

**NECK PAIN AND RELATED FACTORS AMONG THE
DENTISTS IN DHAKA CITY**



*Faculty of Medicine
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By

MD ABDUR RAHMAN

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Student of Bachelor of Science in Physiotherapy



SAIC College of Medical Science and Technology

Department of Physiotherapy

SAIC Tower, M-1/6, Mirpur -14, Dhaka, Bangladesh

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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 acceptance of thesis entitled-

**NECK PAIN AND RELATED FACTORS AMONG THE DENTIST
IN DHAKA CITY**

Submitted by **MD ABDUR RAHMAN**, For the partial fulfilment of the requirements for the degree of Bachelor Science in Physiotherapy (B.Sc. in PT).

.....
Dr. Abul Kasem Mohammad Enamul Haque
Principal
SAIC College of Medical Science and Technology
SCMST, Mirpur-14, Dhaka

Supervisor

.....
Dr. Mohammad Sohrab Hossain, PhD
Professor of Physiotherapy, BHPI
Executive Director, CRP
CRP, Savar, Dhaka-1343

.....
Zahid Bin Sultan Nahid
Assistant Professor & Course Coordinator
Department of Physiotherapy
SCMST, Mirpur-14, Dhaka.

DECLARATION

This work has not previously been accepted in substance for any degree and isn't concurrently submitted in candidature for any degree. This dissertation is being submitted in partial fulfillment of the requirements for the degree of B.Sc. in Physiotherapy.

I confirm that if anything identified in my work that I have done plagiarism or any form of cheating that will directly awarded me fail and I am subject to disciplinary actions of authority. I confirm that the electronic copy is identical to the bound copy of the Thesis.

In case of dissemination the finding of this project for future publication, research supervisor will highly concern, it will be duly acknowledged as graduate thesis and consent will be taken from the physiotherapy department of *SAIC College of Medical Science and Technology (SCMST)*.

.....
Signature

.....
Date

MD. ABDUR RAHMAN

Roll: 1369

Reg. No: 10250

Session: 2017-2018

4th Professional B.Sc. in Physiotherapy

SAIC College of Medical Science and Technology
SAIC Tower, M-1/6, Mirpur -14, Dhaka, Bangladesh

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ACRONYMS

SCMST: SAIC College of Medical Science and Technology

MSD: Musculoskeletal Disorders

WMSDs: Work related Musculoskeletal Disorders

RULA: Rapid Upper Limb Diagnostic

BMI: Body Mass Index

NPRS: Numeric Pain Rating Scale

VAS: Visual Analog Scale

SD: Standard Deviation

SPSS: Statistical Package for Social Science

ERB: Ethical Review Board

BMRC: Bangladesh Medical Research Council

WHO: World Health Organization

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Abstract

Purpose: The purpose of the study was to explore neck pain and related factors among the dentists in Dhaka city.

Objectives: The objective of the present study was to determine the prevalence of neck pain and its related factors among the dentists in Dhaka city.

Methodology: The present study was a descriptive type of cross sectional one. The required data were collected from a conveniently selected 105 dentists practicing in Dhaka city by face to face formal interview using a pretested questionnaire. The collected data were analyzed with the help of SPSS software program.

Result: The mean age of the participants was 34.17 years and SD was 8.566. The study showed that 44.8% dentists belonged to the age group of 20 – 30 years. About gender of the participants, 68.6% were male and 31.4% were female. It was revealed that 54.3% participants were overweight. The study showed that 48.6% dentists had neck pain. About severity of neck pain, majority participants (60.8%) had mild type of neck pain and 35.3% participants had moderate type of pain. Regarding kind of pain, majority of the participants (51.0%) had sharping nature of pain and 43.1% participants had throbbing pain. It was found that 41.2% dentists took medication, 5.9% participants went for physiotherapy. Both medication and physiotherapy was used by 21.6% dentists. The study revealed that the association between neck pain and age, nutritional status, working experience was found to be statistically significant ($p < 0.05$).

Conclusion: The study revealed that long working causing musculoskeletal problems among the dentists. Over working should be avoided to prevent development of musculoskeletal disorders. Over weight is also a risk factor for heart disease and various musculoskeletal disorders. So they should avoid rich food and should do physical exercise regularly. The findings of the study recommended for early diagnosis and treatment of the neck pain of the concerned dentists.

Keywords: Neck pain, Dental Practitioners, WMSD.

The World Health Organization estimates that 1.71 billion individuals worldwide suffer from musculoskeletal disorders. In the area of dentistry, musculoskeletal disorders (MSD), particularly neck discomfort, are significant occupational health concerns. These issues have existed for a very long time and are still very prevalent. Seventy-two percent of dentists in a 1990 research reported having headaches, shoulders, or neck pain. In a different 2018 research of dentists in Western nations, 58.5% reported having neck discomfort, 56.4% had lower back pain, 43.1% reported shoulder pain, and 41.1% reported upper back pain (Kawtharani., et al 2023).

Musculoskeletal disorders are the common hazard of the dental personnel. The musculoskeletal disorders are characterized by the presence of discomfort, disability or persistent pain in the joints, muscles, tendons and other soft parts. They are caused or aggravated by repeated movements and prolonged awkward or forced body postures (Samat et al. 2011).

Musculoskeletal disorders (MSD) are commonly affects the human support systems such as muscles, tendons, nerves, blood vessels, bones and joints. MSD can occur from a single event or repeated trauma. MSD are one of the most important occupational health problems for dental professionals, particularly dentists (Hayes, Cockrell and Smith 2008).

The dental field is a physically and intellectually taxing one. The physical attributes include the capacity to operate for lengthy periods of time with proper posture, hearing, visual quality, manual dexterity, and good psychomotor abilities. If the dentist is unable to adapt to a specific work environment, they may get an accident or become disabled. Because of this, dentists are susceptible to occupational illnesses and accidents, such as allergies, systemic disorders, hearing loss, and musculoskeletal issues. Musculoskeletal disorders, as defined by the World Health Organization, are issues affecting the muscles, tendons, joints, intervertebral discs, peripheral nerves, and vascular system. Acute or sudden incidents are not the direct cause; rather, it develops gradually and regularly. It has been noted that MSD has become more common in normal job during the past few years (Ijaz., et al 2016).

Dentistry is a hard profession that requires a lot of focus and accuracy. The frequency of MSD among dental professionals is remains significant, despite advancements in dental technologies and equipment. Among the difficulties faced by dental professionals are its high frequency and the stress it creates, which can lead to absenteeism, decreased productivity, and in certain situations, early retirement. These repercussions lead to economic loss in the form of lost revenue, rehabilitation costs, or lost productivity. WMSDs are caused by prolonged unilateral severe strains on muscles, joints, and nerves, as well as high, unsupported arms, instrument vibration, and prolonged awkward static posture during dental treatments (Younis., et al 2022).

Any condition affecting one or more body parts that results in symptoms including pain, weakness, extreme exhaustion, burning, tingling, numbness, or paresthesia¹ is referred to as a musculoskeletal disorder (MSD). MSDs frequently develop from trauma that directly damages or inflames the circulatory, neurological, or musculoskeletal systems, or the supporting structures that go along with them. The two main causes of occupational MSDs are acute and chronic injuries. Single workplace events like slips, falls, collisions, wounds, or crushes can cause acute injuries. Chronic injuries, sometimes referred to as overuse injuries, are caused by repetitive motions that cause microtraumas. These microtraumas build up over time and eventually result in the symptoms listed above that are linked to MSDs (Astin., et al 2024).

Hundreds of millions of individuals worldwide suffer from musculoskeletal diseases (MSDs), which are among the leading causes of chronic pain and disability. This fact has been acknowledged by the United Nations and World Health Organization (WHO), which supported the Bone and Joint Decade 2000–2010. Repetitive motions and extended uncomfortable or forced body postures can induce or exacerbate this illness, which is characterized by the presence of discomfort, impairment, or persistent pain in the joints, muscles, tendons, and other soft parts. Among the most significant work-related issues that are now being reported are MSDs. Because of the risk factors associated with their employment, which can result in a variety of diseases like tendinitis, synovitis, tenosynovitis, and bursitis, dentists are among the workers who are more likely to develop this disorder (Sultana., et al 2019).

