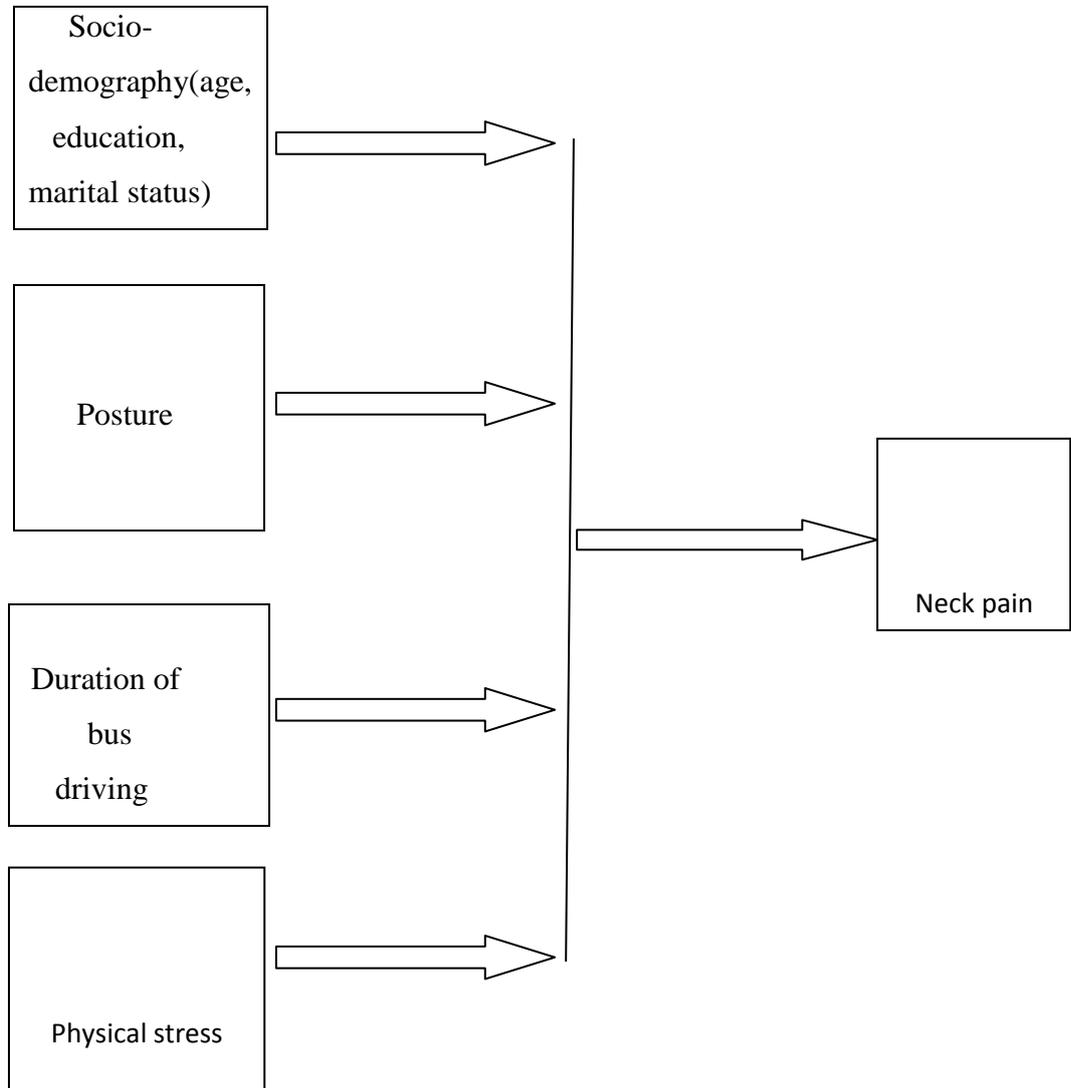
- To find out the percentage of participants experiences neck pain among the bus drivers.
- To identify the possible causes of development of neck pain.
- To measure the pain intensity of bus drivers.
- To investigate the pain worsening posture during bus driving.
- To see the impact or absenteeism of bus driving due to pain.
- To explore the consequence of treatment after neck pain.

## 1.5 List of variables

### Conceptual framework

#### Independent variable

#### Dependent variable



## **1.6 Operational definitions**

### **Neck pain**

Neck pain is defined in this paper as pain experienced from the base of the skull (occiput) to the upper part of the back and extending laterally to the outer and superior bounds of the shoulder blade (scapula).

### **Bus driver**

A person who drive the bus regularly in the most of the days and have legal bus driving license.

### **Prevalence**

The term prevalence is defined in this paper as the percentage (%) of drivers who experienced pain in the neck due to bus driving.

### **Highway**

A highway is any public road that covers any route or path with a public right of access including footpaths.

Pain in the neck is an unpleasant sensory and emotional experience in the neck area associated with actual or potential tissue damage or described in terms of such damage and it is an unspecified pain symptom (or syndrome) – not a clinical sign – that covers a variety of specific disorders, for example spinal tumours, spinal infections, and fractures (Bogduk, 2003). These specific disorders only account for approximately 10% of all cases so in most cases neck pain is non-specific (i.e. no organic or pathological cause of the symptoms can be identified) and is therefore termed a functional (somatic) symptom (Mayou & Farmer, 2002). Thus, neck pain covers a range of specific pathological disorders to more somatic conditions and must therefore be seen as a heterogeneous group of pain (or perceived pain) syndromes with anatomical reference to the neck area (Viljanen et al., 2003).

The second largest cause of time off work is neck pain which is after the low back pain (LBP) and the acute neck pain is usually the result of injury or accident, most often road vehicle accidents associated with whiplash (Ylinen et al., 2003). Neck pain is perceived as arising in a region bounded superiorly by the superior nuchal line, laterally by the lateral margins of the neck, and inferiorly by an imaginary transverse line through the T1 spinous process (Green, 2008).

The cervical spine (neck) is composed of vertebrae which begin in the upper torso and end at the base of the skull and the bony vertebrae along with the ligaments (like thick rubber bands) provide stability to the spine and the muscles allow for support and motion. The neck has a significant amount of motion and supports the weight of the head because it is less protected than the rest of the spine, the neck can be vulnerable to injury and disorders that produce pain and restrict motion (Linton, 2000).

Pain around the neck may originate from any of the pain sensitive structures in the neck include the vertebral bones, ligaments (anterior and posterior longitudinal ligaments) the nerve roots, the particular facets and capsules, muscles, and dura. Other structures of the neck region, visceral and somatic structures are encountered (Cagnie et al., 2007).

