

PREVALENCE OF LOW BACK PAIN AMONG THE TRAFFIC POLICE

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

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BHPI, CRP, Savar, Dhaka



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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 LOW BACK PAIN AMONG THE TRAFFIC
POLICE**

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Declaration

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

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Acronyms

BHPI	Bangladesh Health Professions Institute.
BMI	Body Mass Index
CRP	Center for the Rehabilitation of the Paralyzed.
LBP	Low Back Pain
MSK	Musculoskeletal system
NIOSH	National Institute for Occupational Safety and Health
NSAID	Non-Steroid Anti Inflammatory Drug
PT	Physiotherapy
RCMP	Royal Canadian Mounted Police
SPSS	Statistical Package for the Social Sciences.
USA	United States of America
VAS	Visual Analogue Scale
WHO	World Health Organization

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Abstract

Purpose: To identify the prevalence of low back pain among the traffic police. *Objectives:* To identify the prevalence of low back pain among the traffic police. To determine the socio-demographic information of the participants. To evaluate the risk indicators among the traffic police. To clarify the pattern of onset of pain. To examine the severity of symptoms at VAS scale. To figure out whether traffic police received physiotherapy treatment or not. *Methodology:* The study design was cross-sectional. Total 40 samples were selected conveniently for this study from the Comilla district traffic police. Data was collected by using mixed type of questionnaire. Descriptive statistic was used for data analysis which focused through table, pie chart. *Results:* The finding of the study was that the 80% of traffic police suffered from LBP. Out of the 40 participants age range 38-42years were 13% , 43-47years were 34%, 48-52years were 50%, and >52 years were 1% were affected. Body type (B.M.I) of the participants 65% were normal body type, 35% were overweight. Residential area of participant where 15% were from urban and 85% were from rural area. Education status of the participants 90% were completed primary education, 7.5% were completed S.S.C education, and 2.5% were completed graduate education. Among the affected 32 participants pattern of sign and symptoms, 72% were gradually and 28% were sudden attack. 41% were mildly attack, 56% were moderate attack and 3% were severely attack. In affected participants 3% were taken physiotherapy and 97% were not taken physiotherapy for their problem. *Conclusion:* The finding of the study was that the 80% of traffic police suffered from LBP. This study could help the traffic police who had risk of LBP, the researcher for further study and the physiotherapist to treat the LBP accurately.

Key words: Low back pain, Prevalence, Traffic police.

1.1Background

According to WHO (2013) LBP is responsible for a major population of people staying away from work and visiting a medical practitioner. About 70% to 80% of the world's population has at least one episode of low back pain in their life time (Charoenchai et al., 2006). LBP is a major public health problem in the USA because more than 34 million (17%) adults reported LBP only and 19 million (9%) reported LBP and neck pain (Biglarian et al., 2012). In Canada it is estimated that 84% of adults have LBP during their life time. Average prevalence of LBP in UK was 59%. Prevalence of low back pain in Denmark is 70% (Harreby et al., 1996) and 75% in Finland (Heliovaara et al., 1989).

Low back pain (LBP) is one of the most common musculoskeletal disorders in the population especially in working population. Musculoskeletal disorders constitute a major health problem to our society. Lifetime prevalence rates of low back pain are up to 85-90%. Only a small part of all musculoskeletal disorders can be diagnosed as distinct clinical entities. Most low back symptoms have been reported to be unspecific or undiagnosable. Proper treatment is often difficult because 'evidence based' therapies are still scarce, but guidelines for treatment of low back symptoms have become available in our country. Moroder suggests that the etiology and risk factors of musculoskeletal disorders are still insufficiently known. The American National Institute for Occupational Safety and Health (NIOSH) concluded that strong evidence existed for several occupational risk factors. This essay provides a review of some of the existing research on the occupational health and safety risks that police officers may encounter on a daily basis or at some point during their career. The essay opens with a description of the research methods used to assemble the research reviewed here. This is followed by a summary of the documented health and safety risks associated with policing. The latter are divided into five categories: physical, chemical, biological, ergonomic, and psychosocial. Documented physical hazards associated with policing include homicide, assault, cardiovascular disease and fatigue; chemical hazards include cancer and air pollution; biological hazards include communicable disease; and, ergonomic hazards include back problems. Stress, sexual

harassment, discrimination and suicide, are some of the psychosocial risks associated with policing (Anderson et al., 2011).

Police officers play a pivotal role in North American and European societies. They are involved in many aspects of North American and European life. Officers' involvement ranges from general, daily, proactive patrol activities to specific criminal activities such as narcotic investigations. Because there is such a wide range of activities involved in police work, there are many health and safety issues surrounding policing as an occupation. Police officers may be exposed to different health and safety risks in their occupation. For example, police officers are at risk of assault and homicide; the dynamics of policing as an occupation creates opportunities for them to experience many psychosocial hazards such as stress, suicide, sexual harassment, and discrimination. It is important that research be completed on the health and safety issues of police officers in order to identify hazards and identify ways to reduce risk. The failure to identify and solve health and safety concerns of officers has potentially serious consequences for the health and well being of officers and their families. These consequences can include depression, divorce, suicide, and disease. Not addressing the health and safety issues associated with policing may also impact the general public. For example, if an officer is stressed or fatigued he/she may not perform his/her duties to the best of his/her ability reducing the contribution of policing to the community. Police officer fatigue might also increase the potential for a car accident, thus putting the public at risk. This essay provides a review of some of the existing research on the occupational health and safety risks that police officers may encounter on a daily basis or at some point during their career. The essay opens with a description of the research methods used to assemble the research reviewed here. This is followed by a summary of the documented health and safety risks associated with policing. The latter are divided into five categories: physical, chemical, biological, ergonomic, and psychosocial. Documented physical hazards associated with policing include homicide, assault, cardiovascular disease and fatigue; chemical hazards include cancer and air pollution; biological hazards include communicable disease; and, ergonomic hazards include back problems. Stress, sexual harassment, discrimination and suicide, are some of the psychosocial risks associated with policing. The research reviewed for this study included Canadian, American and European research. The discussion of each category of hazard is broken down by the

country where the research was completed. Each hazard section ends with a discussion of the weaknesses evident in the literature related to that hazard. The essay concludes with a comparison of Canada and the United States as well as North America and Europe in terms of the research completed and the results yielded in the literature. Also included in the conclusion is a discussion of the general gaps in the research on occupational health and safety issues of police officers indicating areas where future research needs to be completed (Brown at al., 1998).

1.2 Rationale

Low back pain (LBP) is the common problem in both developed & undeveloping countries. LBP is more common in working population. Severity is gradually increased with the work in a long time or inappropriate way or poor posture. Among the work related musculoskeletal disorders LBP is common health problem throughout the world and major cause of disability among workplace (Choobineh et al., 2007).

Work related musculoskeletal disorders (Low back pain) is common health problem throughout the world and major cause of disability among workplace. The traffic police are not aware about their posture (Poor posture) which cause back pain. They are doing their activities with poor posture, long working hours, repetitive movements of the body and poor work centre design are main risk factors for these problems.

Many of the traffic police comes from low socio-economic conditions. They are not aware of their health condition. They don't disclose their health problem due to fear of losing salary. This study helps finding out prevalence of back pain among the traffic police. Finding of this study will be brought to authority concerned for future intervention whereby physiotherapist may extend their cooperation to bring ease in the lives of traffic police.

1.3 Research question

What is the prevalence of low back pain among the traffic police?