Musculoskeletal symptoms among dentists have been considered a significance of the workload of dental practice. Dentists' work includes some familiar risk factors for musculoskeletal symptoms in general and specifically for upper as well as lower back pain. A higher prevalence of musculoskeletal symptoms and back pain of upper back and lower back among dentists had shown 30 to 70 percent of musculoskeletal pain among dentists than other occupational groups. The following postures among dentists are considered as risk factors: Forward bent sitting posture, accompanied with bending and twisting, and the relative static work. Those postures are affecting the dentists work efficacy as well as their working performance in their working area, among the postures not only sitting and twisting postures has been affecting their health through back pain but also the amount of sitting and twisting postures in a seating positions has a great impact on musculoskeletal pain (Ratzon et al. 2000).

Dental professionals are susceptible to occupational health issues. These include incidences of percutaneous exposure; exposure to radiation, infectious diseases, dental materials, and noise; dermatitis; respiratory ailments; eye injuries; musculoskeletal disorders; psychological issues; and more. In 1997, Chowanadisai conducted a study on the occupational health issues of dentists in southern Thailand and discovered that the most prevalent issue was musculoskeletal (MS) discomfort. The dental practitioners were much more likely to experience MS complaints than office staff. According to various research, the neck, shoulders, and low back were the most often reported MS problem locations among dental staff. These investigations, however, were conducted in a wider environment as surveys. Few investigations were carried out in dentistry schools that offered both instruction and services (Dajpratham., et al 2010).

The prevalence of musculoskeletal disorders (MSDs) has increased during the past several decades worldwide. It is a prevalent cause of disability at work that have significant financial repercussions because of workers' compensation and medical costs. Damage to the human support system, which includes muscles, ligaments, tendons, nerves, blood vessels, bones, and joints, is known as an MSD. These conditions can result from a single incident or from repeated stress. Neck, back, hand, and finger discomfort and dysfunction are characteristics of these illnesses. Significant

working issues impact occupational health and can result in musculoskeletal symptoms, including pain, weakness, paresthesia, muscle ischemia, imbalances, necrosis, decreased joint mobility, spinal disk herniation or degeneration, and other related symptoms (Abdolalizadeh and Jahanimoghadam., et al 2015).

Work-related musculoskeletal diseases (WMSDs) are a clear issue associated with occupation, and musculoskeletal symptoms are widespread in society. Both sedentary and physically demanding jobs are associated with the symptoms. The definition of sedentary labor includes sitting, walking, and standing sometimes, as well as lifting no more than ten pounds. Physical ergonomic factors associated with WMSDs include extended periods of sitting, poor posture, and repetitive actions. It is possible to evaluate ergonomic risk factors by observing the postures. A rapid diagnostic method for neck, trunk, and upper limb posture, as well as muscle function and external loads, is the Rapid Upper Limbs diagnostic (RULA) (Chaiklieng and Suggaravetsiri., 2015).

In Saudi Arabia, the field of dentistry is growing. In 2015, there were 5946 Saudi dentists, or 32% of all dentists, according to the Saudi Commission for Health Specialties. operating in Saudi Arabia. In dentistry, musculoskeletal (MSK) pain is a significant occupational health issue. There are a number of physiological and 6ergonomic aspects of dentistry that contribute to the greater rates of MSK discomfort among practitioners. Awkward postures and motions, frequent and extended use of vibrating equipment, and the amount of time spent with each patient are all issues associated to the workplace. The dentist's body mass index (BMI), long hours, the quantity of walk-in patients, and the number of daily booked patients are additional considerations (Al-Mohrej., et al 2016).

Lower back and neck pain is a bothersome ailment that can strike anyone at any age and frequently goes untreated as it progresses from an acute to a chronic health issue. It affects ligaments, muscles, and bones. joints, and with a complex genesis and a significant neurological component, it is one of the most frequent causes of medical visits (Samoladas., et al 2018).

Dentists appear to be at risk for developing musculoskeletal diseases due to their physical workload. It is common to detect discomfort and dysfunction, neuromuscular

inhibition, and muscular imbalance in oral health care practitioners. The specific risk factors are probably going to be repetitive awkward, distorted, or insufficient postures, forceful hand motions, subpar tools or workspace layouts, and improper work schedules. However, MSDs are an unavoidable aspect of working as an oral health care provider. The high prevalence of musculoskeletal diseases is likely due to the unique demands of dentistry, which include precise hand movements, unsupported, elevated arms, and high vision and precision requirements (Abduljabbar., 2008).

The dentists' restricted work area, restricted range of motion, and narrow field of vision related to the oral cavity put them at greater risk for neck and lower backache issues. In order to obtain enough access and visibility within the mouth cavity, these working constraints often force a clinician to adopt uncomfortable body positions. Additionally, dental procedures typically take a lot of time and demand a lot more focus while working. Long periods of inactivity are frequently unavoidable for dentists. Even in the best sitting positions, the vertebral joints move very little and more than half of the body's muscles are statically contracted (Chandra., et al 2015).

Many occupations, especially those in the medical field like oral health, have a high prevalence of occupational hazards. Percutaneous wounds, exposure to harmful chemicals, hearing loss, and musculoskeletal conditions associated with the workplace (WMSD) are among the most prevalent work-related risks for dentists. Musculoskeletal pain is defined as pain in the muscles, bones, ligaments, tendons, and nerves. Work-related musculoskeletal disorders are defined as injuries to the musculoskeletal system, including nerves, tendons, muscles, bone, joints, ligaments, spinal disc, and cartilage, brought on by repeated trauma. MSD is frequently accompanied by pain, stiffness, redness, edema, and weakness (Younis., et al 2022).

The dental field requires a great level of precision and focus, making it a hard job. Good visual acuity, hearing, depth perception, psychomotor abilities, manual dexterity, and the capacity to sustain work postures for extended periods of time are all prerequisites for dentists. The performance and productivity of the practitioner are impacted when any of these skills are diminished. In contemporary dentistry, a number of occupational health issues still exist despite major advancements. Dental professionals are particularly concerned about musculoskeletal issues. Discomfort, incapacity, or chronic

pain in the joints, muscles, tendons, and other soft areas are hallmarks of musculoskeletal disorders, which are brought on by or made worse by repetitive motions and extended uncomfortable or forced body postures. This condition is prone to developing in dentists. Dentists appear to be at risk for developing musculoskeletal disorders due to their physical workload (Sultana., et al 2017).

In China, the number of dentists is increasing at a rapid pace; from 36,378 in 2000 to over 120 000 in 2013. Nonetheless, occupational health risks in China's dental field have received little attention. Although reports of work-related musculoskeletal diseases (WMSDs) in the dental field have been common in many nations, little is known about the condition among Chinese dentists. According to a research done in New Zealand, the prevalence of WSMD among dentists was 57% in the neck, 54% in the lower back, and 52% in the shoulder after a year (Feng., et al 2014).

1.2 Justification of this study:

A good numbers of research on the musculoskeletal issues that affect dentists, but there had never been any research on the causes of neck discomfort among dentists in Bangladesh. One of the occupations that demands a lot of concentration while treating patients is dentistry. The dentist may be at risk of acquiring neck-related musculoskeletal problems and experiencing pain when working on the patient's teeth due to a number of predisposing variables, such as neck flexion, arm abduction, and rigid postural stance. However, people can avoid neck ache by maintaining specific good posture. According to a recent study, 15% of all soft tissue issues experienced in general practice are neck pain-related, and this condition is frequently referred for physiotherapy treatment.

It is anticipated that this study will identify characteristics that increase the likelihood of neck pain among dental professionals. The study hopes to share its findings with others so that they can take the appropriate action to lessen neck pain, as well as to cut down on the costs and injuries brought on by the ergonomic risk of prolonged employment. There is very little information available to dental practitioners about the risk factors for developing neck pain. The present study will identify to the prevalence and associated risk factors for developing neck pain among dental practitioners, and it will aid in the investigation of this issue. This study also intends to disseminate the study's findings in order to take the necessary steps to reduce risk factors and neck pain and injuries associated with the ergonomic hazard. This study will assist physiotherapy professionals in treating such patients and raising patient awareness about the negative side effects of neck pain. This study will aid in determining the associated risk factors for developing neck pain among dental practitioners in Bangladesh in order to observe, identify, and percentage of their problem.