The most common causes of neck pain are soft tissue abnormalities due to injury or prolonged wear and tear and in some people, neck problems may be the source of pain in the upper back, shoulders or arms and in rare cases infection or tumors can cause neck pain (von Korff et al., 2000). Degenerative diseases that cause neck pain include osteoarthritis and rheumatoid arthritis but osteoarthritis usually occurs in older people as a result of wear of the joints between the bones in the neck and rheumatoid arthritis can cause destruction of the joints of the neck. Both of these major types of arthritis can cause stiffness and pain (Wolsko, 2003).

Degeneration in the cervical disc also causes neck pain because the disc acts as a shock absorber between the bones in the neck and in cervical disc degeneration (typically age 40 onwards), the normal gelatin-like center of the disc degenerates and the space between the vertebrae narrows. As the disc space narrows, added stress is applied to the joints of the spine causing further wear and degenerative disease. The cervical disc may also protrude and cause pressure on the spinal cord or nerve roots when the rim of the disk weakens; this is known as a herniated cervical disc (Eltayeb et al., 2011).

The cervical spine is so flexible because it supports the head and is extremely vulnerable to injury and thus motor vehicle or diving accidents, contact sports, and falls may result in neck injury. The regular use of safety belts in motor vehicles can help to prevent or minimize injury (Picavet & Schouten, 2003). A "rear end" automobile collision may result in hyperextension, a backward motion of the neck beyond normal limits, or hyperflexion, a forward motion of the neck beyond normal limits. Most common injuries are to the soft tissues, i.e., muscles and ligaments and severe injury with fracture or dislocation of the neck may damage the spinal cord and cause paralysis (Palmer et al., 2001).

The causes of neck pain have focused on occupational risk factors either with regard to specific occupations (i.e. dentists, nurses, bus drivers, office workers, etc.) or to specific physical and psychosocial risk factors across a variety of different occupations or populations (Trinkoff et al., 2002).

In the epidemiological studies there have been demonstrated that neck pain is more common in women than in men and the magnitude of these observed sex differences in the prevalence of neck pain, however, has yet to be established. Further, it would be relevant to examine how these sex differences are related to pain intensity and disability (Smith et al., 2004). Biological and psychosocial factors have been suggested as explanations of the sex-specific pain differences. Experimental studies on mechanical pressure pain thresholds have shown that females have a lower pain threshold than men, and it has been suggested that this reduced pain threshold leads to increased risk of musculoskeletal pain. The increased pain sensitivity and decreased pain tolerance in women point to biological factors as a possible explanation for the gender disparities (Smith et al., 2003).

The sex difference in experimental pain may be explained by both psychosocial factors and biological factors; and is therefore of interest to further investigate whether sex differences in pain reporting are associated with neck pain intensity and disability and also to investigate whether genetic factors are related to these seemingly opposite clinical results (Gross et al., 2002).

The less common causes of neck pain include tumors, infections, or congenital abnormalities of the vertebrae. The more common and less severe neck pain causes include:

Physical and emotional stresses can cause 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 - prolonged use of a computer keyboard ; minor injuries and falls- car accidents, sporting events and day to day minor injuries ; referred pain- mostly from upper back problems ; over-use - muscular strain is one of the most common causes ; obesity - weak abdominal muscles often disrupt the spine's balance, causing the neck to bend forward to compensate (Bot et al., 2005).

The individual with neck pain complains of aching discomfort in the base of the neck and upper back. Headaches, stiffness, torticollis, and noisy joints are common (Adegoke et al., 2008). Neck soreness on one or both sides, burning pain, tingling sensations, stiffness, pain around the shoulder blades, Arm complaints (pain,

numbness, or weakness), pain that moves around the body, dizziness and headache are the common symptom. Trouble walking or writing, trouble swallowing or talking, nausea, blurred vision, fever, night sweats, tiredness and unintentional weight loss are the less common (Carroll et al., 2004).

Pain around the neck is one of the symptoms of meningitis, a relatively rare but very serious contagious infection; need urgent medical care if neck pain present with: High fever, sensitivity to light, irritability, severe tenderness with neck movement. Neck pain also can be due to injury. A severe neck injury could be life-threatening; may need medical treatment if neck pain present with: Numbness, weakness, tingling symptoms (Korhonen et al., 2003).

Around two thirds of European Union (EU) workers report being exposed to repetitive hand and arm movements and a quarter to vibrations from tools; significant risk factors for work related neck and upper limb disorders. Many workers, in a wide range of jobs, develop work related upper limb disorders (WRULDs) and they are the most common form of occupational disease in Europe, accounting for over 45 % of all occupational diseases (Nevala-Puranen et al., 2003).

Despite the lack of specific diagnoses neck pain is a heavy socio-economic burden in terms of health care utilization and sick leave and in the Netherlands the estimated cost-of-illness of neck pain in 1996 was about 1% of the health care expenditure; in Sweden the annual total cost of low back pain and neck pain was 1% of the Gross National Product (GNP) with indirect costs that is costs due to absenteeism and disability being 10 times as high as the direct costs that is healthcare consultations (Waersted et al., 2010).

These estimates may be considered fairly conservative as sickness absence seems to be increasing; especially for women and it may increase partly be explained by the risk of developing longstanding discomfort and development of more widespread pain. Still, people with neck pain continue to go to work with a resulting loss in productivity (Aasa et al., 2005). Between 20% and 40% of the general population seek treatment for neck pain at some time during their lives and the impact of neck

pain is considerable, it is therefore important to study what causes neck pain in order to identify possible preventive measures (Cote et al., 2000).

The pain around the neck is treated by numerous physical therapies and the range of complexity depending on the severity and underlying causes of the pain. Treatment is administered by chiropractic, osteopathic and physical therapy and all of these specialties treat neck pain issues but the benefit of mobilization and manipulation is not clear (Gross et al., 2004).

Also, the neck pain can be eased via many self help techniques such as stretching, strength building exercises. Non-traditional methods such as Acupressure, Reflexology and therapeutic massage are commonly used as well (Hoving et al., 2002). About one-half of neck pain episodes resolve within one year and about 10% of cases become chronic (Binder, 2007).

The clinical evidence reports that although they are widely used as first line therapy, there is also sufficient evidence on the effects of analgesics, non-steroidal anti-inflammatory drugs (NSAIDs), muscle relaxants and antidepressants for neck pain, but there are adverse effects associated with a number of drugs used to treat neck pain. The efficacy of analgesics or non-steroidal anti-inflammatory drugs (NSAIDs) for the treatment of acute neck pain is significant. Along with analgesics or NSAIDs muscle relaxants such as diazepam and phenobarbital have greater effect for the treatment of acute neck pain (Carragee et al., 2008).

For the treatment of acute spinal pain, the guidelines on acute pain management, published by the National Health and Medical Research Council of Australia (1999), state that ‘Opioids (oral) may be required in the acute stage, with regular rather than pain-contingent dosing with a short-acting agent such as oxycodone or codeine’, but provide no evidence in support of this recommendation. It appears to be a consensus view taking into account that some patients with acute spinal pain may require analgesia stronger than that afforded by paracetamol or NSAIDs (Hoving et al., 2002).