1.4 Objectives:

1.4.1 General objective

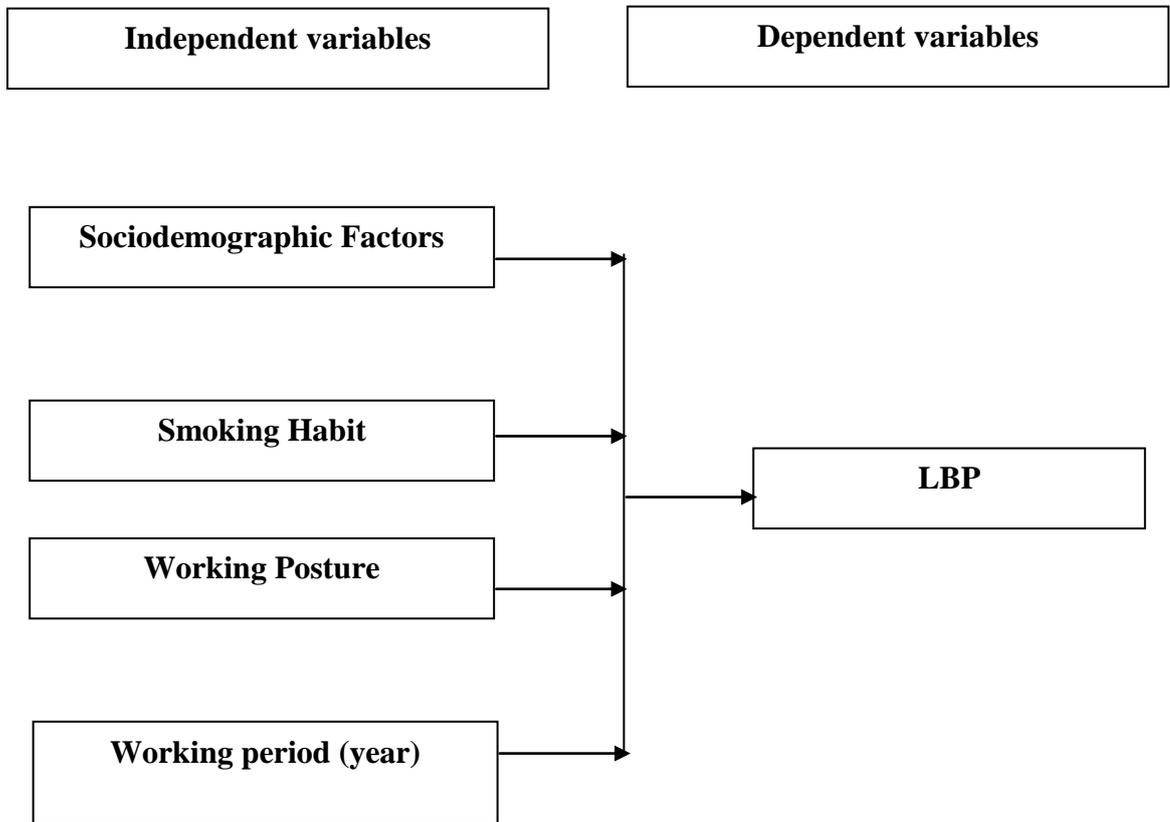
- To identify the prevalence of low back pain among the traffic police.

1.4.2 Specific objectives

- To find out how many participants experience low back pain among the traffic police.
- To determine the socio-demographic information of the participants.
- To evaluate the risk indicators among the traffic police.
- To clarify the pattern of onset of pain.
- To examine the severity of symptoms at VAS scale.
- To figure out whether traffic police received physiotherapy treatment or not.

1.5 List of variables

CONCEPTUAL FRAMEWORK



1.6 Operational definition

1.6.1 Prevalence

Total number of all cases who have already disease at a particular time. Proportion of a population found to have a condition/disease/risk factor comparing number of people have suffering for total population.

1.6.2 Low back pain

Low back pain is an important clinical, social, economic, and public health problem affecting the population indiscriminately. Low back pain refers to pain felt in lower back. It may also have back stiffness, decreased movement of the lower back, and difficulty standing straight.

1.6.3 Police

The police are a constituted body of persons empowered by the state to enforce the law, protect property, and limit civil disorder. Their powers include the legitimized use of force.

1.6.4 Traffic police

Traffic police or traffic cops may refer to:

- Police controlling
- Traffic guard
- Highway patrol
- Road policing unit (is the term for the highway patrol within the majority of police forces).

Low back pain is a common musculoskeletal symptom that may be either acute or chronic. It may be caused by a variety of diseases and disorders that affect the lumbar spine (Late et al., 2000). Low back pain has several different possible causes: strain on the muscles of the lower back may be caused by obesity; pregnancy; or job-related stooping, bending, or other stressful postures (Walker et al., 2009). According to the anatomical view, the term LBP refers to pain in the lumbosacral area of the spine encompassing the distance from 1st lumbar vertebra to 1st sacral vertebra. This is the area of the spine where the lordotic curve forms. The most frequent site of LBP is in the 4th and 5th lumbar segment (Kravitz et al., 2011).

Understanding the physical requirements of police work and the literature linking driving and heavy lifting (Anderson et al., 2001) twisting and turning (Anderson et al., 2001) one could predict a high incidence of lower back problems in the police force. While Brown et al. found the one-year prevalence rates of lower back pain in RCMP members to be within those reported for the general population (25-62%) (Brown et al. 1998), police officers fall within the upper end of normal with prevalence rates of 44-62%. The purpose of this study was to develop a method to explore the prevalence of LBP in general duty police officers, while examining the level of disability associated with the LBP and factors that the officers attribute to LBP occurrence (Degirolamo et al., 1991).

Back muscles act to support the spine and maintain the stability of the spine; weakness of back muscles can lead to low back pain and is known as a main cause of recurrence (Lee et al., 2012). Generally we found that people stand for long time from morning to night continuously, but the sitting or standing system is poor, most of the cases poor posture can lead to pain. The back is not supported; as a result their lumbar spine stays incorrect position resulting various ligamentous structures on full stretch. Traffic police have to do all type of activities themselves to maintain the traffic. These types of activity include lifting, twisting & repeated movements of the spine (Lee et al., 2012).

LBP can be defined as pain or discomfort located between the lower costal arch and the gluteal folds, with or without referred leg pain (Tulder., 2003). Back pain (also known as dorsopathy) is pain felt in the human back that may come from the muscles, nerves, bones, joints or other structures in the spine. The pain may constant or intermittent, stay in one place or refer or radiate to other areas. It may be a dull ache, or a sharp or piercing or burning sensation (Robinson., 2011). The term low back pain refers to pain in the lumbosacral area of the spine encompassing the distance from the 1st lumbar vertebra to the 1st sacral vertebra. This is the area of the spine where the lordotic curve forms. The most frequent site of low back pain is in the 4th and 5th lumbar segment (Kravitz & Andrews., 2011). Shiel (2007) informed us that low back pain is pain and stiffness in the lower back. It is one of the most common reasons people miss work. Low back pain is usually caused when a ligament or muscle holding a vertebra in its proper position is strained. Vertebrae are bones that make up the spinal column through which the spinal cord passes. When these muscles or ligaments become weak, the spine loses its stability, resulting in pain (Tulder, 2003). Because nerves reach all parts of the body from the spinal cord, back problems can lead to pain or weakness in almost any part of the body (Ostgaard, 1991). Pain in the low back, often referring into the hip, buttock or one leg. The cause may be muscle strains or trigger points, instability due to weak postural muscles, hypomobile spinal facet joints, or degeneration or herniation of spinal disks (Anderson, 1984). (Kelsey et al., 1990) expressed that LBP is common throughout the adults years in men and women, first episodes most frequently occur among people in their 20s and 30s. Pain in the lower back area that can relate to problems with the lumbar spine, the discs between the vertebrae, the ligaments around the spine and discs, the spinal cord and nerves, muscles of the low back, internal organs of the pelvis and abdomen, or the skin covering the lumbar area (Ostgaard, 1991).