1.3 Research Question:

1. What is the prevalence of Neck pain among the dentists in Dhaka city?
2. What are the factors related to neck pain among the dentist?

1.4 Objective of the study:

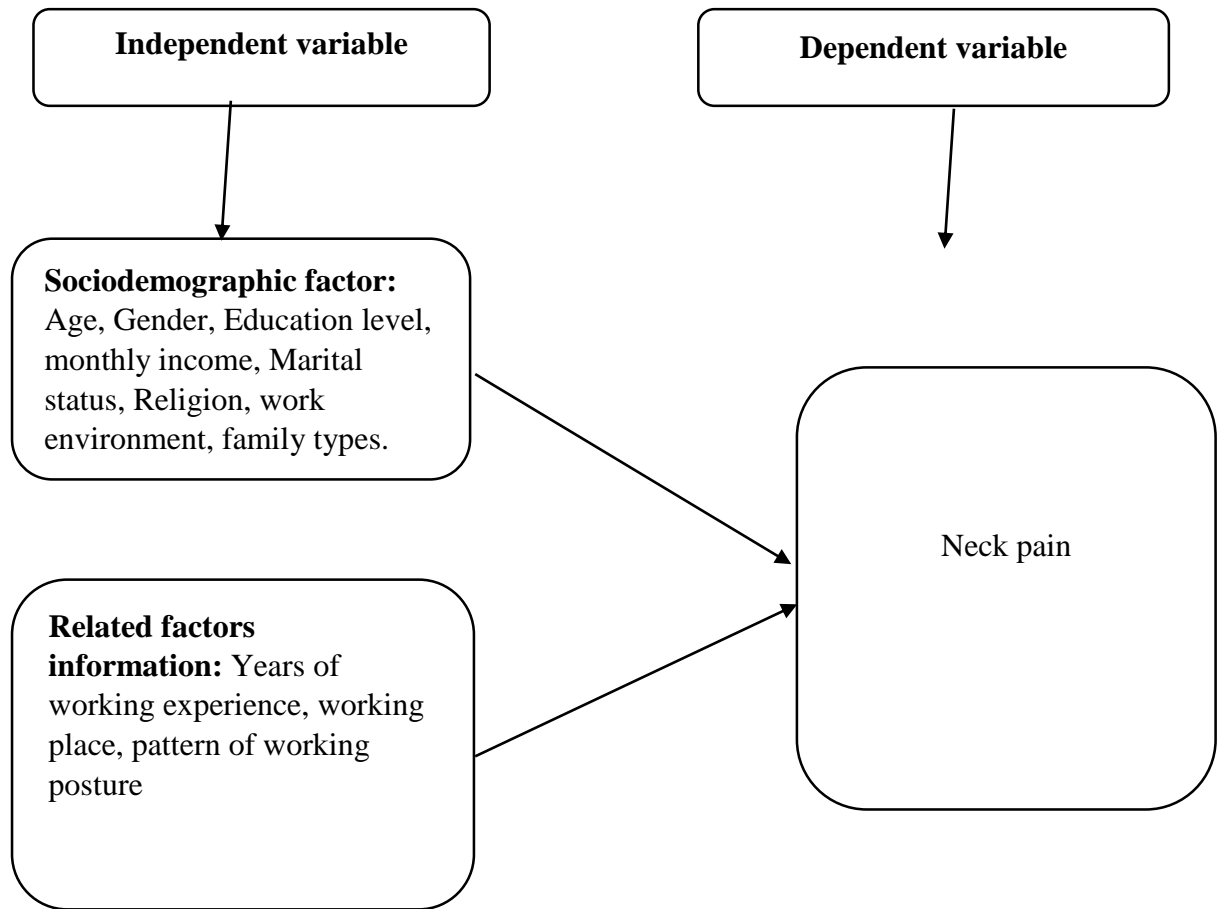
General objectives:

- 1.To explore neck pain and related factors among the dentist in Dhaka city.

Specific objectives:

- 1.To calculate the percentage of dentists having neck pain in some selected areas in Dhaka city.
- 2.To find out the duration of neck pain of the study subjects.
- 3.To assess the severity of neck pain of the dentists by using NPRS scale
- 4.To examine the relationship between posture of dentist during treatment of the patient and neck pain.

1.5 Conceptual frame work:



1.6 Operational Definition:

Neck pain: Neck pain is discomfort in any of the structures in the neck. These include the muscles, nerves, bones (vertebrae), joints, and the discs between the bones.

Dentist: A person who is qualified to treat diseases and other conditions that affect the teeth and gums, especially the repair and extraction of teeth and the insertion of artificial ones.

NPRs Scale: The Numeric Pain Rating Scale (NPRS) is a segmented numeric version of the visual analog scale (VAS) in which a respondent selects a whole number (0-10 integers) that best reflects the intensity of his/her pain.

Globally, there are an estimated 1.71 billion musculoskeletal problems, according to the World Health Organization. For dentists, multiple sclerosis (MSD), particularly neck pain, is a serious occupational health risk. These concerns are still common now and have existed for a while. In 1990, a survey of dentists revealed that 72% of them reported having head, shoulder, or neck pain either frequently or rarely. A 2018 survey of dental professionals in Western countries found that 58.5% of them experienced neck discomfort, 56.4% back pain, 43.1% shoulder pain, and 41.1% back pain. A collection of disorders collectively referred to as rheumatoid arthritis impact numerous parts of the nervous system, including the muscles, tendons, cartilage, bones, blood, and appendages such as intervertebral discs (Kawtharani., et al 2023).

Musculoskeletal disorders (MSDs) are one of the main causes of long-term disease and disability. They are also directly linked to functional incapacity and, as a result, to substantial health and social resource costs. The fascial system, which can envelop, interpenetrate, and support bone tissue and skeletal muscles, is a continuity of the musculoskeletal system, which is the body's basic structural component and is made up of muscles, bones, joints, and connective tissues. About 150 distinct pathological disorders are caused by changes in the performance of this complex system's constituent parts, which are linked to the system's overall health. Pain and temporary or permanent impairments in dexterity and movement are common symptoms of musculoskeletal illnesses, which limit a person's capacity to work and engage in social activities (Greggi., et al 2024).

Particularly among dental professionals and dentistry students, work-related musculoskeletal disorders (WMSDs) pose a serious health risk. 95.8% of dentists say they have had these problems at some point in their careers. Notably, with a wide-ranging occurrence rate between 44 and 93%, the start of these diseases is frequently observed during the early phases of their professional training. The particular demands of the dentistry profession can exacerbate these diseases. Because their regular work involves repetitive movements and uneven, immobile postures, dental practitioners are especially susceptible. Physical tension is very common in the neck area of dentistry

students. According to a meta-analysis, these students experienced neck pain at a rate of 44–69% over a 12-month period (Almeida., et al 2024).

Neck discomfort is a complicated issue that may be related to a person's degree of functioning, amount of physical activity, psychological state, and work habits, among other things. Furthermore, there have been more reports of neck pain in Asia than in Western nations, which raises the possibility that other factors like lifestyle and ethnicity play a role. Particularly in low- and middle-income nations, the prevalence of neck discomfort has been rising, which has a detrimental impact on people's quality of life and puts more strain on healthcare systems. Throughout their careers, healthcare professionals may be susceptible to neck pain. According to a comprehensive analysis of MSDs connected to the workplace, 35–45% of physicians, nurses, and midwives have upper back, shoulder, and neck pain (Plaza-Manzano., et al 2024).

One of the biggest threats to healthcare workers' occupational health is musculoskeletal discomfort. Dental care, especially for general One of the occupations with the highest risk of acquiring these issues is dentistry, mainly because of the high visual demands that force doctors to assume lengthy static positions with hand and wrist-only movements. Numerous additional factors, such as poor illumination, age, genetic predisposition, fitness level, and repetitive motions, have also been identified as contributing to the development of musculoskeletal discomfort. Muscle skeletal pain causes substantial cumulative physiological harm, which has been linked to decreased productivity, higher absenteeism, and clinicians quitting their jobs (Vijay and Ide., 2016).