One study found no statistically significant differences in outcome at one month after treatment with massage and traction, a collar, or neck and shoulder girdle exercises. In contrast, another study found that significantly fewer people treated with exercises and passive mobilization had residual pain at six and twelve weeks than those treated with a rest in a collar (Gross et al., 2010). Much of the evidence on collars stems from studies in which collars have been used as the control treatment, or as part of the index treatment. In that regard, collars have been found to be effective use with manual therapy (Hurwitz et al., 2002).

Cervical manipulation is a movement performed passively with impulse and the evidence on manipulative therapy for acute neck pain is limited to one study that assessed the immediate effects of cervical manipulation and one that followed patients for three weeks (González-Iglesias et al., 2009).

Miller et al. (2010) compared the effects of cervical manipulation with those of treatment using muscle energy techniques. Although the differences in mean decrease in pain were reported as significantly greater in favour of cervical manipulation, those differences disappear when the data are adjusted for pre-treatment differences.

Wood et al. (2001) compared cervical manipulation with treatment with an NSAID. Although differences in favour of cervical manipulation were apparent immediately after treatment, there were no differences at one week and three weeks after treatment.

Cervical passive mobilization is movement performed passively at a slow, rhythmic rate. Systematic reviews have differed in the way that they have interpreted and treated the studies available on mobilization therapy for neck pain (Gross et al., 2010). One review analyzed studies that addressed chronic neck pain as well as those that addressed acute neck pain, and studies that used cervical manipulation as well as cervical passive mobilization. It calculated effect-sizes for individual studies but ventured no explicit conclusions concerning the efficacy of mobilization (Muller & Giles, 2005). One study, published only in abstract form assessed the efficacy of spray and stretch therapy for myofascial pain of the neck. This study found spray and stretch to be no more effective than placebo (Hakkinen et al., 2007).

### 3.1 Study design

Descriptive analytical cross sectional study design was carried out to find out the prevalence of neck pain among the bus drivers. This design has been selected because it is simple, time saving, less expensive and useful for descriptive study.

### 3.2 Study area

The site of study areas are Gabtoly, Syedabad and Kollanpur bus terminal. These bus terminals have been choose because of the highway bus drivers are found in these terminals.

### 3.3 Sample size

Sample size for cross sectional study done by following equation-

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

Here,

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

$$P = 0.78$$

$$q = 1 - p$$

$$d = 0.05$$

So the researcher aimed to focus his study by 384 samples following the calculation above initially. But the researcher was able to include 75 subjects instead of 384 due to resource constraint.

### **3.4 Sampling technique**

Data were collected from the bus drivers in convenience sampling technique in which the participants were willing to participate in the interview and answer to the questionnaire.

### **3.5 Method of data collection**

Following convenience sampling procedures the interviewer was gone to the bus drivers to take permission if they are in this study or not. Firstly, the researcher introduced him and the research project as well its purpose. Then researcher met with individual subject to find out if they are interested in participating. For data collection, the researcher used English type of questionnaire with the consent of supervisor for easiest wording and translates them into Bangla for understanding.

### **3.6 Data analysis**

The collected data was illustrated with bar graphs and pie graphs. By this survey a lot of information was collected. All these results gave a basic idea about the prevalence of neck pain among highway bus drivers. Thus the data has been analyzed by SPSS 16(Statistical package of social science) software program. SPSS is a comprehensive and flexible statistical analysis data management solution. SPSS can take data from almost any type of file and use them generate tabulated reports, charts, and plots of distributions and trends, descriptive statistics, and conduct complex statistical analyses.

Data analysis is the process of systemically arranging presenting information in order to search for ideas. The aim of data analysis is to find out the meaning of the collected information.

### **3.7 Data collection tools**

Pen, paper, questionnaire, pen drive, Harvard referencing, SPSS 16(Statistical Package for the Social Sciences) and computer.

### **3.8 Inclusion criteria**

- Data were collected in those subjects who had literacy so that he can signature into the consent form.
- Subjects who were highway bus driver, because highway bus drivers facing on more traffic jam that can lead stresses on the soft tissues of the neck.

### **3.9 Exclusion criteria**

- Subjects who were Dhaka city bus driver (less than 50 kilometer), perhaps of not producing fatigability of the soft tissues around the neck.
- Subjects who were alcohol user, perhaps they were mentally unstable and irritating.

### **3.10 Ethical consideration**

- The proposal of the research has been passed through ethical review board.
- All the participants were informed about the purpose of the study and their consent have been obtained.
- The researcher has ensured the confidentiality of participants' information, sharing information only with the research supervisor.
- The researcher has followed the guideline of WHO and BMRC.

### **3.11 Informed Consent**

Written consent was taken from each individual subjects before data collection. For this study, interested subjects were given consent forms and the purpose of the research and consent forms were explained to the subjects. They were told that participation is fully voluntary and they have right to withdraw at any time. They were also told that confidentiality will be maintained. Information might be published in any presentations or writing but they will not be identified. The study results might not have any direct effects on them but the members Physiotherapy population may be benefitted from the study in future. And the subjects would not be embarrassed by the study. At any time the researcher will be available to answer any additional questions in regard to the study.

### **3.12 Limitations**

- Samples were collected from Gabtoly, Kollanpur and Syedabad bus terminal. But it should to collect from different divisions in Bangladesh to make it more generalized.
- Total numbers of sample were 75 which were very small in number to generalize the result.
- The researcher was a 4<sup>th</sup> year B.Sc. in physiotherapy student and this was his first research project. He had limited experience with techniques and strategies in terms of the practical aspects of research. As it was the first research of the researcher so might be there were some mistakes by the researcher.