The typical postures & activities of traffic police make them one of the most vulnerable groups of being LBP. They bend frequently, twist right & left, & transfer (Bellamy, 2004). The standing systems of the traffic police are inappropriate, without back support (BBS, 2002). Most of the cases the posture is too poor to cause the LBP (Ebnezer, 2003). Though there is no more statistics on traffic police how many are being suffered from LBP, so this is the right time to explore prevalence of LBP among

the traffic police to set up both preventive & curative management as a physiotherapist.

Mechanical causes of back pain (muscle strain, herniated disc) have an acute sudden onset & the onset of pain is frequently associated with a specific task done in a mechanically disadvantaged position; muscle may be torn, fascia stretched & facet joint irritated. Pain starts instantly or within a few hours (Ostgaard, 1991).

Medical causes of low back pain have a more gradual onset of a pain. Tumours pain start insidiously excepts for episodes of acute pain associated with pathologic fractures of skeletal structures. The duration of LBP episode can be classified as: Acute (0-6 weeks), Sub-acute (7-12 weeks), Chronic (longer than 12 weeks) (Bekkering et al., 2003). The causes of LBP are multifactorial, including physical, environmental, pathological factors. Back injuries in the work place are rarely caused by direct trauma; typically they are the result of overexertion of individual factors. Age is the most important whereas sex, height (greater than 72 inch tall), weight and smoking >20 cigarettes per day probable risk factors (Hestbaek et al., 2003). Occupational factors associated with an increased risk of LBP are: heavy physical work, static work posture, frequent bending & twisting & psychological & psychosocial (Cox, 1999). Over two third of back strains are caused by lifting & other exertions like pushing & pulling. The common causes of LBP are muscle strain, vertebral compression fractures, spinal stenosis, intervertebral disc lesion, spondylolysis or spondylolisthesis, & exercise programme (Painting et al., 1998).

Growing evidence shows that low back pain starts early in life between 8-10 years (Croft et al., 1998). In his study, (Ghaffari, 2006) confirmed that LBP prevalence is significant as early as age 12-14 in both sexes. Workers compensation from 16 states, the scope of LBP in the workforce peaked in the 20-24 year old age group for men & 30-34 years old group for women (Wadell et al., 2005). Gender differences vary from country to country. In USA the higher prevalence of back pain in male workers & a study on LBP in Japan showed that the incidence in male workers was about four times greater than in female workers, in a representative prevalence study in Germany, seven day back pain prevalence was significantly higher for women (Croft et al., 1998). Twisting refers to spine rotation or torsion. Awkward postures include non

neutral trunk postures (related to bending & twisting) in extreme position or at extreme angles. A study (Robinson, 2011) examined the relationship between low back disorder & bending, twisting & awkward postures & found that flexion or lateral bending of the spine & bending or rotation of the spine are considered potential risk factors for LBP. The length of the daily working hours is risk factors for developing musculoskeletal disorders (LBP). Static work posture include position where very little movement occurs, along with cramped or inactive postures that cause static loading on the muscles. This includes prolonged standing & sedentary work (Tulder, 2003).

Pain has mechanical origin & occurs when the joint between two bones have been placed in a position that over stretches the surrounding soft tissues. This is true for mechanical low back pain in any joints of the body, including the spine (McKenzie, 1995). Centralization is the phenomenon where pain moves from a distal to a more central location in response to the application of mechanical forces. It is a clear indicator for mechanical pain (Painting et al., 1998). Stretching, compression or distortion of connective tissue structure stimulating the innervating nociceptors produce mechanical pain. Mechanical stress ultimately produces vascular change & ischemia which activates nociceptors (Robinson, 2011). Mechanical type back pain results from inflammation caused by irritation or injury to the disc, the facet joints, the ligaments, or the muscles of the back. Disc degeneration is the common cause of mechanical pain. A typical muscle strain or lumbar strain can also produce mechanical symptoms. Mechanical type low back pain usually starts from near the lower spine. Mechanical type pain may refer to the buttock & thigh areas. It may also referred to the below knee (Maniadakis et al., 2000). Causes of mechanical LBP are forceful flexion, forceful extension, flexion with torsion, compression from excessive axial loading, fall from top on the buttocks, lifting, bad posture, abrupt unbalanced movements, disc rupture. Most episode of back pain is related to mechanical regional abnormalities. This accounts for 80% of LBP. The muscle strain or sprain due to sudden unaccustomed activities & improper postures (Ebnezer, 2003). Visceral pathology sometimes may provide pain to the lower lumbar areas & tuberculosis, spondylitis also cause of LBP. The nerves that leave the lower lumbar spine join to form the sciatic nerve. This nerve provides sensation & controls the muscles of the lower legs (Ostgaard, 1991). Sacroilitis may spread pain around the lower back and

gluteal region (Maniadakis & Gray, 2000). The sign & symptoms of LBP includes Pain, numbness, tingling, burning, cramping, stiffness, decreased range of motion, deformity, decreased functional strength and loss of muscle function (Office ergonomics, 2012).

The patient history is perhaps the most useful tool in differentiating the cause of back pain. Patients should be asked to describe the location, nature, and duration of their pain. The physician can ask patients to draw the location and radiation of their pain on an anatomic diagram for the medical record (Colliton, 1996). Pain is most often measured on a horizontal visual analogue scale from 1 to 100 with anchors at 'no pain' and worst pain imaginable (Sabino et al., 2008). Assessments of LBP include the visual analogue scale and body charts or pain diagrams but they may be inadequate to distinguish the lumbar pain. The neurological examination usually is negative dural tension signs including the straight leg raise. Pain on palpation of paraspinal muscles, hypo mobility and weakness in the back signifies muscle insufficiency in the lumbar spine. There could also be decrease range of motion of lumbar spine, with pain reproduced on lumbar flexion (Cart, 2010). Typically people are treated symptomatically without exact determination of the underlying cause. Only in cases with worrisome signs is diagnostic imaging needed (Chou, 2011). X-rays, CT or MRI scans are not required in lower back pain except in the cases where red flags are present. If the pain is of a long duration X-rays may increase patient satisfaction. However routine imaging may be harmful to a person's health and more imaging is associated with higher rates of surgery but no resultant benefit (Cart, 2010). Red flags are Recent significant trauma, Milder trauma if age is greater than 50 years, Unexplained weight loss, Unexplained fever, Immune suppression, Previous or current cancer, Intravenous drug use, Osteoporosis, Chronic corticosteroid use, age greater than 70 years, focal neurological deficit, duration greater than 6 weeks (Chou, 2011). Low back pain (LBP) is one of the most common reasons for patients to seek primary care (Wadell et al., 2005). One of the most common treatments for LBP is physiotherapy. Physical therapist assesses an individual's physical ability to do a specific job or activity and aids in developing a safe return to work program or reduce symptoms (Lee et al., 2012).