Neck pain, which includes any discomfort, tightness, or pain in the neck area, is a common illness that affected up to 3551.1 out of 100,000 persons in 2017. Since neck pain is becoming more common over time, more research into this problem is becoming necessary. Neck discomfort has a largely positive natural course, although there are major obstacles due to its chronicity and propensity for recurrence. In the United States, the overall cost of treating lower back and neck pain was estimated to be USD 134.5 billion in 2016. This ailment has a significant economic and social impact. Millions of people suffer from neck pain, which also contributes to high rates of absenteeism from work, which affects economic stability and productivity (Plaza-Manzano., et al 2024).

Seventy percent of persons in the community will experience neck pain at some point in their lives. A greater prevalence of work-related musculoskeletal diseases (WRMSD) is reported by dentistry professionals than by any other health specialty. Early in dental, chronic neck pain manifests. Workplace-related stress disorder (WRMSD) is characterized by a sequence of micro-traumatic events that build up in the body due to workplace conditions and have the potential to progress into more severe musculoskeletal injuries. As a result of recurrent exposure to occupational risk factors, tissue repair is never truly achieved. Workplace physical ergonomics commonly identified as risk factors for WRMSDs include vibration, forceful exertions, non-neutral body postures, fast work tempo, and repetitive motion (Shinde., et al 2015).

The majority of dental practitioners' workdays are spent in uncomfortable, motionless situations. They must adopt and maintain uncomfortable postures and steady hands in order to avoid mistakes. Backaches can result from awkward and strained postures, while shoulder and neck pain can be brought on by repetitive activities and psychological pressures (Gaowgzeh., et al 2015).

The majority of dental practitioners' workdays are spent in uncomfortable, motionless situations. They must adopt and maintain uncomfortable postures and steady hands in order to avoid mistakes. Backaches can result from awkward and strained postures, while shoulder and neck pain can be brought on by repetitive activities and psychological pressures (Feng., et al 2014).

Dental nurses and dentists are among the medical professionals who need to be highly skilled and sit for extended periods of time in order to accomplish their everyday duties. Work ergonomic variables may include repetitive upper limb movements and bending the trunk forward to concentrate on small work items for patient dental health care. The most common complaint among Following neck pain, which ranged from 19.8% to 85.0%, dentists' WMSDs ranged from 36.3% to 60.1% (Chaiklieng and Suggaravetsiri,, 2015).

According to a prior survey conducted in the United States, 73% and 65% of dentists, respectively, reported having neck and shoulder pain over the last 12 months. The high

frequency of shoulder, back, and neck pain was also revealed by a study conducted by Thai dentists from a government hospital in the province of Khon Kaen (Chaiklieng and Suggaravetsiri,., 2015).

The dental field requires a great level of precision and focus, making it a hard job. Good visual acuity, hearing, depth perception, psychomotor abilities, manual dexterity, and the capacity to sustain work postures for extended periods of time are all prerequisites for dentists. The performance and productivity of the practitioner are impacted when any of these skills are diminished. In contemporary dentistry, a number of occupational health issues still exist despite major advancements. Dental professionals are particularly concerned about musculoskeletal issues. Discomfort, incapacity, or chronic pain in the joints, muscles, tendons, and other soft areas are hallmarks of musculoskeletal disorders, which are brought on by or made worse by repetitive motions and extended uncomfortable or forced body postures. This condition is prone to developing in dentists. Dentists appear to be at risk for developing musculoskeletal disorders due to their physical workload (Sultana., et al 2017).

A society's social, economic, and health development are significantly influenced by working people. Numerous issues could be brought on by the surroundings and working situations. Physical illnesses associated to the workplace that lower productivity are one of the key contributing causes. People's inadequate education and occupational health are primarily to blame for this. About 150 million individuals are impacted by these issues, which is roughly four times as many as there were 20 years ago, according to an overall evaluation. Preventing work-related diseases and other symptoms is the primary goal of ergonomics, a science that examines the stressors and harms that people experience in connection to their jobs and professional activities (Aghahi., et al 2018).

One occupation that frequently results in muscle soreness is dentistry. These pains are typically innocuous, seem little, and are frequently disregarded until they develop into a chronic illness and cause irreversible harm. In terms of muscular and skeletal problems, dentistry—especially general dentistry—is a profession that carries a high risk. These issues in the dentistry industry are caused by repetitive, long-term, and bad work habits combined with the necessity of adequate visibility in this sector and frequent upper limb motions. Posture, tool holding, stance, and environmental elements

including light and sound are examples of ergonomic considerations. Over the past 30 years, the most prevalent dental positions have changed internationally (Aghahi., et al 2018).

Among dental surgeons worldwide, the prevalence of musculoskeletal disorders (MSD) was found to be extremely high. The two most common MSDs are neck and back pain, most prevalent. There were other contributing variables, such as prolonged sitting, poor posture, and repetitive motions and heavy instrument use during work, which resulted in overexertion of the lumbar and cervical spines. Maintaining proper posture while working and having suitable operating characteristics for the tools and equipment the dentist uses are crucial. They are also subjected to biomechanical risk factors, which suggest that postures imposed by their jobs are associated with an increased risk of skeletal muscle lesions and soreness (Alshammari and Alsubaie., 2020).

The incidence of neck Frequent static postures that demand more than 50% of the body's muscles to contract and hold in order to fight gravity are the source of pain for dentists. According to earlier research, dentists are prone to occupational health diseases because they frequently adopt uncomfortable static positions at work, sit or stand for extended periods of time, and keep their necks and shoulders fixed for extended periods of time. Extensor musculature is fatigued by eccentric overloading in dentistry due to repetitive motions that result in micro injuries, uncomfortable working postures, demanding arm positions, extended standing, and prolonged forward-bent postures, all of which contribute to musculoskeletal diseases (Shinde., et al 2015).

More than half of the body's muscles must contract in order to maintain the dentist's sitting position while defying gravity. It has been demonstrated that the static forces brought on by these positions are more demanding than the dynamic pressures. Thus, a process of pain and discomfort that may result in musculoskeletal damage starts when the supporting muscles start to show signs of weariness. musculoskeletal disorders caused by pain and muscular activity: Long-term immobility → muscle atrophy and imbalance → muscle ischemia/necrosis, trigger points, and muscle replacement → pain → protective muscle contraction → spinal disk degeneration, nerve compression, and musculoskeletal disorders. Uncomfortable posture might lead to muscle imbalance (Atri and Nagraj., 2014).

One of the most prevalent work-related health risks for medical professionals, especially dentists, is MSDs. Numerous research have been carried out to evaluate dentistry students' MSK pain. Between 46% and 71% of dentistry students in the US reported having physical pain, with the rate rising with each academic year. A study conducted in the United Kingdom revealed that 54% of people reported having pain in their lower back. While 63.5% of dentists in an Indonesian study reported having MSD symptoms, 92% of participants in another European study reported neck, shoulder, elbow, wrist, or hip pain (Felemban.,et al 2021).

Approximately 70% of dental professionals have dealt with MSDs. Dentists had a far higher prevalence of MSDs than the general population, particularly in the neck, shoulder, and back regions. the populace at large. The scientific study of creating and organizing objects that people use to increase mobility safety and efficiency is known as ergonomics. When repetitive stressors and microtraumas occur more frequently, intensely, and for longer periods of time than a tissue can repair itself, chronic injury may result from inadequate ergonomics in the dental workplace. As a result, the afflicted tissues start to exhibit symptoms of MSDs (Astin., et al 2024).

The natural process of intervertebral disc degeneration is thought to start in the second decade of life and may be the cause of progressive spinal discomfort. Though the lumbar and cervical segments are more vulnerable because they endure significant stresses during daily activities, discomfort might theoretically arise at any level of the spine. After ruling out outside variables like trauma or other comorbidities, the cause is frequently mechanical in nature and involves spraining or straining of muscles, which are typically brought on by lifting large objects, performing unconventional movements, and standing for extended periods of time in unconventional positions. The latter has been linked to the long-term issues brought on by a persistent musculoskeletal disorder (Samoladas., et al 2018).