**Prevalence of neck pain**

In this study found that 56 (74.7%) participants out of 75 participants have suffered from neck pain (Figure-1)

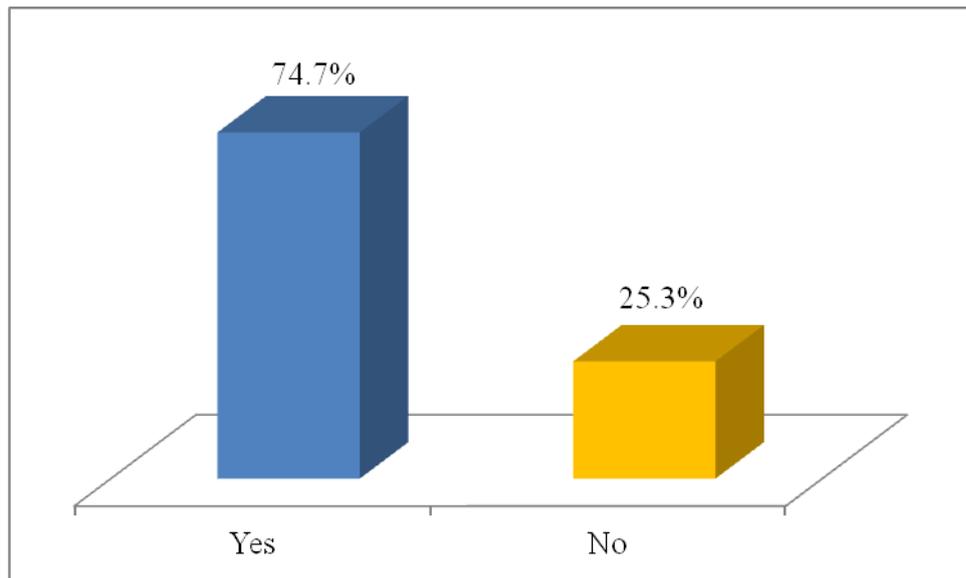


Figure-1: Prevalence of neck pain

### Age of the participants who had experienced 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. Their mean age was 37.23 years. And there were 19 (25.34%) participants in between 22-29 years, 18 (24%) participants in between 30-38 years, 18 (24%) participants in between 39-42 years and 20 (26.67%) participants in between 43-56 years (Figure-2).

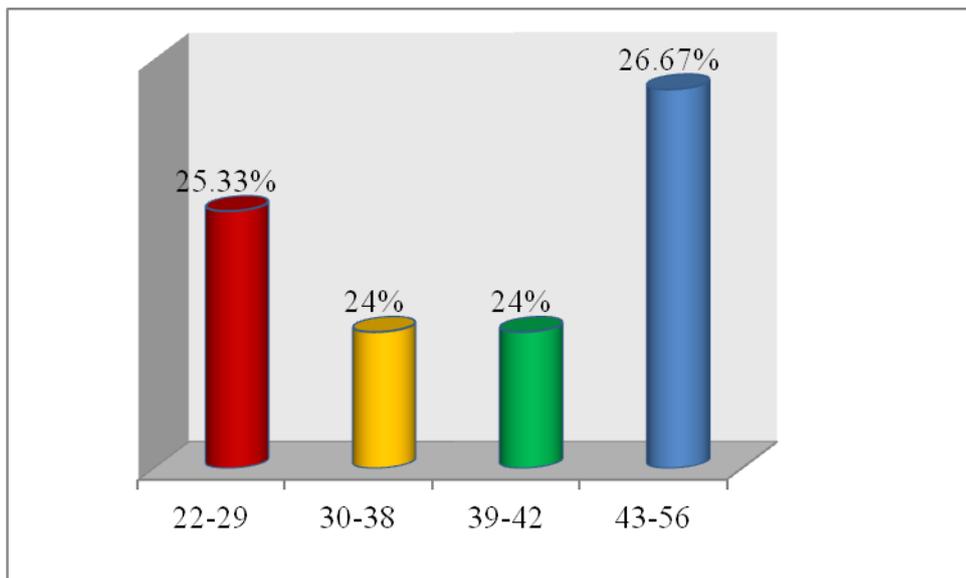


Figure-2: Age of the participants who suffered neck pain.

### Marital status

Study shows that 65 (86.7%) of the participants was married, among them 47 (72%) of the participants experienced neck pain; 9 (12%) of the participants was unmarried, among them 5 (56%) of the participants experienced neck pain and 1 (1.3%) of the participants was divorced who did not experience neck pain among the total 75 participants (Figure-3).

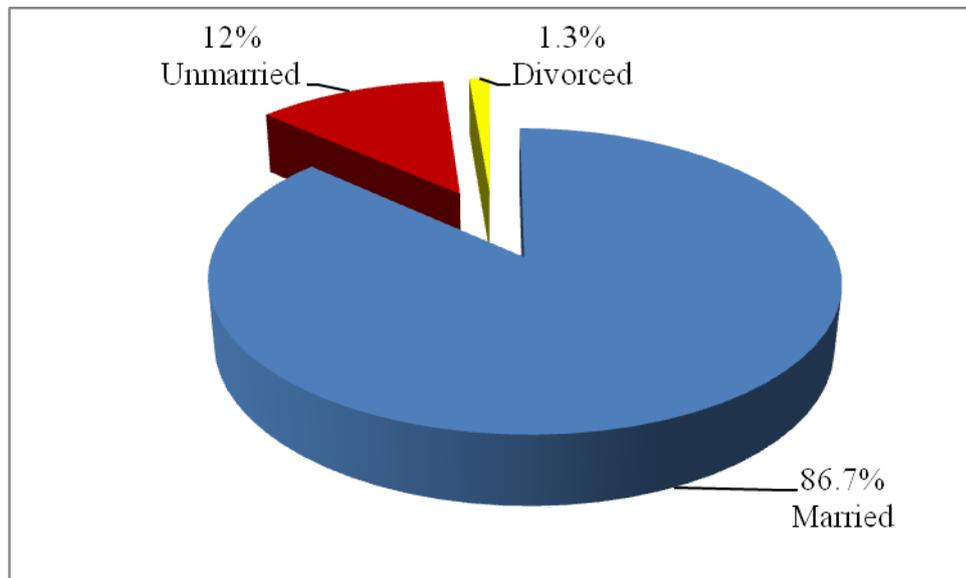


Figure-3: Marital status of the participants

### Educational status

In the study 57 (76%) of the participants completed primary education, among them 44 (77%) participants experienced neck pain; 16 (21.3%) of the participants completed their secondary education (SSC), among them 12 (75%) participants experienced neck pain; 2 (2.7%) of the participants never attended in the school, between them 01 participant experienced neck pain; and there was no participant who completed higher secondary or bachelor education (Figure-4).

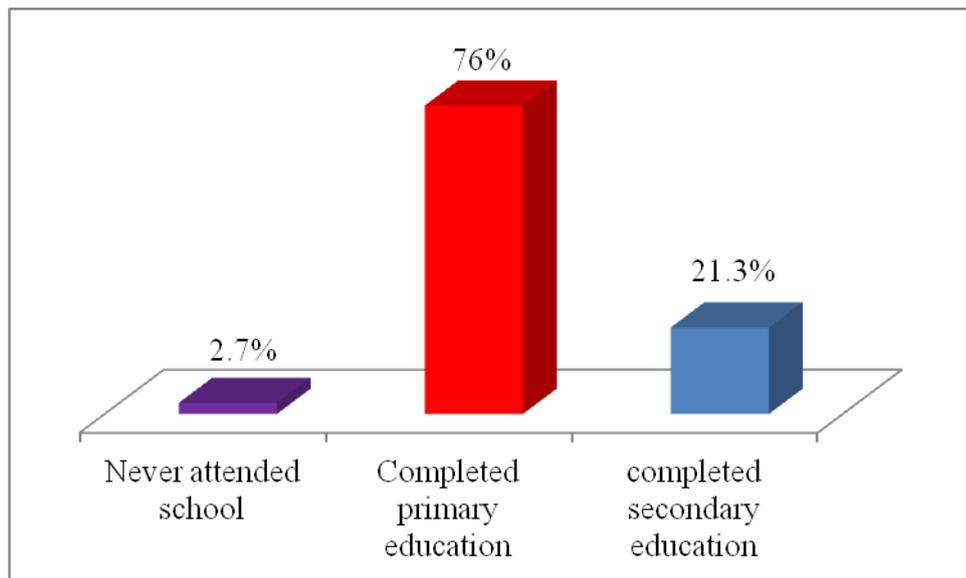


Figure-4: Educational status.