All exercises should be performed slowly and comfortably to avoid injury. When performing strengthening and flexibility exercises, remember to breathe naturally and do not hold your breath; exhale during exertion and inhale during relaxation (Healthy Back Exercises: Strengthen and Stretch, 2011). Physiotherapy seems to enhance personal healing factors such as positive expectations of trust and confidence in the individual's ability to manage problems, which promote patient recovery. A program of strengthening, stretching, and aerobic exercises will improve 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 (Healthy Back Exercises: Strengthen and Stretch, 2011). For acute cases that are not debilitating, low back pain may be best treated with conservative self-care (Chou et al., 2007) including: application of heat or cold and continued activity within the limits of the pain, Firm mattresses have demonstrated less effectiveness than medium-firm mattresses (Atlas, 2010). Engaging in physical activity within the limits of pain aids recovery. Prolonged bed rest (more than 2 days) is considered counterproductive (Koes et al., 2006). Even with cases of severe pain, some activity is preferred to prolonged sitting or lying down excluding movements that would further strain the back. Structured exercise in acute low back pain has demonstrated neither improvement nor harm (Choi et al., 2010). 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 (Wadell et al., 2005). Adequate core strength that comes from abdominal and back muscles helps stabilize the spine, allows proper spinal movement, and makes it easier to maintain correct posture.

Strong hip and leg muscles are important to perform proper lifting techniques and body mechanics (Healthy Back Exercises: Strengthen and Stretch, 2011). Tulder (2003) said these are specific exercises to strengthen the abdominal muscles and low back muscles (erector spinae) to provide the aforementioned 'belt of muscle' around the spine. These exercises typically include: specific abdominal strengthening such as sit ups, crunches, abdominal machines, & leg rises. Flexibility is the ability to move arms and legs through their full range of motion. Stretching will help improve your flexibility (Lee et al., 2012). Croft et al. (1998) said that adequate flexibility of tissues around the spine and pelvis allows full, normal spinal movement, prevents abnormal

force on the joints and decreases the possibility of injury. Stretching also prepares muscles for activity; stretching should be done both before and after each vigorous workout to prevent muscle strain and soreness and to help avoid injuries. When performing flexibility exercises, stretch as far as you can and hold the stretch for 10 seconds and then ease back. Each stretching exercise should be performed slowly in both directions, with no sudden jerking or bouncing. Bouncing is more likely to injure or strain a muscle or joint (Healthy Back Exercises: Strengthen and Stretch, 2011). Dynamic stabilizing exercises involve the use of a variety of exercises & many include use of exercise balls, balancing machines or specific stabilizing exercises. The point of dynamic stabilization exercises is to strengthen the secondary muscles of the spine and help support the spine through various ranges of motion (Leeuw et al., 2007). A convincing relation exists between low back pain and decreased muscular endurance. Occupational postural disorders, where prolonged maintenance of a particular posture occurs, were a causal factor to low back pain (Lee et al., 2012).

Patients with low back pain have decreased levels of muscular endurance in the lumbar extensors. Abdominal muscular endurance in patients with low back pain is less than those in the normal health population. The application of endurance exercises that incorporate the back extensors as well as the abdominal muscles (Kravitz at al., 2011). Along with specific back exercises, aerobic exercise that increases the heart rate for a sustained period is very beneficial for helping back problems (Wadell at al., 2005). Aerobic exercise increases the flow of blood and nutrients to back structures which supports healing, and can decrease the stiffness in the back and joints that lead to back pain. It is easier to control weight or lose weight, decreasing the stress placed on the spine structures and joints. An increased production of endorphins after 30 or 40 minutes of exercise can combat pain. These bio-chemicals are the body's natural painkiller (Ostgaard et al., 1997). Spinal manipulation is not known if chiropractic care improves clinical outcomes in those with lower back pain more or less than other possible treatments. Spinal manipulation was no more or less effective than other commonly used therapies such as pain medication, physical therapy, exercises, back school or the care given by a general practitioner which was supported by a 2006 and 2008 review (Murphy et al., 2006). A 2010 systematic review found that most studies suggest spinal manipulation achieves equal or superior improvement in pain and function when compared with other

commonly used interventions for short, intermediate, and long-term follow-up. Postural education and ergonomic recommendations for minimizing the risks of back injuries focus on improving working posture and equipment design. These include: Change Posture - Alternate between sitting and standing to reduce postural fatigue and maximize postural variety, which helps to reduce static muscle fatigue & LBP (Ergonomics Risk Factors, 2007). Use Support - When sitting or standing, don't lean forwards or stoop in an unsupported posture for prolonged periods. If you are standing for prolonged periods try to find something to help you lean against. LBP in daily life determines the treatment outcome in terms of perceived quality of life and limitation of activity and also that each patient must be considered individually to achieve optimal care (Leeuw et al, 2007).

Safe reaching - Avoid having to reach awkwardly to equipment and work close to the objects (Ergonomics Risk Factors, 2007). Maintain Neutral Postures- The optimal design of work provides tasks that can be performed while maintaining a neutral range of postures (Leeuw et al., 2007). A neutral range of postures is not just one posture or position of a joint, but includes a range of postures where the muscles are at or near their resting length, and the joint is naturally aligned. Neutral ranges of postures are usually the most comfortable positions for our joints and can reduce the risk of injury (Ergonomics Risk Factors, 2007). Most people with acute lower back pain recover completely over a few weeks regardless of treatments. 60% of people recover after seven weeks, regardless of the treatments they receive (Croft et al., 1998). Consistent with these statistics, a recent study found that almost 30% of patients did not recover from the presenting episode of low back pain within a year. For those patients whose low back pain continues on to chronicity, it is rarely self limiting, as fewer than 10% of those patients whose low back pain becomes chronic report no pain five years later (Hestbaek et al., 2003).

3.1 Study design

Quantitative research model in the form of prospective type survey design was selected for this study. Quantitative research method was use because in this way a large number of participants were found. Survey is usually cheaper and quicker than experimental design and was also confounding variable can be controlled during data collection.

3.2 Study site

This study was conducted at Sasongasa, Kandirpar, police line traffic, Rajgonj, Tomsom bridge traffic station.

3.3 Study population

In this study population were traffic police within the Comilla city.

3.4 Sample size

Sample size for this study was calculated by the following equation-

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

Here,

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

P= 0.76 (Here P=Prevalence and P=76%)

q= 1-P

$$=1-0.76$$

$$=0.24$$

d= 0.05

So the investigator aim was to focus his study by 280 samples following the calculation above initially. As this research is in course curriculum, there are varieties of limitation e.g. Time length. There is lot of traffic police, from this population 40 samples were selected for the study. 40 subjects were selected for the study according to the inclusion and exclusion criteria, because it is not possible to study the total population within the time.

3.5 Sampling procedure

Sample was taken by using convenience sampling method due to time limitation and as it is the one of the easiest, cheapest and quicker method of sample selection.

3.6 Inclusion criteria

- Only male was selected.
- Age group is form from 18 years to 57 years.

3.7 Exclusion criteria

- Subject who have kidney problem and accident was excluded because these are responsible for LBP.
- Mentally retarded person.

3.8 Method of data collection

In this study data was collected by questionnaire form set on a paper. Questionnaire form was including both open and close ended questions. Following that before the data collection informed consent was taken from the participant. Firstly, identity of author and the research project as well its purpose were delivered verbally among them. Then individual subject was selected to find out if they were interested in participating. For data collection, the Bengali type of questionnaire was delivered. On the other hand the Bengali version about disease condition might be helpful. After that a date was fixed to collect the questionnaire from the recipients. The question will ask face to face interview.

3.9 Questionnaire

Data was collected by using a questionnaire on paper and the questions types were both closed and open ended questions. These questions were used to collect nominal and ordinal data for research findings and were setup sequentially. There were questions relating to low back pain among the traffic police. A piloting study showed that traffic police were work in a traffic in various time length as for they work in a traffic more than 12 hours. The age range varies from adult to older age. Some of the traffic police were suffering from low back pain. They were work in their traffic with

poor postural arrangements. So the questionnaire was developed based on the piloting study.