Numerous studies show that dental practitioners are more likely than the general population to experience musculoskeletal disorders (MSD) or related discomfort. When giving dental treatment, it might be difficult to reach and navigate the oral cavity because it is a relatively limited work area. Therefore, uncomfortable body positions are necessary for dental exams or procedures, which puts stress on the musculoskeletal

system. In these positions, the head and neck are flexed to the front and side, while the trunk is inclined and rotated in the direction of the patient. Static body postures, which are defined as body positions held for more than four seconds, are necessary for several dental treatments, including cavity filling and root canal preparation (Ohlendorf., et al 2020).

Dentists must maintain protracted, frequently still positions for the duration of their physically demanding labor, mainly to satisfy the job's rigorous visual requirements. Static and uncomfortable postures, relatively high hand and finger exertion forces, and insufficient work equipment and workspace design are the strongest occupational risk factors for MSD. Vibration, repetitive motions, inadequate lighting (both in terms of intensity and placement), and patient and dentist positioning are other risk concerns. Furthermore, a dentist's height, weight, physical condition, overall health, gender, and age may all highlight physical stress variables (Al-Emara., et al 2024).

Dentistry is a hard profession that requires a lot of focus and accuracy. The prevalence of MSD among dental professionals is remains significant, despite improvements in dental technologies and equipment. Dental professionals must deal with its high frequency and the stress it creates, which can lead to missed work, decreased productivity, and in some circumstances, early retirement. These repercussions lead to economic loss in the form of diminished output, rehabilitation, or monetary loss. WMSDs are caused by prolonged unilateral severe strains on muscles, joints, and nerves, as well as lifted unsupported arms, instrument vibration, and prolonged awkward static posture during dental treatments (Younis., et al 2022).

Even though modern dentistry has been rated as the least dangerous of all jobs, there are still a lot of risks that threaten this profession's reputation. Occupational health concerns are not unusual. These can be discovered Similar risks and occasionally even legal threats are faced by dentists and other clinical dental workers around the world. These risks originate from the workplace, which can have mechanical, chemical, biological, social, and physical elements. Research from all throughout the world has revealed that dentists report more serious and frequent health issues than people in other medical specialties (Reddy., et al 2015).

The prevalence of musculoskeletal symptoms is rising, and because of the financial toll they take, they have a big impact on the workforce. Neck discomfort, mostly from stressors that affect the upper back and neck, is a common ailment in people of all ages, although it is particularly common in middle-aged individuals. Neck pain is particularly common among computer users, which raises the need for medical care and interventions. This, in turn, puts a pressure on the economy because of missed work due to illness (Gul., et al 2024).

Dentists are among the workers who are more often vulnerable to musculoskeletal symptoms (MSS) in their work includes risk factors that may lead to many pathologies such as tendinitis, synovitis, tenosynovitis, and bursitis. Occupational diseases have not only physical, psychological, and social values, but also financial and security impacts when they reach a level of severity that directly affects work capacity, causing absences and early retirement has occurred by dentists in their working sectors. Doing work in their working area dental surgeons as well as dentists often cannot avoid prolonged static postures. They sustained long time awkward postures during treatment session. They even stay in seated postures for a long time during treated a patients, more than one-half of the muscles of the body are contracted statically and there is little movement of the vertebral joints. This may result in damaging physiological changes that can lead to back, neck, or shoulder pain or musculoskeletal symptoms (MSS) among dentists (Shaik et al. 2011).

A prevalent health issue in the general population, and particularly among computer workers, is neck pain. The majority of people encounter some level of neck discomfort throughout their lives. General aches and pains, postural tiredness in the arms, shoulders, and neck, as well as ongoing pain or discomfort in the soft tissues surrounding the neck and shoulders, are all signs of neck pain. The neck appears to have a small lordotic curve when it is perfectly aligned. Long-term computer use, rounded shoulders, and poor neck posture all disrupt the neck's natural lordotic curvature, which causes muscular imbalance and, ultimately, neck pain (Gandhi., et al 2024).

Chronic neck pain is a prevalent and expensive musculoskeletal condition that affects 15% of US adults, but it can occur up to 70% of the time. during the course of a life.

Prolonged neck pain has been linked to greater disability and higher health care expenses. Decreased function and disability are prominent metrics used to assess a person's capacity to return to work. \$134.5 billion was spent by Americans on neck and lower back pain in 2016. The primary cause of this increase, in comparison to 1996, was an increase in outpatient care. Determining whether this investment has improved the management of persistent neck and lower back pain is challenging, though (Van Gorp., et al 2024).

These issues include musculoskeletal conditions, allergic responses, and elevated psychological stress. Besides the fact that dentists deal with tissues on a daily basis, blood and saliva either directly or indirectly. This puts children at risk for a lot of infectious diseases that are spread. Given that psychological comfort and physical welfare have been linked, awareness of professional dangers is crucial. Risks for dentists include suicidal thoughts and legal issues. Therefore, evaluating the risks to one's career as a dentist is a crucial part of the dental field (Reddy., et al 2015).

3.1 Study design:

It was a descriptive type of cross sectional study carried out with the objective of exploring neck pain and related factors of the dentists in Dhaka city.

3.2 Study place:

The study was carried out at SAIC College of Medical Science and Technology, Mirpur, Dhaka.

3.3 Study population:

The dentists currently practicing in Dhaka city constituted the study population for the present research.

3.4 Sample size:

The sample size for the present study will be calculated by the following statistical formula.

$$n = \frac{z^2 p(1-p)}{d^2}$$

Here,

n = Required sample size.

z = confidence level at 95% (Standard value of 1.96).

p = p is the prevalence taken as 85% or 0.85(Cho et al., 2016).

d = margin of error at 5% (Standard value of 0.05).

$$n = \frac{z^2 p(1-p)}{d^2}$$

$$n = \frac{(1.96)^2 \times 0.85(1-0.85)}{(0.05)^2}$$

$$= \frac{3.84 \times 0.85 \times 0.15}{0.0025}$$

$$= \frac{0.4896}{0.0025}$$

$$= 196$$

So, sample size 196.

So, the researcher aim to focus his study by 196 sample following the calculation above initially.

3.5 Sampling technique:

Convenience sampling technique was applied to select the participants from the study population.

3.6 Method of data collection:

Data was collected from the dentists by face to face formal interview.

3.7 Instruments of data collection-

A pre-tested structured questionnaire was used as an instrument of data collection for the present study. Both open and close ended questions were included in the questionnaire. The questionnaire had three parts. Part A contained questions on socio-demographic characteristics. Part B included questions on work related information. Part C contained questions on neck pain related questions.

NPRS scale was used to assess the level of pain of the participants.

3.8 Data collection Tools:

For collecting data some other materials were also used. These are:

- Weighing machine and
- Measuring tape

3.9 Inclusion criteria:

- Dentist currently practicing in Dhaka city.
- Willingness to participate.

3.10 Exclusion criteria:

- Who were not interested.

3.11 Data collection procedure:

At first, researcher took permission from the Dentist. Before collecting data, the objectives of this study and purpose were explained to all participants. All the participants were given consent form for taking permission from them to participate in this study and they were given opportunity to ask any type of study related questions. Every interview lasted 10 - 15 minutes. Each data was collected carefully and

confidentiality was maintained. After successfully collecting data, researcher leaves the participants by giving thanks to all to be a part of study willingly.

3.12 Data analysis:

The data were analyzed using the Statistical Package for the Social Sciences (SPSS) program. Descriptive statistics, such as frequency, distribution, range, mean, and percentage were performed. For inferential statistics the relationship between independent and dependent variables were analyzed accordingly.

3.13 Ethical consideration:

The Research proposal was submitted to the Ethical Review Board (ERB) of SCMST and approval was obtained from the Board.

The investigator obtained written permission from ethical review board (SCMST).

Bangladesh Medical Research Council (BMRC) and World Health Organization (WHO) guideline also were followed to conduct the study.

Ethical review board informed by written document about aims and objectives of the study and that the Participation of the study was not harmful.