### Duration of pain suffering

Study shows that among the 75 participants, 56 participants were suffered from neck pain. And among the 56 participants, 31 (55.4%) of the participants were suffered from years, 21 (37.5%) of the participants were suffered from months and 4 (7.1%) of the participants were suffered from days (Figure-5).

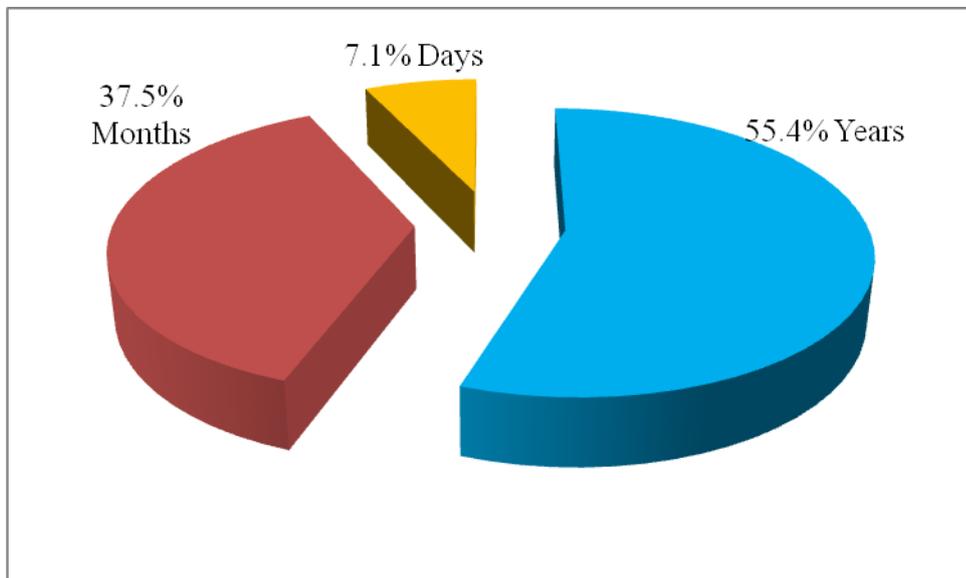


Figure-5: Duration of pain suffering

### Severity of neck pain

Among the 56 participants out of 75 participants, who experienced neck pain; 27% (n=15) experienced neck pain 4 out of 10 in VAS scale, 25% (n=14) experienced neck pain 2 out of 10 in VAS scale, 14% (n=8) experienced neck pain 3 out of 10 in VAS scale, 21% (n=12) experienced neck pain 5 out of 10 in VAS scale, 11% (n=6) experienced neck pain 7 out of 10 in VAS scale and 2% (n=1) experienced neck pain in 01 out of 10 in VAS scale (Figure-6).

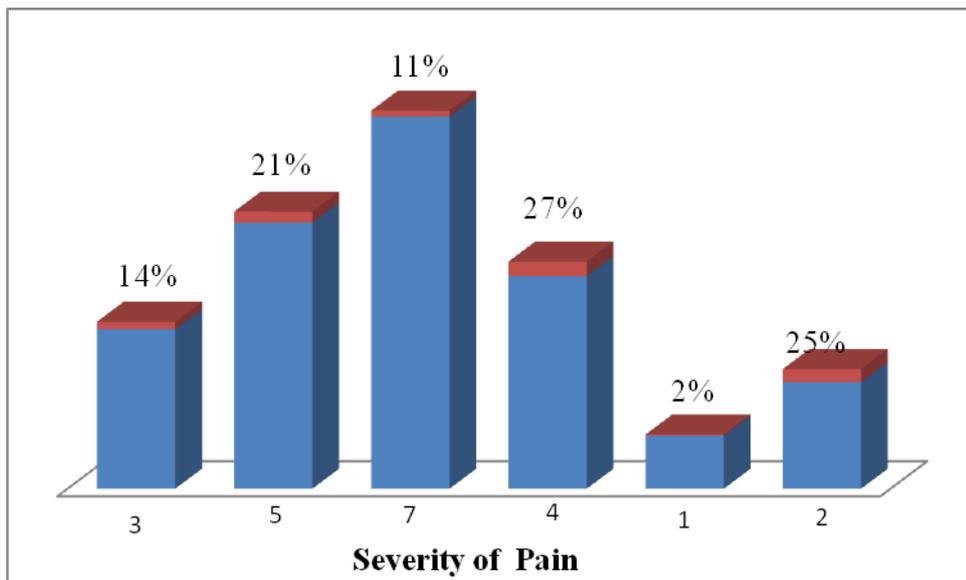


Figure-6: Severity of neck pain.

### Hampered of bus driving due to pain

Among the 75 participants, 56 of the participants were experienced neck pain. And among the 56 participants, 41 (73.2%) participants experience hampered bus driving due to pain and 15 (26.8%) participants did not experience any hamper during bus driving (Figure-7).