3.10 Materials & tools

The materials and tools for this study were consent form, questionnaire, pencil, pen, pages, computer and Statistical Package for the Social Sciences (SPSS) software-16 version to analyze data.

3.11 Data analysis

Data was analyzed by SPSS software program.

3.12 Ethical consideration

A research proposal was submitted to the ethical committee of BHPI to get approval & after approved this study was conducted. The participant was ensuring that their comments would not affect their occupational role. When received an approval letter from the ethical committee then data collection was started. The Bangladesh Medical Research Council & World Health Organization (WHO) guidelines were followed.

3.13 Inform consent

For this study a consent form was given and the purpose of the research and consent forms was explained to the subject verbally. Participants were fully voluntary and they have the right to withdraw at any time. Participants were ensured and their confidentiality was 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 of physiotherapy population may be benefited from the study in future. They would not be embarrassed by the study.

3.14 Rigor

During the data collection and data analysis it was always tried not to influence the process by own perspectives, values and biases. No leading questions were asked and judgments were avoided. When conducting the study the researcher was taken help from the supervisor when needed.

3.15 Limitations

Though the expected sample size was 100 for this study but due to resource constrain & time limitation researcher could manage just 40 samples which is very small to generalize the result for the wider population of the traffic police. There are no literatures about LBP among the traffic police in the perspective of Bangladesh so it is difficult to compare the study with the other research. The researcher was able to collect data from kandirpar traffic, police line traffic, sasongasa traffic for a short period of time which will affect the result of the study to generalize for wider population. The questionnaire was developed only through searching sufficient literature but considering the context of the demography of the population a pilot study would substantial before developing questionnaire.

4.1 Socio-demographic information

The study was conducted on 40 participants of overweight and normal person. Out of the participant the mean age of the participants was 2.50 ± 0.751 (SD) years. The range is 15 with minimum age 38 years and maximum >52 years. Among the participants the higher numbers of the participants were at the 45 years respectively and the numbers were 6 (15%). The number of ≤ 47 years were 18 (45%) and ≥ 47 were 22 (55%). Body type (BMI) of the participants 65% (n=26) were normal body type, 35% (n=14) were overweight. Residential area of participant where 15% (n=6) were from urban and 85% (n=34) were from rural area. Education status of the participants 90% (n=36) were completed primary education, 7.5% (n=3) were completed S.S.C education, 2.5% (n=1) were completed graduate education.

Age(years) Mean age = 2.50 ± 0.751(SD)	Living area
38-42=10% (n=4) 43-47= 35% (n=14) 48-52=50% (n=20) >52=5% (n=2)	Urban= 15% (n=6) Rural= 85% (n=34)
BMI	Education
Normal= 65% (n=26) Over weight= 35% (n=14)	Primary= 90% (n=36) S.S.C= 7.5% (n=3) Hons= 2.5% (n=1)

Table -1: Socio-demographic information of the participants

4.2 Prevalence of LBP

Among all of the 40 participants 80% (n=32) participants had been suffered from LBP and 20% (n=8) participants had not been suffered from LBP.

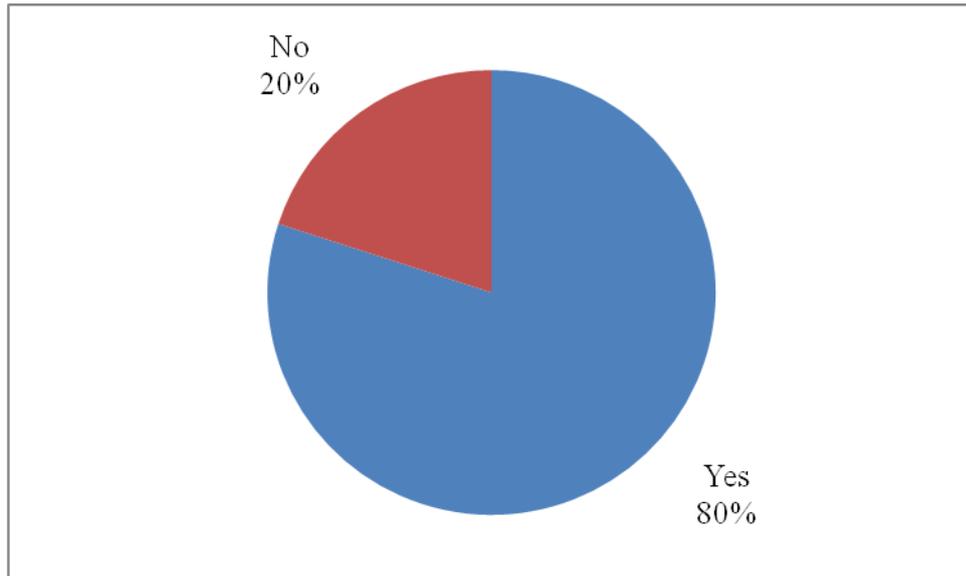


Figure-1: Prevalence of LBP

4.3 Age group of the participants

Out of the 40 participants 32 were affected and age range 38-42years were 14% (n=4), 43-47years were 34% (n=11), 48-52years were 50% (n=16), and >52 years were 3% (n=1).

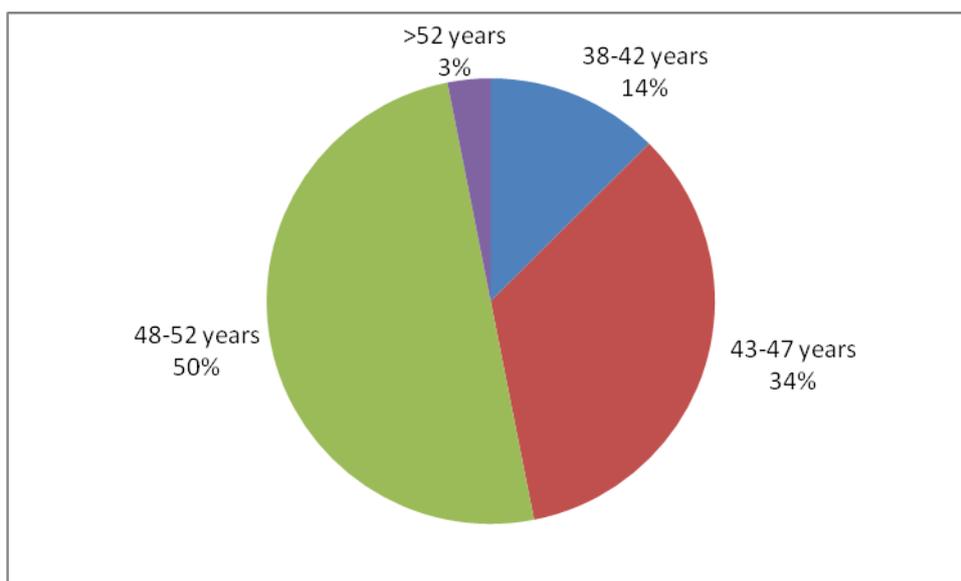


Figure- 2: Age percentage of the participants

4.4 Educational level

Affected 32 participants out of 40 participants, 88% (n=28) were primary completed, 9% (n=3) were S.S.C completed and 3% (n=1) were hons completed.