The clients name, address and personal information was kept confidential by the investigator and the data were not shared with others.

3.14 Rigor:

Researcher always tried not to influence the process by his own value and biases.

No leading question was asked or no important question was avoided.

The participant's information was coded accurately and checked by the research supervisor to eliminate any possible errors.

The entire information was handled with confidentiality.

Every section of the study was checked by the research supervisor.

This was a descriptive type of cross-sectional study carried out with the objective of exploring neck pain and related factors among the dentist in Dhaka city. Data were collected from 105 participants by using a pretested questionnaire. Data were numerically coded and captured in Microsoft Excel and calculated by SPSS 25.0 version software program as mean, SD and percentage and presented by tables with description.

Part -A : Socio Demographic profile

Table no. 1: Frequency distribution of the respondents by age.

Age group in years	Frequency	
	N	%
20 - 30	47	44.8
31- 40	32	30.5
More than 41	26	24.8
Total	105	100.0

Mean = 34.17, SD = \pm 8.566

Regarding frequency distribution of the respondents by age, it was found that 47 (44.8%) participants belonged to the age group 20 – 30 years. It was also found that 32 (30.5%) respondents were in the age group of 31 – 40 years (Table no. 1).

Table no. 2: Frequency distribution of the respondents by gender.

Gender	Frequency	
	N	%
Male	72	68.6
Female	33	31.4
Total	105	100.0

The study revealed that 72 (68.6%) participants were male and 33 (31.4) respondents were female (Table no.2).

Table no. 3: Frequency distribution of the respondents by education.

Education	Frequency	
	N	%
BDS	60	57.1
BSc in dental	13	12.4
Diploma in dental	32	30.5
Total	105	100.0

About frequency distribution of the respondents by education, it was found that 60 (57.1%) participants had BDS degree. It was found that 32 (30.5%) participants had diploma in dental degree (Table no.3).

Table no. 4: Frequency distribution of the respondents by religion

Religion	Frequency	
	N	%
Islam	92	87.6
Hindu	12	11.4
Buddhist	1	1.0
Total	105	100.0

The study showed that out of 105, 92 (87.6%) participants were Muslims and 12 (11.4%) [Table no.4].

Table no. 5: Frequency distribution of the respondents by marital status.

Marital status	Frequency	
	N	%
Married	59	56.2
Unmarried	34	32.4
Separate	12	11.4
Total	105	100.0

It was found in the study that 59 (56.2%) participants were married and 34 (32.4%) respondents were unmarried. It was also found that 12 (11.4%) respondents were separated from the spouse (Table no.5).

Table no.6: Frequency distribution of the respondents by monthly income.

Monthly income	Frequency	
	N	%
Less than taka 20000	9	8.6
Taka 20000 – 136000	89	84.8
More than taka 136000	7	6.7
Total	105	100.0

About monthly income of the participants, it was found that 89 (84.8%) participants had monthly income was Taka 20000 – 136000. It was also found that 9 (8.6%) participants had monthly income less than Taka 20000 (Table no.6).

Table no.7: Frequency distribution of the respondents by BMI.

BMI Group	Frequency	
	N	%
Normal weight (18.50 – 24.99)	48	45.7
Over weight (≥ 25.00)	57	54.3
Total	105	100.0

Mean=34.17

Regarding BMI, it was found that 57 (54.3%) participants were overweight and 48 (45.7%) participants had normal weight . The mean BMI was 34.17 (Table no.7).

Part -B :Work related information

Table no.8: Frequency distribution of the respondents by working experience

Working experience in years	Frequency	
	N	%
1-5	47	44.8
6-10	30	28.6
11-15	14	13.3
16-20	13	12.4
more than 20	1	1.0
Total	105	100.0

Regarding frequency distribution of the respondents by working experience it was found that 47 (44.8%) participants had 1 – 5 years of experience and 30 (28.6%) participants had 6 – 10 years (Table no. 8).

Table no. 9: Frequency distribution of the respondents by maintaining respondents position during working time

Position during working time	Frequency	
	N	%
Standing	31	29.5
Sitting up straight	73	69.5
Forward banding	1	1.0
Total	105	100.0

About position during working time, it was revealed that 73 (69.5%) participants' position was sitting up straight. It was also found that the position during working time of 31 (29.5%) participants was standing (Table no. 9).

Table no. 10: Frequency distribution of the respondents by duration work daily.

Duration of working per day in hours	Frequency	
	N	%
Less than 3h / day	2	1.9
3 to 6 h/ day	57	54.3
More than 6 h /day	46	43.8
Total	105	100.0

The study revealed that 57 (54.3%) participants had to work for 3 to 6 hours. It was also found that 46 (43.8%) respondents had to work for more than 6 hours daily (Table no. 10).

Table no. 11: Frequency distribution of the respondents by working days during the week.

Number of working days per week	Frequency	
	N	%
3 to 5 days/week	29	27.6
More than 5days/ week	76	72.4
Total	105	100.0

About number of working days, it was found that 29 (27.6%) participants had to work 3 to 5 days per week and 76 (72.4%) participants had to work more than 5 days per week (Table no.11).

Table. no. 12 :Frequency distribution of the respondents by work related information

Information	Frequency	
	Yes	No
	N (%)	N (%)
Protective equipment during work	105 (100)
Position longer than 40 min	94 (89.5)	11 (10.5)
Transfer any heavy objects	4 (3.8)	101 (96.2)
Proper body position	105 (100)
Knowing work related ergonomics	105 (100)

This Study showed that all the participants used protective equipments during work. It was also found that 94 (89.5) participants could maintain position longer than 40 minutes. It was reported that all the participants maintained proper body position and knew the work related ergonomics (Table no.12).

Part -C :Neck pain related information

Table no. 13: Frequency distribution of the respondents by having of neck pain.

Presence of neck pain	Frequency	
	N	%
Yes	51	48.6
No	54	51.4
Total	105	100.0

Regarding frequency distribution of the respondents by presence of neck pain, it was found that 51 (48.6%) participants had neck pain and 54 (51.4%) participants had not neck pain (Table no. 13).

Table no. 14: Frequency distribution of the respondents by severity of pain.

Severity of pain	Frequency	
	N	%
Mild	31	60.8
Moderate	18	35.3
Severe	2	3.9
Total	51	100.0

The study revealed that 31 (60.8%) participants had mild form neck pain and 18 (35.3%) participants had moderate level of pain in the neck (Table no. 14).

Table no.15: Frequency distribution of the respondents by kind of pain.

kind of pain	Frequency	
	N	%
Sharping	26	51.0
Burning	2	3.9
Throbbing	22	43.1
Stabbing	1	2.0
Total	51	100.0

About frequency distribution of the respondents by kind of pain, it was found that 26 (51.0%) respondents had sharpening nature of pain. It was also found that 22 (43.1%) respondents had throbbing pain (Table no. 15).

Table no. 16: Frequency distribution of the respondents by treatment for this pain.

Treatment for this pain	Frequency	
	N	%
Yes	33	64.7
No	18	35.3
Total	51	100.0

The study showed that 33 (64.7%) participants took treatment for pain and 18 (35.3%) participants did not go for any type of treatment (Table no.16).

Table no. 17: Frequency distribution of the respondents by have taken type of treatment

Type of treatment	Frequency	
	N	%
Medication	21	41.2
Physiotherapy	3	5.9
Both	11	21.6
Surgery	2	3.9
Others	14	27.5
Total	51	100.0

Regarding type of treatment taken by the participants, it was revealed that 21 (41.2%) participants took medication for pain. It was also found that 11 (21.6%) participants took both medication and physiotherapy (Table no. 17).

Table no. 18: Frequency distribution of the respondents by restriction of movement.

Restriction of movement	Frequency	
	N	%
Yes	6	11.8
No	45	88.2
Total	51	100.0

Out of 51 participants, 45 (88.2%) respondents told that they had no restriction of movement and 6 (11.8%) participants had movement restriction (Table no. 18).