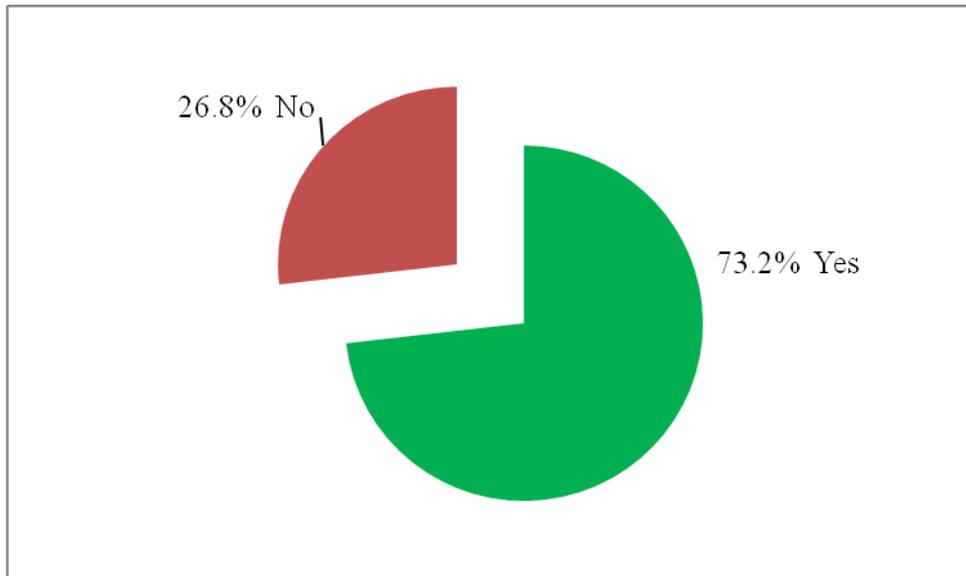


Figure-7: Hampered of bus driving due to pain

### **Pain worse due to poor posture**

Analysis shows that among the 75 participants, 37 (66.1%) participants (n=56) experienced pain that worse due to forward flexion; 13 (23.2%) participants (n=56) experienced pain that worse due to side flexion and 6 (10.7%) participants experienced pain that worse due to extension (Figure-8).

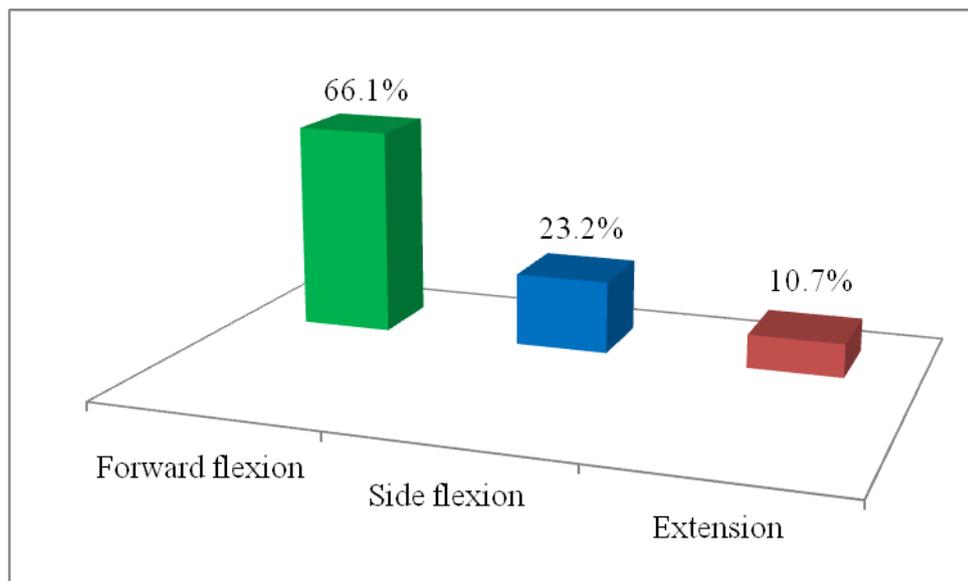


Figure-8: Pain worse due to poor posture

### **Absenteeism of bus driving due to pain**

Study shows that 16 (28.6%) participants stopped bus driving due to pain and 40 (71.4%) of participants did not stop bus driving due to pain among the 56 participants out of 75 participants (Figure-9).

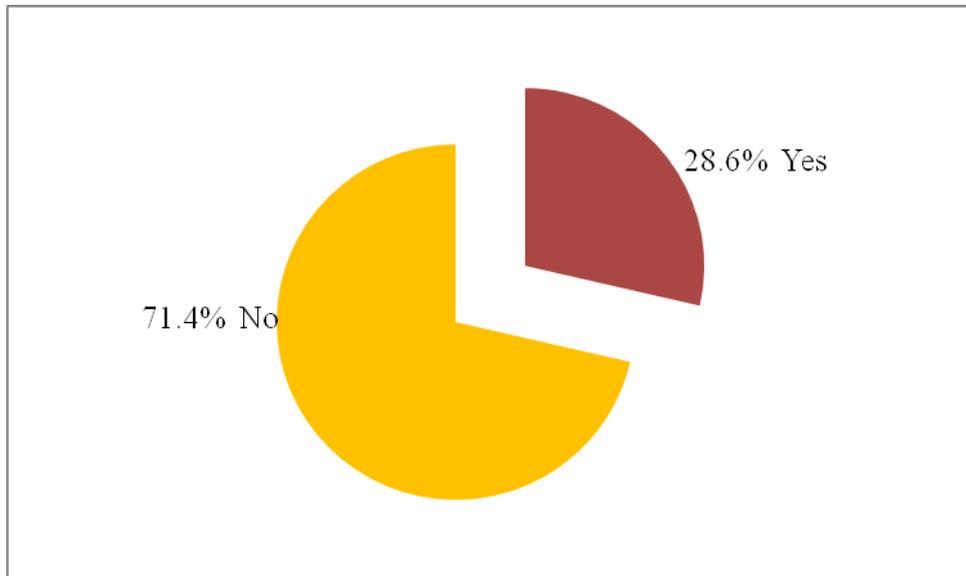


Figure-9: Absenteeism of bus driving due to pain

### Available received treatment

Study shows that among the 56 participants out of 75 participants who had suffered from neck pain received medication 13 (23.2%), received Physiotherapy 10 (17.9%) and 33 (58.9%) of the participants did not received treatment from health professionals (Figure-10).

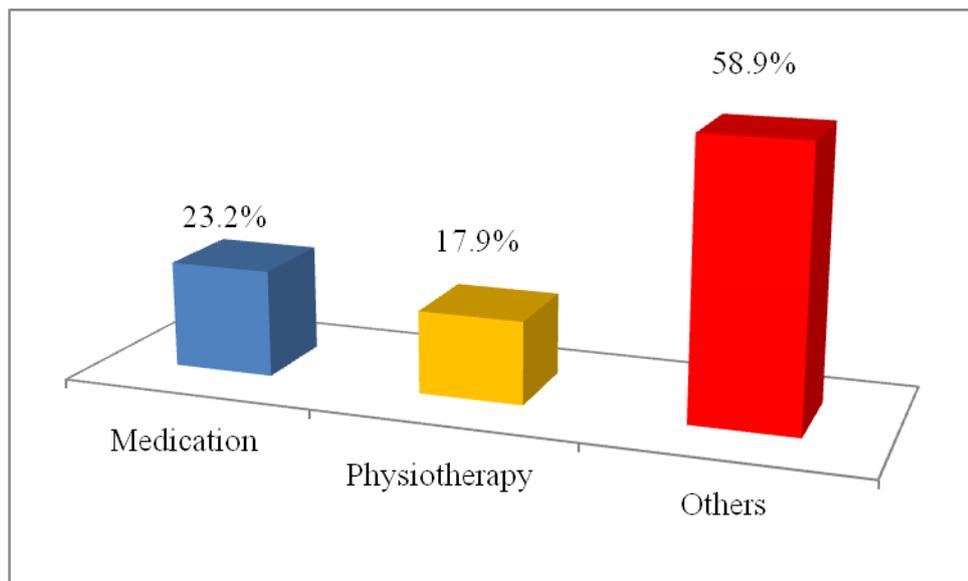


Figure-10: Available received treatment

## Outcome of treatment

In this study shows that 56 participants experienced neck pain and received treatment from health professionals and non-health professionals. And 23 (41.1%) of participants improved from neck pain, 5 (8.9%) of participants had worse neck pain and 28 (50%) of participants did not experienced any significant change from neck pain (Figure-11).