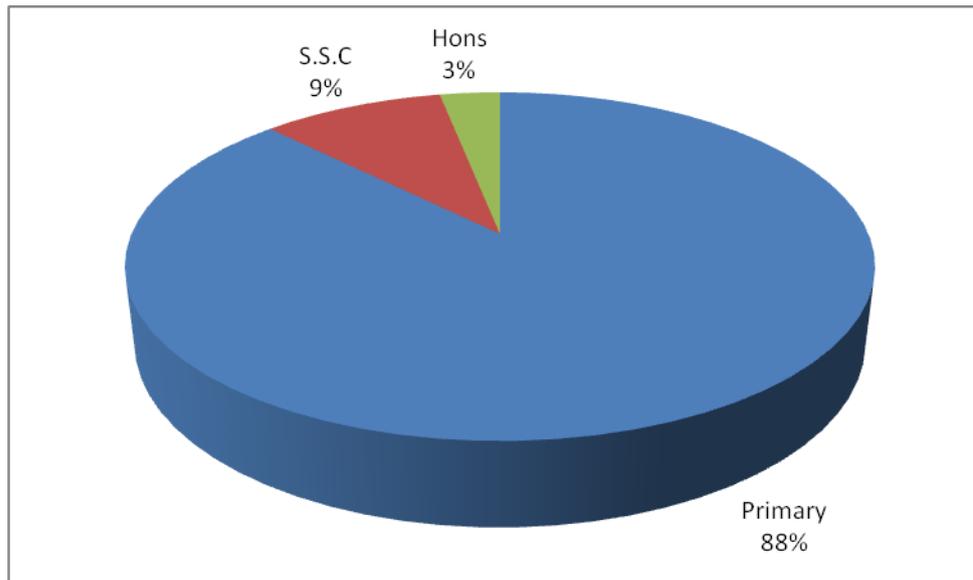


Figure- 3: Education level of the participants

4.4 Pattern of sign & symptoms

Among the affected 32 participants pattern of sign and symptoms- 72% (n=23) gradually and 28% (n=9) were sudden attack.

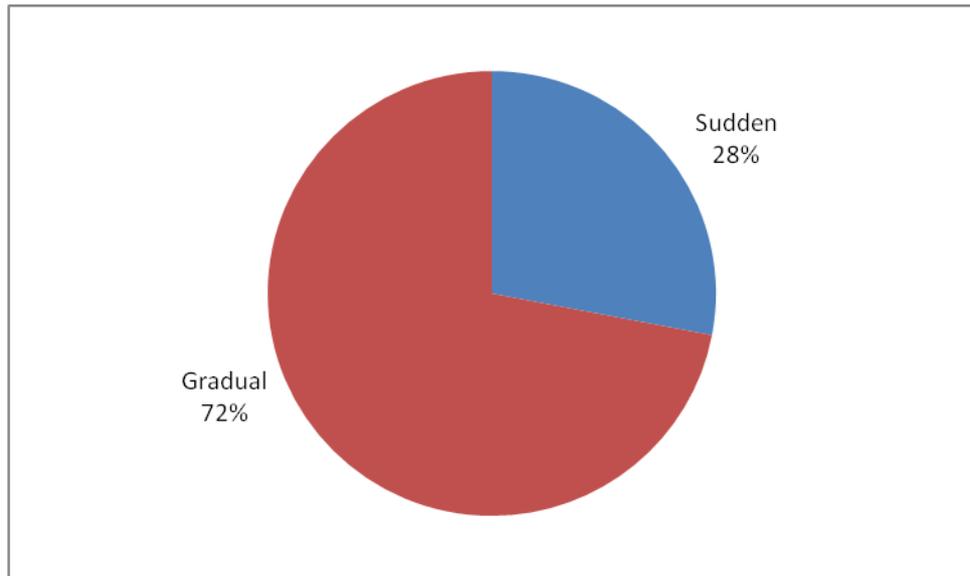


Figure- 4: Pattern of sign symptoms

4.5 Severity of pain

In affected 32 participants out of 40 participants 41% (n=13) were mildly attack, 56% (n=18) were moderate attack and 3% (n=1) were severely attack.

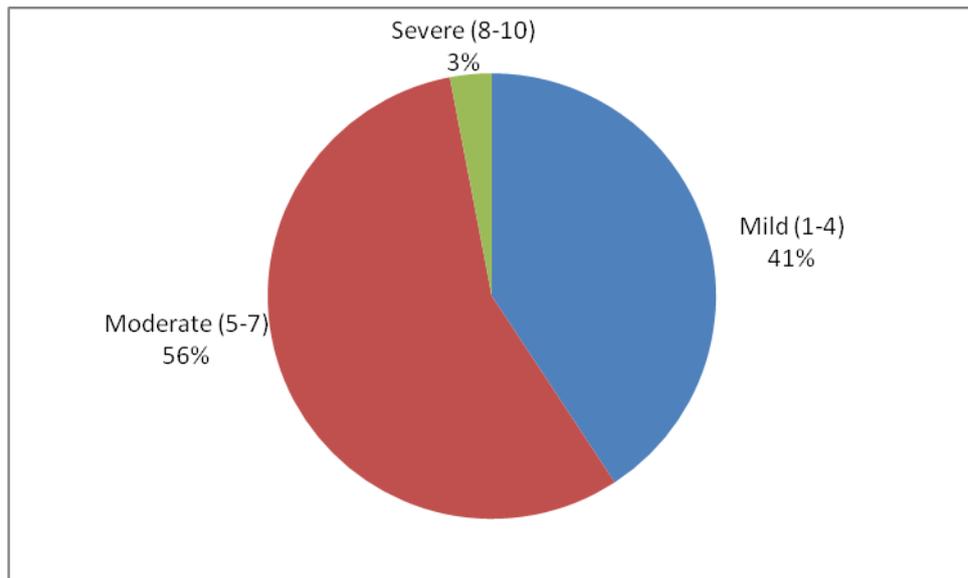


Figure- 5: Severity of pain

4.6 Risk indicator for the LBP

Among the total participants 32 were affected. Some risk indicators were responsible for this low back pain. Risk indicators were working status, working posture, body type (BMI), cigarette smoking, diabetes, working period (year). In working duration 81% (n=26) were working 12 hours, 19% (n=6) were working 14 hours. 78% (n=25) were working in both standing & walking posture, 22% (n=7) were working in standing posture. In BMI calculation 69% (n=22) were normal body type and 31% (n=10) were overweight. 50% (n=16) were cigarette smoker and 50% (n=16) were non smoker. 9% (n=3) had diabetes and 91% (n=29) had no diabetes. In working period (15-18) years were working 28% (n=9), 19-22 years were 34% (n=11), (23-24) years were 16% (n=5) and > 24 years were working 22% (n=7).

Working status/ duration	Cigarette smoking
12 hour = 81% (n=26) 14 hour = 19% (n=6)	Yes = 50% (n=16) No = 50% (n=16)
Working posture	Diabetes
Standing & walking time = 78% (n=25) Standing time = 22% (n=7)	Yes = 9% (n=3) No = 91% (n=29)
Body type (BMI)	Working period (year)
Normal = 69% (n=22) Over weight = 31% (n=10)	15-18 years = 28% (n=9) 19-22 years = 34% (n=11) 23-24 years = 16% (n=5) >24 years = 22% (n=7)

Table- 2: Risk indicator of the participants

4.7 Physiotherapy treatment taken or not

In affected 32 participants only 3% (n=1) were taken physiotherapy and 97% (n=31) were not taken physiotherapy for their problem.