Table no. 19: Frequency distribution of the respondents by duration of pain

Duration of pain in month	Frequency	
	N	%
Less than 4.6	7	13.7
4.7 – 15.8	38	74.5
More than 15.8	6	11.8
Total	51	100.0

About duration of pain, it was revealed that 38 (74.5%) participants had pain for 4.7 to 15.8 months and 7 (13.7%) participants had pain for less than 4.6 months (Table no.19).

Table no 20: Association between independent variable with dependent variable:

Independent variable	Test	Test value	<i>p</i> value
Age	T-Test	4.47	0.000
BMI	T-Test	2.53	0.013
Working experience	T-Test	3.34	0.001
Working days during the day(h)	T-Test	0.399	0.691
Working days during the week	T-Test	0.246	0.806
Treatment vs severity of pain	Chi-Square	$\chi^2=3.25$	0.001
Restriction of movement	Chi-Square	$\chi^2=15.85$	0.000

It was found that the association between age of the patient neck pain statically highly significant ($p= 0.000$).

Regarding association between restriction movement and severity of pain among the patients also statically highly significant ($\chi^2=15.85$, $P = 0.000$).

The aim of the present study was to determine the prevalence of neck pain and related factors among the dentists working in Dhaka city. The data were collected from 105 study participants by using a pre-tested questionnaire. Analysis of the data was carried out by SPSS 25.0 version software program. The discussion part of the study has been presented in the following section. About frequency distribution of the respondents by age, it was found that 44.8% participants belonged to the age group 20 – 30 years. It was also found that 30.5% respondents were in the age group of 31 – 40 years. The study showed that 68.6% participants were male and 31.4% respondents were female. The findings indicated that majority of the participants were young adult and males were proportionately higher than that of females.

Regarding frequency distribution of the respondents by education, it was found that 57.1% participants had BDS degree. It was revealed that 30.5% participants had diploma in dental technology. The result showed that in Bangladesh dentists with diploma degree are also providing dental care service to the people.

About religion of the participants, it was found that out of 105, 87.6% participants were Muslims and 11.4% participants were Hindu.

The study revealed that 56.2% participants were married and 32.4% respondents were unmarried. It was also found that 11.4% respondents were separated from the spouse.

Regarding monthly income of the participants, it was found that monthly income of 84.8% participants was Taka 20000 – 136000. It was also found that 8.6% participants had monthly income less than Taka 20000. About BMI, the study showed that 54.3% participants were overweight and 45.7% participants had normal weight.

About working experience, it was found that 44.8% participants had 1 – 5 years of experience and 28.6% participants had 6 – 10 years (Table no. 8). A study conducted by Reddy V et al showed that dentists with clinical experience less than 5 years had greater prevalence of physical hazard in the form of musculoskeletal pain in neck region (Reddy V et al., 2015).

Regarding position during working time, it was revealed that position of 69.5% participants was sitting up straight. It was also found that the position during working time of 29.5% participants was standing. It showed that a good percentage of dental personnel keep standing during practice time. In a study it was found that 100.0% of

the dentists practicing in standing position faced musculoskeletal pain in neck (Reddy V et al., 2015).

The study showed that 54.3% participants had to work for 3 to 6 hours. It was also found that 43.8% respondents had to work for more than 6 hours daily .

About number of working days, it was found that 27.6% participants had to work 3 to 5 days per week and 72.4% participants had to work more than 5 days per week

The study revealed that all the participants used protective equipments during work. It was also found that 89.5% participants could maintain position longer than 40 minutes. It was found that all the participants maintained proper body position and knew the work related ergonomics .

Regarding frequency distribution of the respondents by presence of neck pain, it was found that 48.6% participants had neck pain and 51.4% participants had no neck pain . In a study it was revealed that out of 158 dentists 70.3 % had neck pain (Dajpratham P et al., 2010). In Saudi Arabia a study showed that 82.0% of the dentists complained of lower and neck pain (Alshammari and Alsubaie, 2020).

The study showed that 60.8% participants had mild form of neck pain and 35.3% participants had moderate level of pain in the neck .Subhash Chandra et al showed in a study that 40.0% of the dentists had experienced mild form of pain (Chandra S et al., 2015).

Regarding kind of pain, it was found that 51.0% respondents had sharpening nature of pain. It was also found that 43.1% respondents had throbbing pain .

It was revealed that 64.7% participants took treatment for pain and 35.3% participants did not go for any type of treatment (Table no.16). In a study it was found that 23.86% dentists had consulted physician, 83.54% dentists had taken precautionary measures while 16.46% did not take any precautionary measures (Alshammari and Alsubaie, 2020).

About type of treatment taken by the participants, it was found that 41.2% participants took medication for pain. It was also found that 21.6% participants took both medication and physiotherapy (Table no. 17). Alshammari and Alsubaie showed in their study that 62.18% of dentists opted for exercise and yoga as treatment modalities to relieve the pain.

The study showed that 88.2% respondents told that they had no restriction of movement and 11.8% participants had movement restriction .The results indicated that most of the dentists could continue their work despite neck pain.

About duration of pain, it was revealed that 74.5% participants had pain for 4.7 to 15.8 months and 13.7% participants had pain for less than 4.6 months. A study conducted by Dajpratham P et al in Thailand revealed that the median duration of musculoskeletal pain was three years (Dajpratham P et al., 2010).

The present study was a descriptive type of cross sectional one carried out with the objective of determining the prevalence of neck pain and associated factors among the dentists working in different private dental clinic in Dhaka city. The data were collected from a purposively selected sample size 105 dentists by face to face formal interview using a pre-tested questionnaire. Analysis of the data was carried out by SPSS 25.0 version software program. The conclusion part of the study has been presented in the following section.

Regarding distribution of the respondents by age, the study showed that 44.8% participants were in the age group of 20 – 30 years and 30.5% respondents belonged to the age group of 31 – 40 years. The study revealed that 68.6% participants were male and 31.4% respondents were female. The findings indicated that majority of the participants were young adult and males were proportionately higher than that of females.

About education, it was found that 57.1% participants had BDS degree. It was revealed that 30.5% participants had diploma in dental technology. The result showed that in Bangladesh dentists with diploma degree are also providing dental care service to the people.

Regarding religion of the participants, it was found that 87.6% participants were Muslims and 11.4% participants were Hindu. The study revealed that 56.2% participants were married and 32.4% respondents were unmarried. About monthly income of the participants, 84.8% participants had Taka 20000 – 136000. It was also found that 8.6% participants had monthly income less than Taka 20000. Regarding nutritional status assessed on the basis of BMI, the study showed that 54.3% participants were overweight and 45.7% participants had normal weight.

About working experience, 44.8% participants had 1 – 5 years of experience and 28.6% participants had 6 – 10 years. Regarding position during working time, 69.5% participants was sitting up straight. It was also found that the position during working time of 29.5% participants was standing. It showed that a good percentage of dental personnel keep standing during practice time.

The study revealed that 54.3% participants had to work for 3 to 6 hours and 43.8% respondents had to work for more than 6 hours daily. Regarding number of

working days, 27.6% participants had to work 3 to 5 days per week and 72.4% participants had to work more than 5 days per week. The study showed that all the participants used protective equipments during work. It was also found that 89.5% participants could maintain position longer than 40 minutes and all the participants (100.0%) maintained proper body position and knew the work related ergonomics.

About presence of neck pain, it was found that 48.6% participants had neck pain and 51.4% participants had no neck pain. The study revealed that 60.8% participants had mild form of neck pain and 35.3% participants had moderate level of pain in the neck. About kind of pain, it was found that 51.0% respondents had sharp nature of pain. It was also found that 43.1% respondents had throbbing pain.

It was found that 64.7% participants took treatment for pain and 35.3% participants did not go for any type of treatment. About type of treatment taken by the participants, 41.2% participants took medication for pain. It was also found that 21.6% participants took both medication and physiotherapy. The study showed that 88.2% respondents had no restriction of movement and 11.8% participants had movement restriction. The results indicated that most of the dentists could continue their work despite neck pain. About duration of pain, 74.5% participants had pain for 4.7 to 15.8 months and 13.7% participants had pain for less than 4.6 months.