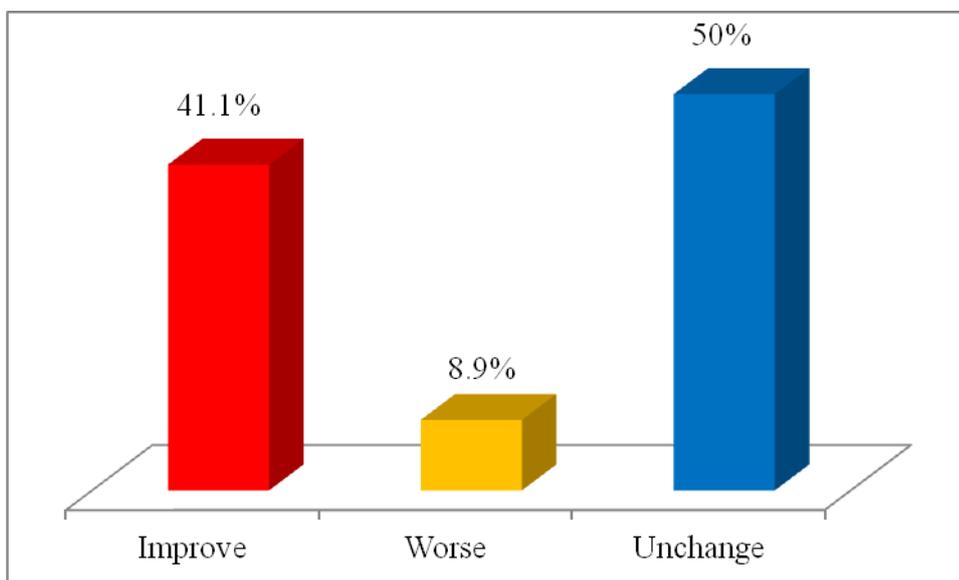


Figure-11: Outcome of treatment

The result of the study shows that neck pain is prevalent among the Bus drivers. In this study the prevalence of neck pain was 74.7%. Pehkonen et al., (2012) reported the prevalence neck pain among the Bus drivers in Sweden was 71% and Sadri (2003) shows that the 35% bus drivers suffered from neck pain in Iran.

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.

Study shows that 86.7% of the participants were married, 12% of the participants were unmarried and 1.3% of the participants were divorced. In this study, 76% of the participant completed their primary education, 21.3% completed their secondary education and 2.7% of the participants never attended in the school.

In this study, 55.4% of participants were suffered from years, 37.5% of participants were suffered from months and 7.1% of participants were suffered from days due to neck pain. Sadri (2003) reported that 22.3% of the bus drivers were suffered from pain for several months in Iran.

Study shows that 66.1% participants experienced pain due to prolong forward flexion; 23.2% 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.

In this study, 44.6% of the participants experienced neck pain 0-3 score in VAS scale, 48.2% experienced 4-6 score and 7.1% of the participants experienced neck pain 7-10 score in VAS scale.

Study shows that, 73.2% participants experienced hamper bus driving due to pain and 26.8% participants did not experience any hamper during bus driving.

Analysis shows that near about one third (28.6%) of the participants stop bus driving due to neck pain. Just only 17.9% participants who suffered from neck pain had taken physiotherapy treatment for their condition. Kompier (1996) stated that between 1974 and 1977, 07% of bus drivers in former West Berlin stop driving due to pain.

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 bus drivers with a poor posture and ergonomics such as back rest of the driver 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 drivers.

## **CHAPTER-VI : CONCLUSION AND RECOMMENDATIONS**

### **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 drivers. The prevalence of neck pain among the highway bus drivers 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 bus driving due to pain and 40 (71.4%) of participants did not stop bus driving 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 bus drivers can fully concentrate on their driving.

## **6.2 Recommendations**

The aim of the study was to find out the prevalence of neck pain among the highway bus drivers. The main recommendations would be:

- In this study the sample were only the highway bus drivers. In future, if sample are all bus drivers, the research may be more precious.
- In this study used only 75 participants as the sample, in future the sample size would be more.

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## Appendix-A

### সম্মতি পত্র

(অংশগ্রহনকারীকে পড়ে শোনাতে হবে)

আসসালামুআলাইকুম/ নমস্কার,

আমার নাম মোঃ আল-মাবুদ, আমি এই গবেষণা প্রকল্পটি বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বিআইচপিআই)-এ পরিচালনা করছি যা আমার ৪র্থ বর্ষ বি এস সি ইন ফিজিওথেরাপি কোর্সের অধিভুক্ত। আমার গবেষণার শিরোনাম হল “মহাসড়ক বাস চালকদের ঘাড় ব্যাথার হার”। আমি আপনাকে কিছু ব্যক্তিগত এবং ঘাড় ব্যাথা সম্পর্কে প্রশ্ন করতে চাই। এতে আনুমানিক ১৫ মিনিট লাগবে।

আমি আপনাকে অবগতি করছি যে, এটা আমার অধ্যয়নের অংশ এবং অন্যকোন উদ্দেশ্যে ব্যবহৃত হবে না। এই গবেষণা আপনার বর্তমান ও ভবিষ্যত চিকিৎসায় কোন প্রকার প্রভাব ফেলবে না। আপনি যে সব তথ্য প্রধান করবেন তার গোপনীয়তা বজায় থাকবে এবং আপনার প্রতিবেদনের ঘটনা প্রবাহে এটা নিশ্চিত করা হবে যে এই তথ্যের উৎস অপ্রকাশিত থাকবে।

এই অধ্যয়নে আপনার অংশগ্রহন সেচ্ছাপ্রনোদিত এবং আপনি যে কোন সময় এই অধ্যয়ন থেকে কোন নেতিবাচক ফলাফল ছাড়াই নিজেকে প্রত্যাহার করতে পারবেন। এছাড়াও কোন নির্দিষ্ট প্রশ্ন অপছন্দ হলে উত্তর না দেয়ার এবং সাক্ষাতকারের সময় কোন উত্তর না দিতে চাওয়ার অধিকারও আপনার আছে।

এই অধ্যয়নে অংশগ্রহনকারী হিসেবে যদি আপনার কোন প্রশ্ন থাকে তাহলে আপনি আমাকে অথবা/ এবং মোঃ ওবায়দুল হক, সহযোগী অধ্যাপক, ফিজিওথেরাপি বিভাগ, সিআরপি,সাভার,ঢাকা-১৩৪৩-তে যোগাযোগ করতে পারেন।

আমি আপনার অনুমতি নিয়ে এই সাক্ষাৎকার শুরু করতে যাচ্ছি।

হ্যাঁ.....