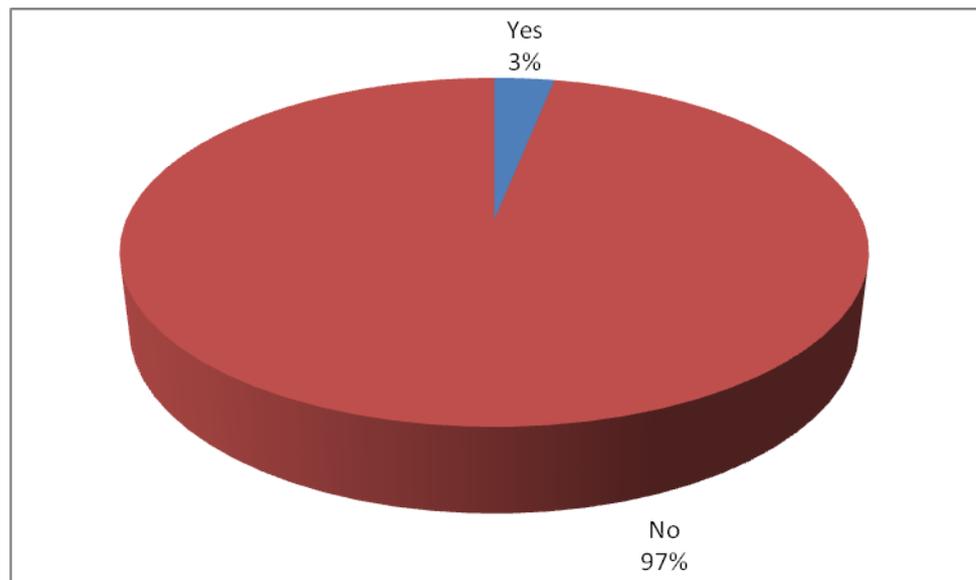


Figure-6: Percentage that taken physiotherapy or not

Low back pain has been found to be a major health problem for traffic police. Anderson et al. (2011) showed that participants age ranged from 31-50 years with a response rate of 71%. Studies routinely report 60-85% of the general adult population to have a lifetime prevalence of LBP. In comparison, the present study found a high incidence of LBP in the general duty police officers, with 86% of the officers reporting having LBP. Duty related factor have contributed to LBP is 75.4% (Brown at al., 1998). In this study most frequent age range of participants was 48-52 years (50%) and prevalence of low back pain in between 38->52 years were 80%. It was observed from this study that the prevalence of low back pain was higher in age range of 48-52 years. In a research that was published by (Tissot et al., 2009) a significantly larger proportion usually stand at work, the prevalence of LBP was significantly higher among those who work in a standing posture (27.8%) to compared those who usually work sitting (21.7%). In this study majority of them are lived in rural area (85%) and (15%) were lived in urban area. Study explored that among the all participants (90%) had primarily, (7.5%) had S.S.C and (2.5%) had Hons pass. The findings from this study showed that among the 40 participants 32 participants were suffering from LBP & among them 26 (81%) were work 12 hours, 6 (19%) were work 14 hours, so finally it was estimated that highest prevalence among those who worked for long time 12-14 hours. The study result shows that low back pain is prevalent among the traffic police. This is concordance with a research by Ghaffari et al. who reported the worldwide estimates of lifetime prevalence of LBP vary from 50% to 84% (Ghaffari et al., 2006). In this study the prevalence was 80%. In Britain, the 1 year prevalence was 49% and in the Nordic countries the 1 month prevalence of LBP was 35% (Torill et al, 2004). Posture affects low back pain among the traffic police who worked by standing 22% and both standing & walking time 78%. The lifetime prevalence of low back pain 66% for general duty traffic officers (Gyi at al., 1998).

In this study risk factor found on participants that standing and both standing & walking ,diabetes,working hours (12-14 hours) & they were controlling the traffic by repetitive twisting, rotating movements of the body. Physical work demands that have

been clearly associated with LBP in the scientific literature include heavy physical work, frequent twisting and whole body vibration (Tissot et al., 2009). Outcome of this study showed that among the 40 participants affected 32 participants who were suffering from LBP 28% had sudden onset of pain & 72% had gradual onset of pain. Croft et al. (1998) state that the mechanical causes of back pain (muscle strain, herniated disc) have an acute sudden onset & the onset of pain is frequently associated with a specific task done in a mechanically disadvantaged position; muscle may be torn, fascia stretched & facet joint irritated.

Data from the RCMP suggest that 51% of members regard back pain as a major or moderate health problem within the force (Laslett et al., 1991). A 1996 LBP survey revealed that 56% of RCMP members surveyed suffer from acute, chronic or reoccurring LBP (Laslett et al., 1991). The study concludes that traffic police who were suffering from LBP 41% had mild pain, 56% had moderate pain & 3% had severe pain. Low back pain is the most common causes for chronic or temporary impairment in U.S.A adults under the age of 65, & the most common cause of activity limitations in persons under the age of 45 & it is established by (Sabino & Grauer , 2008). In this study traffic police who were suffering from LBP 3% were received physiotherapy treatment & 97% were not received physiotherapy treatment. This study revealed that traffic police in the traffic have a relationship with low back pain and their posture & working hours. This is probably because many traffic police need different body motion to control the traffic. This study shows that most of the traffic police who were suffering from low back pain were working in a poor posture, worked for long time duration, did not get rest when felt pain. Correct poor posture, dividation of the working hours, need to take rest if feel pain or discomfort and modify the work places within the traffic area will bring to healthy life and will improve performance level of the traffic police.

CHAPTER VI : CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Low back pain continues to be an important clinical, social, economic, and public health problem, affecting the population of the entire world. Police officers have a high incidence of lower back pain, while its frequency and intensity may be related to the physical requirements of the job. Prevention programs should be considered. Possible risk factors include age, working period, working posture, body type, cigarette smoking. 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 traffic police. 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 traffic area of Bangladesh. Conduct research on other musculoskeletal problems among the traffic police where physiotherapist can work. So it is very important to conduct such type research in this area.

The result of this study showed that the prevalence of low back pain is 80% among the traffic police at Comilla city traffic area, Bangladesh. The author recommend that working hour should be reduced or need adequate rest within the working hours, avoid twisting & excessive rotational movements during working time, postural correction such as maintain erect posture who are working long time in standing posture because those are the main causes of low back pain in case of traffic police. Traffic police should be educated on ergonomics, posture, working hour breaks in between work and relaxation as this will ultimately improve healthy life & performance in the duty.

Advising patients to do exercise, stop smoking, avoid excessive weight, and maintain physical status for the purpose of maintaining good health, is good medical practice, which may or may not help alleviate low back pain directly, but certainly may influence it indirectly.

6.2 Recommendations

The aim of the study was to find out the prevalence of LBP among the traffic police. Though the study had some limitations but investigator identified some further step that might be taken for the better accomplishment of further research. The main recommendations would be as follow:

- The random sampling technique rather than the convenient would be chosen in further in order to enabling the power of generalization the results.
- The duration of the study was short, so in future wider time would be taken for conducting the study.
- Investigator use only 40 participants as the sample of this study, in future the sample size would be more.
- In this study, the investigator took the sample from only Comilla traffic area, it was small area to take available sample. So for further study investigator strongly recommended to include the all traffic police all over the Bangladesh to ensure the generalizability of this study.

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Appendix

CONSENT FORM (English)

(Please read out to the participant)

Assalamualaikum, my name is Mohammad Nazmul Hasan I am conducting this study for partial fulfillment of Bachelor of Science in Physiotherapy degree, titled, “prevalence of low back pain among the traffic police” from Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some information. You will answer some questions which are mentioned in this form. This will take approximately 10-15 minutes. The objectives of this study is to establish the prevalence of low back pain among the traffic police, the Socio-demographic information, the working area which causes more work related low back pain, & identify the necessity of physiotherapy treatment among the traffic police. Your participation will be voluntary. You have the right to withdraw consent and discontinue participation at any time. You might not be benefited, but in future may benefit and would not harmful. This project is only for the development of the profession.