Long working hours is responsible for development of musculoskeletal problems among the dentists. Over working should be avoided by the dentists to prevent development of musculoskeletal disorders. Over weight is a risk factor for heart disease and various musculoskeletal disorders. So they should avoid fatty rich food and should do physical exercise regularly. It is known that working on standing position causes back pain. They should take rest during work. The findings of the study recommend for early diagnosis and management of the neck pain problems of the concerned dental surgeons.

The following recommendations are made on the basis of the findings of the present study.

1. The study showed that a good percentage of the dentists (54.3%) had to work for 3 – 6 hours daily and 43.8% participants had to work for more than 6 hours per day (Table no.10). Long working hours might influence the development of musculoskeletal problems among the dentists. Dentists should maintain optimum working hours daily. Over working should be avoided by the dentists to prevent development of musculoskeletal disorders.
2. Regarding BMI, it was found that 54.3% participants were overweight (Table no.7). The mean BMI was 34.17. The study revealed that higher proportion of dentists (54.3%) was overweight than that of dentists with normal weight (45.7%). The dentists should be aware about the risk of developing cardiovascular diseases along with various musculoskeletal disorders. So they should avoid fatty rich food to reduce body weight. The dentists should do physical exercise regularly.
3. It was revealed in the study that 29.5% participants had to work on standing position (Table no.9). It is known that working on standing position causes back pain. The dentists should work on sitting position. They should take rest during work inside the chamber. Provision of rest during work for the dental surgeons will prevent diseases especially musculoskeletal disorders.
4. The study revealed that a good proportion of the participants (48.6%) had neck pain. It is obvious that neck pain might interfere their professional service to the patients. Physiotherapy could play a vital role in the management of musculoskeletal problems of the dentists. The findings of the study recommend for early diagnosis and management of the neck pain problems of the concerned dental surgeons.
5. The sample size for the present study was small. On the other hand convenient sampling technique was used to select the study participants from different private clinics. So, the result could not be generalized. It is recommended that a well planned research should be carried out to explore the occupation related musculoskeletal disorders particularly among the dentists with a statistically

calculated representative sample size. It would certainly bring out the true findings of the dental surgeons.

6. The time period for the study was inadequate. It certainly affected the quality of the present study. In order to ensure the quality of the research, sufficient time should be allotted for planning and implementation of the various processes and steps of the study.

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Appendix – A

Consent form (English)

Responded ID NO:

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Dear participant,

I am Md **Abdur Rahman**, student of B.Sc. in physiotherapy program in the Department of physiotherapy, Saic college of Medical Science and Technology (SCMST) which is affiliated Dhaka university. I am conducting the study entitled “**Neck pain and related factors among the dentist in Dhaka city**” as a part of my thesis work for the partial fulfillment of B.Sc. in physiotherapy degree. There are the lists of question you need to fill-up which is include socio- demographic, information related, disease related and treatment related questions. For spending your time to participate in this self – administered interview which will take around 7-10 minutes. There is list of questionnaires and you need to fill up each answer. The information gained from this questionnaire will be used to academic purposes and will be kept confidential. Your participation in this study is totally voluntarily and you have the right to withdraw from the interview without any clarification at any moment. You can ask any question to the researcher regarding the study to meet up your quarry. Looking confidential. Your participation in this study is totally voluntarily and have the right to withdraw from the interview without any clarification at any moment. You can ask any question to the researcher regarding the study to meet up your quarry. Looking forward your kind cooperation.

Declaration of the participant,

I have been invite to participate I this survey. The foregoing information has been read to me and that have been answered to my satisfaction. I have noticed participation in this study is totally voluntary and I have the right to withdraw from the interview at any clarification. I give my consent voluntarily to be participants in this study.

Responded name:

Witness name:

Mobile number:

Signature and date:

Appendix – B

QUESTIONNAIRE(ENGLISH)

NECK PAIN AND RELATED FACTORS AMONG THE DENTIST IN DHAKA CITY

Date...../...../.....

Name of respondent.....

Address.....

Mobile
number.....

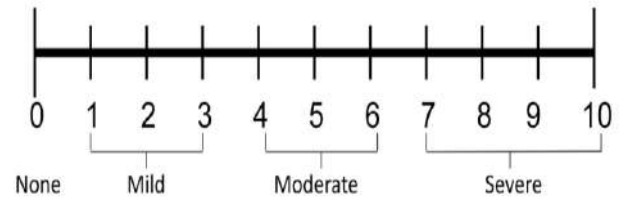
Part A: Socio Demographic Related Question:

Q NO	Question	Response	code
1	How old are you?	Years	
2	Gender of Participant	1.Male 2.Female 3.Others	
3	Educational level	1.BDS 2.B.Sc.in dental 3.Diploma in dental	
4	What is your religion?	1.Islam 2.Hindu 3.Buddhist 4.Christian	
5	Marital status	1.Married 2.Unmarried 3.Divorce 4.Separate	
6	What is your monthly income (BDT) BDT	
7	BMI Height.....Feet Weight.....kg		

Part B: Work related information


Q No	Questions	Response	Code
8	How many years of working experience in dentistry? years	
9	Which position do you maintain during working time?	1.Standing 2.Sitting up straight 3.Forward banding 4.Backward 5.Slouched	
10	What is the length of working time during the day(h)? hours	
11	How many working days during the week? day	
12	Do you use protective days equipment during work?	1.Yes 2.No	
13	Does it often happen that you work in the same position longer than 40 minutes?	1.Yes 2.No	
14	Do you need to transfer any heavy objects?	1.Yes 2.No	
15	Are you trying to work in a proper body position?	1.Yes 2.No	
16	Do you know about correct your work related ergonomics?	1.Yes 2.No	

Part C: Neck pain related Questions:

Q No	Questions	Response	Code
17	Do you have pain in you neck ?	1.Yes 2.No	
18	Severity of pain ? (According to NPRS scale)  Ref: McCaffery, M., Beebe, A., et al. (1989). Pain: Clinical manual for nursing practice, Mosby St. Louis, MO	1.Mild 2.Moderate 3.Severe	
19	What kind of pain do you feel	1.Sharping 2.Burning 3.Throbbing 4.Stabbing 5.Electric	
20	Do you have taken any treatment for this pain?	1.Yes 2.No	
21	What type of treatment you have taken?	1.Medication 2.Physiotherapy 3.Both 4.Surgery 5.Others	
22	Restriction of movement ?	1.Yes 2.NO	
23	Duration of pain?	

Appendix – C

Permission Letter

 **SAIC COLLEGE OF MEDICAL SCIENCE AND TECHNOLOGY**
Approved by Ministry of Health and Family Welfare
Affiliated with Dhaka University

Ref: _____ Date:

Ref.No: SCMST/PT/ERB-2017-18/1-2023/49

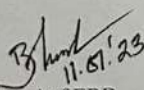
3rd January'2023
To
Md. Abdur Rahman
4th Professional B.Sc. in Physiotherapy
Saic College of Medical Science and Technology (SCMST)
Mirpur-14, Dhaka-1216.

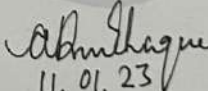
Sub: Permission to collect data

Dear Rahman,
Ethical review board (ERB) of SCMST pleased to inform you that your proposal has been reviewed by ERB of SCMST and we are giving you the permission to conduct study entitled "Neck pain and related factors among the dentist" and for successful completion of this study you can start data collection from now.

Wishing you all the best.

Thanking You,


11.01.23
Head of ERB
Ethical Review Board
Saic College of Medical Science and Technology


11.01.23
Principal
Saic College of Medical Science and Technology
Mirpur-14, Dhaka-1216

Address: Saic Tower, M-1/6, Mirpur-14, Dhaka-1216. Mobile:01936005804
E-mail: simt140@gmail.com, Web:www.saicmedical.edu.bd

Gant Chart

Activities/ months	Sep 23	Oct 23	Nov 23	Dec 23	Jan 24	Feb 24	Mar 24	Apr 24	May 24	June 24	July 24	Aug 24
Proposal presentation												
Introduction												
Literature review												
Methodology												
Data collection												
Data Analysis												
Result												
1st progress presentation												
Discussion												
Conclusion And Recommendation												
2nd progress presentation												
Communication with supervisor												
Final submission												