না .....

অংশগ্রহনকারীর সাক্ষর.....

সাক্ষাৎগ্রহনকারীর সাক্ষর.....

## Appendix-B

### VERBAL CONSENT STATEMENT

(Please read out to the participant)

Assalamualaikum/Namasker, my name is Md: Al-Mabud, I am conducting this study for a Bachelor project study titled **“Prevalence of neck pain among the highway bus drivers”** from Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some proposal and other related questions about musculoskeletal complaints. This will take approximately 15 minutes.

I would like to inform you that this is a purely academic study and will not be used for any other purpose. The researcher is not directly related with this area (Musculoskeletal), so your participation in the research will have no impact on your present or future treatment in this area (Musculoskeletal). All information provided by you will be treated as confidential and in the event of any report or publication it will be ensured that the source of information remains anonymous. Your participation in this study is voluntary and you may withdraw yourself at any time during this study without any negative consequences. You also have the right not to answer a particular question that you don't like or do not want to answer during interview.

If you have any query about the study or your right as a participant, you may contact with Md: Al-Mabud, researcher and/or Md. Obaidul Haque, Associate Professor of Physiotherapy Department, BHPI, CRP, Savar, Dhaka-1343.

Do you have any questions before I start?

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

- YES
- NO

Signature of the Participant.....

Signature of the Researcher.....

## Appendix-C

### মহাসড়ক বাস চালকদের ঘাড় ব্যথার হার সম্পর্কিত প্রশ্ন পত্র

#### প্রথম অংশ : সামাজিক জনসংখ্যা তাত্ত্বিক বৈশিষ্ট্য

কোড নং

- নাম :
- বয়স :
- ঠিকানা :
  - গ্রাম :
  - ডাকঘরঃ
  - উপজেলাঃ
  - জেলাঃ
- বৈবাহিক অবস্থা :
  - বিবাহিত
  - অবিবাহিত
  - তালাকপ্রাপ্ত
- শিক্ষাগত যোগ্যতা :
  - কখনো স্কুলে যায়নি
  - প্রাথমিক শিক্ষা সম্পন্ন করেছে
  - এস.এস.সি পাশ
  - এইচ.এস. সি পাশ
  - সম্মান অথবা তদোর্ধ
- সাক্ষাৎকারের তারিখ

দ্বিতীয় অংশ : ঘাড় ব্যাথা সম্পর্কিত

১. আপনি দিনে কতক্ষণ বাস চালান?

- ৫ ঘণ্টার কম
- ৫-১০ ঘণ্টা
- ১০ ঘণ্টার বেশী

২. বাস চালানোর কারণে আপনি এখন ঘাড় ব্যাথা অনুভব করছেন?

- হ্যাঁ
- না

৩. যদি করেন, তাহলে কতদিন ধরে অনুভব করছেন?

- বছর .....
- মাস .....
- দিন.....

৪. আপনার ঘাড় ব্যাথার তীব্রতার কত ?

- ০.....১.....২.....৩.....৪.....৫.....৬.....৭.....৮.....৯.....১০

৫. ঘাড় ব্যাথা কি আপনার বাস চালাতে অসুবিধা করে ?

- হ্যাঁ
- না

৬. যদি করে, তবে কত টুকু ?

- অল্প
- মাঝারি
- খুব বেশি
- একটুও না

৭. আপনি ১ম কখন গাড় ব্যাথা অনুভব করেছেন?

- প্রথম বছরে
- প্রথম ৫ বছরে
- ৫-১০ বছরে

৮. কখন উপসর্গ দেখা দেয়?

- বাস চালানো সময়
- বাস চালানোর পরে

৯. কোন অবস্থান ব্যাথা বাড়িয়ে দেয়?
- সামনে বুক
  - পাশে বুক
  - পিছনে বুক
  - অন্য কিছু
১০. কোন অবস্থান ব্যাথা কমায়?
- সামনে বুক
  - পাশে বুক
  - পিছনে বুক
১১. আপনি ঘাড় ব্যাথার কারণে কি কখনো বাস চালানো বন্ধ রেখেছেন?
- হ্যাঁ
  - না
১২. আপনি কি ধরনের চিকিৎসা নিয়েছেন?
- ঔষধ
  - ফিজিওথেরাপি
  - অন্য কিছু
১৩. যদি নেন, তাহলে ফলাফল কি?
- উন্নতি
  - অবনতি
  - একই রকম
১৪. আপনার মতে, ঘাড় ব্যাথা কি বাস চালানোর সাথে সম্পর্কিত ?
- হ্যাঁ
  - না

অংশগ্রহণকারী স্বাক্ষর

.....

গবেষকের স্বাক্ষর

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## **Part B: Neck pain related**

1. How long time do you drive the bus in a day?
  - Less than 5 hours
  - 5-10 hours
  - More than 10 hours
2. Do you currently suffer from neck pain due to bus driving?
  - Yes
  - No
3. If yes, than how long do you suffer your current neck pain?
  - Years
  - Months
  - Days
4. How do you describe the severity of the neck pain you suffer from?

0...1...2...3...4...5...6...7...8...9...10
5. Does the neck pain hamper your bus driving?
  - Yes
  - No
6. If yes, then to what extend does your pain hamper your bus driving?
  - Mildly hamper
  - Moderately hamper
  - Severely hamper
  - Not at all
7. When did you first experience neck pain?
  - In first year of work?
  - In first 5 years of year?
  - 5-15 years of work?
8. When did the symptoms occurs?
  - During bus driving
  - After bus driving
9. Which posture makes your pain worse?
  - Forward flexion

- Side flexion
- Extension
- Others

10. Which posture relieves your pain?

- Forward flexion
- Side flexion
- Extension

11. Have you ever been stop bus driving due to neck pain?

- Yes
- No

12. What kind of treatment did you receive?

- Medication
- physiotherapy
- Others

13. If yes, then what was the result?

- Improve
- Worse
- Unchanged

14. In your view, does pain is associated with your bus driving?

- Yes
- No

Signature of the participant

.....

Signature of the researcher

.....