If you have any query about the study or your right as a participant, you may contact with, me or Md. Shofiqul Islam, Assistant Professor, department of physiotherapy, BHPI, CRP, Savar, Dhaka-1343.

I (participant) have read and understand the contents of the form. I agree to participate in the research without any force.

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 Interviewer _____

মৌখিক অনুমতি পত্র

জনাব,

আসসালামুয়ালাইকুম, আমি মোহাম্মাদ নাজমুল হাছান। আমি এই গবেষণাটি বাংলাদেশ হেলথ প্রফেশনাল ইনস্টিটিউট (বি এইচ পি আই) এ করছি যা আমার অধিভুক্ত। যার শিরোনাম হল- “ট্রাফিক পুলিশের কোমর ব্যাথার হার নিরূপন”। আমি এ ক্ষেত্রে কিছু ব্যক্তিগত এবং আনুসঙ্গিক প্রশ্ন করে কোমর ব্যাথার উৎস ও কারণ সম্পর্কে জানতে চাচ্ছি। যা আনুমানিক ১০-১৫ মিনিট সময় নিবে। আমার এই গবেষণার উদ্দেশ্য হল ট্রাফিক পুলিশের কোমর ব্যাথার হার নির্ণয়, সামাজিক জনসংখ্যা ভিত্তিক তথ্য, কাজের অবস্থান নির্ণয় যা কোমর ব্যাথার জন্য দায়ী, এবং ট্রাফিক পুলিশের জন্য ফিজিওথেরাপি চিকিৎসার প্রয়োজনীয়তা দেখা। আমি আপনাকে জানাচ্ছি যে, এটা আমার অধ্যয়নের অংশ এবং অন্য কোন উদ্দেশ্যে এটা ব্যবহৃত হবে না। তাই এই গবেষণায় অংশগ্রহণ আপনার বর্তমান এবং ভবিষ্যৎ চিকিৎসায় কোন প্রভাব ফেলবে না। আপনি যে সব 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 স্বেচ্ছাপ্রনোদিত এবং আপনি যে কোন সময় এই অধ্যয়ন থেকে কোন নেতিবাচক ফলাফল ছাড়াই নিজেকে প্রত্যাহার করতে পারবেন। এছাড়াও কোন প্রশ্ন অপছন্দ হলে উত্তর না দেয়ার এবং সাক্ষাৎকারের সময় কোন উত্তর না দিতে চাওয়ার অধিকার আপনার আছে।

এই গবেষণা সম্পর্কে কোন প্রশ্ন থাকলে বা কোন কিছু জানার থাকলে আপনি ,আমি অথবা মোঃ সফিকুল ইসলাম, ফিজিওথেরাপি বিভাগ, বি এইচ পি আই, সি আর পি, সাতার, ঢাকা-১৩৪৩ এই ঠিকানায় যোগাযোগ করবেন।

এটা শুরু করার আগে আপনার কোন প্রশ্ন আছে?

আমি আপনার অনুমতি নিয়ে এই সাক্ষাৎকার শুরু করতে যাচ্ছি?

হ্যাঁঃ

নাঃ

উত্তরদাতার স্বাক্ষরঃ.....

গবেষকের স্বাক্ষরঃ.....

Questionnaire

Code no: Date: Name:

Address:

1. Socio-demographic information:

a) Age (as at last birthday): _____

b) Male Gender

c) Living area:
A. Urban B. Rural

d) Educational level:
A. Primary B. Secondary C. H.S.C D. Hons & above

e) Work status (in hours):
A. 6 hours B. 12 hours C. 14 hours

f) Marital status
A. Married B. Unmarried

g) Height in inch

h) Weight (in kg)

i) Body type
A. Yes B. No

j) Cigarettes smoking
A. Yes B. No

k) Diabetes
A. Yes B. No

L) Stress in working period
A. Yes B. No

2. Have you ever feel pain on back?
A. Yes B. No

3. Working posture
A. Sitting B. Standing C. Both standing & walking

4. Standing period (hours)

5. Walking period (hours)

6. Year of service? (years)
A . 0-4 B. 5-9 C. 10-14 D. 15-19 E. Above 20

7. Frequently twisting movements on trunk and legs?
- A. Yes B. No
8. Work related lifting and carrying?
- A. Yes B. No
9. Back pain in joining force.
- A . Yes B. No C. Not applicable
10. Suffer from chronic or recurring low back problem?
- A. Yes B. No C. Not applicable
11. Sick leave taken for this pain?
- A. Yes B. No C. Not applicable
12. Has 1 or more children less than 10 years of old?
- A . Yes B. No
13. Limited participation in regular exercise?
- A . Yes B. No
14. Lack of exercise facilities at work?
- A . Yes B. No
15. Pattern of sign symptoms
- A. Sudden B. Gradual C. Not applicable
16. VAS scale (severity of pain)
- A. Mild (1-4) B. Moderate(4-7) C. Severe(7-10) D. Not applicable
17. When do you notice the symptoms most?
- A. During work B. After work C. During resting period D. Not applicable
18. Did you stay away from work due to pain/discomfort?
- A. Yes B. No C. Not applicable
19. Is the pain referred?
- A. To thigh B. Above knee C. Below knee D. No E. Not applicable
20. Have you ever taken physiotherapy management for this condition?
- A. Yes B. No C. Not applicable

“Thank you for your participation”

Permission letter



বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)
(The Academic Institute of CRP)

CRP-Chapain, Savar, Dhaka, Tel: 7745464-5, 7741404, Fax: 7745069
BHPI-Mirpur Campus, Plot-A/5, Block-A, Section-14, Mirpur, Dhaka-1206. Tel: 8020178,8053662-3, Fax: 8053661

তারিখঃ ১২.০৫.২০১৩

প্রতি
পুলিশ সুপার
কুমিল্লা।

বিষয় : রিসার্চ প্রজেক্ট (dissertation) এর জন্য আপনার প্রতিষ্ঠান সফর ও তথ্য সংগ্রহ প্রসঙ্গে।

জনাব,

আপনার সদয় অবগতির জন্য জানাচ্ছি যে, পঞ্চাশতন্ত্রস্তদের পুনর্বাসন কেন্দ্রে-সিআরপি'র শিক্ষা প্রতিষ্ঠান বাংলাদেশ হেল্থ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই) ঢাকা বিশ্ববিদ্যালয় অনুমোদিত বিএসসি ইন ফিজিওথেরাপী কোর্স পরিচালনা করে আসছে।

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

বিএইচপিআই'র ৪র্থ বর্ষ বিএসসি ইন ফিজিওথেরাপী কোর্সের ছাত্র মোহাম্মদ নাজমুল হাছান তার রিসার্চ সংক্রান্ত কাজের তথ্য সংগ্রহের জন্য আপনার সুবিধামত সময়ে আপনার প্রতিষ্ঠানে কর্মরত ট্রাফিক পুলিশের সাথে সাক্ষাৎ করতে আগ্রহী। তার রিসার্চ শিরোনাম "Prevelance of low back pain among the Traffic Police."

তাই তাকে আপনার প্রতিষ্ঠানে কর্মরত ট্রাফিক পুলিশের সাথে সাক্ষাৎ এবং প্রয়োজনীয় তথ্য প্রদান সহ সার্বিক সহযোগীতা প্রদানের জন্য অনুরোধ করছি।

ধন্যবাদান্তে

মোঃ ওয়ারদুল হক
সহযোগী অধ্যাপক ও কোর্স-কো অর্ডিনেটর
ফিজিওথেরাপী বিভাগ
বিএইচপিআই।



Seen
[Handwritten signature]